Characterizing Discourse Among Undergraduate Researchers in an Inquiry-Based Community of Practice

LORI DONATH
Linguistics Program
University of South Carolina

ROXANNE SPRAY
Department of English
University of South Carolina

NANCY S. THOMPSON
Department of Chemical Engineering, and
Department of English (emerita)
University of South Carolina

ELISABETH M. ALFORD
Department of English Writing Center
University of South Carolina

NADIA CRAIG
Department of Mechanical Engineering
University of South Carolina

MICHAEL A. MATTHEWS
Department of Chemical Engineering
University of South Carolina

ABSTRACT

Engineering education increasingly incorporates pedagogies that promote guided, inquiry-based, active learning within authentic "communities of practice". Such pedagogies apply observations made about workplace interaction: that knowledge is distributed across social and physical networks. However, the process through which multiple dimensions of learning occur within a network of distributed cognition—where every person contributes to the learning of every other person—calls for further investigation. The present study, set in an active learning environment, identifies seven speech events that characterize linguistic processes of distributed cognition among undergraduate researchers in the Research Communications Studio (RCS) at the University of South Carolina. Close analysis of a small group session in the RCS revealed that participants enact critique, elicitation of critique, internalization, (direct and indirect) instruction, contextualization, explanation, and collaborative negotiation of knowledge throughout their interactions. Awareness of these speech events, which emerged from the analysis, may better equip engineering educators to optimize interactions in other active group learning environments and to facilitate such activities in more traditional pedagogical settings.

Keywords: active learning, communities of practice, discourse, distributed cognition, interaction

I. INTRODUCTION

For more than a decade, engineering education has been moving towards a new paradigm that privileges experiential, or active, learning over passive learning through the lecture mode. The monograph *How People Learn (HPL)*, as well as the recently published *How Students Learn: Science in the Classroom*, describes active learning in terms of learners' control and awareness of their own learning [1, 2]. The reported benefits from active, inquiry-based learning are far-reaching: the excitement of discovery enhances students' motivation to learn [3], and improved motivation leads to student success.

Accounts of active learning acknowledge collaborative dynamics in a social context, ideally within an authentic community of practice in which learners share and construct goals, skills, values, conventions, and other knowledge. Thus, they expose themselves to alternative conceptualizations, questions, and puzzles, as well as gaps in understanding, through interaction with others; such interaction has been demonstrated to increase student achievement [3, 4]. Systems of inquiry-based learning help to encourage productive connections among research, teaching, and learning—to the benefit of students, faculty, and institutions.

According to Lave, "communities make possible certain kinds of transformations of understanding, identity, and knowledgeable skill, not simply changes of a quantitative sort" [5]. Drawing on other studies [6, 7], *HPL* further describes how communities of practice facilitate learning:

> A community of practice also provides direct cognitive and social support for the efforts of the group's individual members. Students share the responsibility for thinking and doing: they distribute their intellectual activity so that the burden of managing the whole process does not fall to any one individual. In addition, a community of practice can be a powerful context for constructing scientific meanings. In challenging one another's thoughts and beliefs, students must be explicit about their meanings; they must negotiate conflicts in belief or evidence; and they must share and synthesize their knowledge to achieve understanding [1, p. 183–4].

However, the field lacks concrete data on how active learning within communities of practice works in the real teaching and learning situations of engineering research. Lave observes that within communities of practice "near-peer relations seem to facilitate sharing of knowledgeable skills," but that we do not know what conditions "make deep transformations possible" [5]. The processes that produce those positive results are not well understood.

What discursive processes characterize active learning? The goal of this paper is to describe, illustrate, and analyze discourse in the Research Communications Studio (RCS) at the University of South Carolina, a novel community of practice in which peers and near-peers work in an environment of distributed cognition. In this setting, discourse analysis is used to characterize active learning as a set of communicative processes wherein group members with different expertise and perspectives are valuable to one another's learning [5]. Distributed cognition, according to engineering educator Dorothy Winsor, "treats thinking not as an action that takes place wholly inside an individual's head, but rather as an activity that is distributed among the individual, other people, the physical environment, and the tools the person uses, including language and such language structures as genres" [8, p. 6].

The present research, then, investigates how active learning in a distributed cognition environment (which might be termed, by extension, distributed *learning*) is carried out linguistically in a pedagogical context that both assumes and explicitly teaches concepts central to active learning. That is, the study begins with the assumption that active learning, as conceived in the *HPL* monograph, is taking place in the RCS—by virtue of the fact that the RCS (1) structures sessions around students' objectives, and (2) facilitates student awareness of their own learning. The goal of the analysis is to understand what takes place in such a setting: What is the process of active learning, and how do participants bring it about through language?

Through long-term participant observation in the RCS and focused analysis of a single group session, several types of speech events are identified which, as a set, characterize processes of active learning as it occurs in the RCS. (A sample of that interaction is illustrated in an excerpted transcript in the Appendix). The seven principal types of speech that participants contribute in the session consist of *critique, elicitation of critique, internalization and awareness of knowledge gained, contextualization and explanation of research or related ideas, and negotiation* and *consensus-building.*

The discursive activities identified in RCS discourse are different from those attributed to conventional classroom discourse [9–12], modified classroom settings [13], and one-on-one tutoring scenarios [14], as well as other small group contexts [15–20]. Thus, these speech events themselves, along with their description, constitute primary findings. However, additional findings concern the way that participants take part in these activities; in the session studied, the extent to which various events are brought about by the participants highlights participant roles. This pattern of interaction illustrates the social orientation of learning envisioned by Lev Vygotsky, in which learners build on their existing knowledge through group interaction, thereby increasing their individual learning potential [21].

Describing the interaction among the small groups of undergraduate engineering researchers thus enriches our understanding not only about how distributed cognition is linguistically constructed, but also about how authentic communities of practice emerge in which students develop as engineering researchers. An understanding of the types of verbal activities that characterize inquiry-based pedagogy offers teachers a guide for enhancing interaction in other settings that foster distributed cognition, and for stimulating interaction in traditional pedagogical settings that would benefit from more dynamic interplay.

The following section reviews existing studies on interaction in a number of pedagogical contexts at different educational levels: Subsection A reviews studies of interactions in traditional classroom settings, subsection B reviews learning through interaction in communities of practice, and subsection C discusses studies on interaction in small groups and novel classroom contexts. Section III provides background on the research setting—the organization of the RCS, as well as the participants involved. Next, the methodology is covered in section IV, in which subsection A describes the analytical approach; subsection B justifies the construct used; and subsection C outlines the analytical procedure. The analysis is presented in section V, where subsection A reports the findings on the types of events observed; subsection B reports on the patterning of events during the session; subsection C discusses the findings; and subsection D outlines implications for engineering education. Finally, conclusions and future directions are presented in section VI.

II. Motivation for the Study

Vygotskian approaches to education see learning as fundamentally social, taking place through human interaction [21]. It is not surprising, then, that discourse has long been recognized as an important site for the study of learning. *HPL* cites the work of Rosebery et al. [4] not only as an example of exemplary pedagogy which encouraged "communities of scientific practice" within elementary schools, but also as an overall illustration of the way that "scientific ideas are constructed" [1]. The authors of *HPL* discuss evidence that "discourse is a primary means for the search for knowledge and scientific sense-making," citing the Chèche Konnen approach as significant research in this field [1, p. 182].

Clearly, there is a need for the study of discourse in educational settings. Since the 1970s, applied linguists have undertaken analysis of classroom interaction; a summary of this research is provided in subsection A. Although these studies, along with some discussed in the following two subsections, are set in elementary school classrooms, they contribute various observations about classroom interaction that are applicable at all levels of education. More recently, research has addressed the linguistic dynamics of student-centered approaches; subsection B reviews studies on interaction in communities of practice environments and subsection C discusses several studies of interaction in small group contexts. The research discussed in B and C signals the need for further study into interaction and learning, and serves as an appropriate point of origin for probing interaction in the active learning environment of the RCS.

A. Interaction in Traditional Classrooms

Despite their varied foci and findings, four analyses of primary school classrooms are notable because they share in common clearly teacher-centered interaction. Through their microanalysis of fifth-grade classroom discourse, Bloome and Theodorou found that even traditional classroom discourse is not dyadic but rather

essentially social, consisting of alignments that are either between teacher and group (unless the teacher is absent) or between students—either in pairs or small groups [9]. However, although students co-constructed interactional rules that encouraged cooperation, the teacher's assumptions about classroom interaction—that students "do their own work"—worked against this cooperative tendency rather than incorporating it into the course content and goals [9].

In two studies of classroom interaction which base their analysis on speech act theory, as does the present study, the linguistic activity taking place likewise centers on the teacher's contributions. In a landmark study of classroom interaction among majority immigrant children, Sinclair and Coulthard list 22 key types of speech events, among them, *check, prompt, acknowledge*, and *accept* [11]. Notably, these types mainly describe possible teacher utterances, including those that would permit students to speak.

Among subsequent studies that build on that framework, Ramirez's study of six language arts classrooms implements a comparable categorization [12]. He found that while types and patterns of speech acts vary by teacher and by lesson, teachers tended to use those that functioned to manage classroom exchanges—for example, a greater number of "pseudo questions", to which teachers knew the answer, compared to real questions, and a greater number of directive management acts compared to indirective management [12]. Also, across the school term students tended to use more "non-participant" replies and reactions, containing "impersonal or abstract information" in contrast to replies and reactions invested with their "personal experience and opinion" [12]. A different study in the same setting also found that the teachers' language heavily framed the interaction and served mainly to manage student participation [10].

B. Interaction in Communities of Practice Environments

Countering traditional models of regimented talk, Jennings and Green call for research and implementation of democratic classroom practices that "provide opportunities for students to closely observe, name, question, and talk about their lived worlds; to support and celebrate each other as learners; to challenge ideas and each other in constructive yet critical ways; to play active roles in shaping and reshaping classroom practices" [22]. The approach advocates giving students a voice with which to explore, direct, and question their own learning, not only in the classroom, but also in the larger community [22]. Far from creating unstructured chaos, classroom norms that value students' intellectual curiosity generate guided, organized paths of investigation through which students raise and answer real questions. By practicing interactional norms that encourage and incorporate students' diverse perspectives and contributions, inquiry-based pedagogy encourages student direction of the discussion and the goals of the class, even at the elementary school level [18].

Furthermore, such an approach recognizes that learning is an inherently social phenomenon that is situated within communities of practice. Proponents of inquiry-based pedagogy emphasize that "the actual processes of becoming an active member and a legitimate participant in a community are seen as involving particular and universal ways of acting and knowing, as defined by the culture in question" [23]. Therefore, these educational practices, driven by learners' inquisitive needs, necessarily involve "providing learners with appropriate tools and assistance to participate in meaning making in collective activity" [23].

A study of such meaning making in three Finnish classrooms—second-grade, seventh-grade, and second-year undergraduate, all taught by the same teacher—describes "the social practices of science learning communities" [17]. Through analysis of the discourse moves and cultural focus of the learners, the study investigated the way the students negotiated field-specific tools and the way they negotiated the meaning of the scientific phenomena they explored. Adapting Sinclair and Coultard's methodology, the researchers identified several discourse moves common to the three groups: *initiating, continuing, extending, explaining, questioning, repeating, agreeing/disagreeing, replying, tutoring, commenting*, and *concluding* [17]. Additionally, they describe the cultural foci as four modes of interaction: the *activity, identity, material,* and *semiotic* modes. They found that learners engaged in more discourse moves in a greater variety of modes as they increased in level and experience, and, therefore, challenge educators to optimally engage students by designing activities that are "sensitive to the students' age characteristics, as well as to their learning histories and cultural identities" [17].

C. Interaction in Small Group and Novel Classroom Contexts

In a comparison of 18 independent studies on peer interaction in small groups, *explanations* were statistically tied to student achievement [20]. The studies took place in comparable settings of student groups, ranging from second through eleventh grade levels, who were working on mathematical problem sets. The effectiveness of explanation in the groups was shown to be connected to group composition, in terms of student ability, gender, and personality. The researchers advocated deliberately grouping students with these variables in mind, providing explicit instruction on verbal strategies to use, and altering the reward structure [20].

Explanations, along with *justifications*, and the classroom norms that facilitated them, were likewise observed to benefit students in a study of mathematics instruction at the elementary school level [15]. Classroom activity featuring these acts was contrasted with that of another classroom that featured procedural instruction by the teacher; students and teachers who engaged in explanations and justifications were prompted by each other's questions, whereas instruction on mathematical procedures was driven by the teacher, not student inquiry [15]. Research on collaborative learning of mathematics among second-graders has yielded similar insights about the learning opportunities generated through peer interaction, including collaborative dialogue, resolution of conflicting points of view, and agreement about individual rights and responsibilities in a group [19].

Student-centered models of teaching and learning have also been implemented within engineering classrooms. In a study of an undergraduate engineering classroom by Harris and Farmer Cox, a pedagogical approach for increasing interaction informed by the *HPL* monograph resulted in gains over a traditional (teacher-centered) approach, including an average increase in interaction (defined as question-and-answer sessions and student collaboration) from under 30 percent of class time in the traditional classroom to over 40 percent in the *HPL*-modified classroom [13].

Some of the studies on interaction feature classrooms that incorporate small group structures. Haller et al. studied small groups of chemical engineering students working together on homework problems, outside the classroom [16]. They found both symmetrical and asymmetrical alignments (in terms of teacher/pupil roles)

and interactional assumptions between students during interactions, which varied somewhat according to gender. Although both types of "teaching sequences", called *collaborative* and *transfer-of-knowledge sequences*, respectively, were dynamic and resulted in learning benefits over large group settings, collaborative sequences provided "good practice for the kind of group work students will do in engineering design settings, where there is no unequivocally right answer and an optimal solution to a problem must be worked out using the expertise of all group members…[and] for the mutuality and symmetrical contribution typical of engineering groups in industry settings…" [16, p. 287]. In contrast, transfer-of-knowledge sequences made the interactions vulnerable to problems in managing social dynamics.

With the exception of Haller's et al. research, most research has analyzed interaction within the classroom setting. Other research on discourse and learning has focused on tutoring contexts. In their study of tutoring interactions between peer and near-peer partners (undergraduates tutored by graduate students, and 7th graders tutored by high school students), Graesser et al. report that the discourse of one-on-one tutoring with "normal unskilled tutors" prominently features learning that is anchored in specific examples and cases, collaborative problem solving and question answering, and deep explanatory reasoning—three of eight recommended pedagogical components they investigate [14]. They advocate explicit tutor training as a remedy for increasing the prominence of the remaining five components: active student learning; sophisticated pedagogical strategies; convergence toward shared meanings; feedback, error diagnosis, and remediation; and affect and motivation.

While the studies discussed above provide a starting point for understanding the pedgagogical contexts and discursive processes that facilitate active learning, they underscore the need for further investigation of interaction in an environment of distributed cognition. Study of the linguistic actions learners carry out in collaborative, inquiry-based settings, particularly in undergraduate engineering education, remains wanting [12]. The unique setting of the RCS offers a valuable opportunity for researching active learning from a discourse analysis perspective. The research questions for this study center on: (1) What linguistic events occur in the RCS session? and (2) How do the events pattern according to participant and topic?

III. Research Setting

A. The Research Communications Studio

The Research Communications Studio, a research and education project involving undergraduates in three engineering departments at the University of South Carolina [24], nurtures undergraduate learning in engineering through guided interaction among student peers, near-peer graduate mentors, and faculty members. The RCS bases its pedagogical approach on Dorothy Winsor's concept of thought and knowledge as a network distributed among members of a group with shared goals [8]. Details on the theoretical and methodological foundation of the RCS [24–29] as well as its novel contributions to assessment [25, 30] have been reported elsewhere. Supported by a grant from the National Science Foundation, the project investigates how students learn by communicating their research to one another in small groups.

Possessing various levels and aspects of expertise, the RCS staff and students together construct knowledge by communicating their understanding—or gaps in understanding—of the participating undergraduates' research and related deliverables during the weekly meetings of interdisciplinary RCS small groups. These project activities facilitate and encourage successful completion of students' research projects, publications, and presentations. In addition to the support students receive during RCS sessions, the RCS supports students' research through a $450 stipend per semester, funds for printing student posters and other materials, and funds for travel to conferences in which students present their research.

Continuing assessment of the project is carried out in collaboration with the University of South Carolina's Office of Program Evaluation in the College of Education. Additionally, the RCS staff, which includes graduate students and faculty in linguistics and in composition and rhetoric, reflexively conducts its own research to analyze how cognition is distributed among RCS participants. The present study focuses on this question rather than on the frequency of participant turns and the nature of conversational alignments in the RCS [31, 32], which has been addressed in other research.

B. The Participants

RCS participants are undergraduates in chemical, electrical, and mechanical engineering who conduct independent research directed by an engineering faculty research advisor. In addition to their work on specific research projects, these students meet weekly in an RCS group composed of three or four undergraduates, an engineering graduate student, a communications graduate student, and a communications faculty member. For each meeting, undergraduates bring a draft of some communications related to their research project as assigned by their research director. The participants' work, which can include a variety of reports, presentations, journal articles, posters, or other technical genres, provides the content for the RCS sessions. Students have the opportunity to discuss their research projects with peers, near peers, and professionals; to find out how interested audiences respond to their work; and to receive helpful feedback as they develop their writing and presentation abilities.

In the session selected for study, the communications faculty member is an experienced English professor who has also served as Co-Director and Co-PI of the RCS since the inception of the project. The engineering graduate student is a mechanical engineering Ph.D. student in his final year of study. The communications graduate assistant is an M.A. student in composition and rhetoric in the English department; however, because she makes several inaudible verbal contributions during the session, her role as a participant is not discussed in this analysis. The student subjects, Janice, Mike, and Stewart (pseudonyms), who are the focus of this research, include one chemical and two electrical engineers; two of the students graduated in the same semester under study. The third, who continued in the RCS for two subsequent semesters, graduated in May 2004. Background on the students and RCS faculty member is described in Table 1.

All participants in the RCS complete informed consent forms at the beginning of each semester. The informed consent forms, as part of the overall RCS research project, were approved by USC's Institutional Review Board (IRB) at the inception of the RCS. The present study subsequently received IRB exemption.

It must be noted that RCS students are self-selecting participants who must also be nominated by their faculty advisors; they are

Speaker	Graduation Date	Gender	Department
Janice	May 2003	F	Electrical
Mike	May 2004	M	Chemical
Stewart	May 2003	M	Electrical
Faculty	n/a	F	English
Engr. Grad.	Dec. 2003	M	Mechanical
Comm. Grad.	n/a	F	English

Table 1. Participant demographics for the RCS session.

generally highly motivated and capable students. However, as participant observers we have noted that student collaboration challenges these motivated students in ways that individual study might not.

IV. Methodology

Although the analysis also draws on two years of participant observation of RCS sessions, the primary data for this paper come from a representative videotaped RCS session that occurred during April 2003. Because the RCS session that was analyzed took place late in the second semester of RCS, it can be assumed that the participants were familiar with each other's conversational patterns and interacted without the situational awkwardness that sometimes affects communications when group participants are unfamiliar with each other.

A. Analytical Approach

The study employs discourse analysis and ethnographic methods in its approach to a corpus of digitized video-recordings of weekly RCS sessions spanning three years. The present analysis draws on real-time participant observation conducted during multiple RCS sessions but closely focuses on the interaction during a single session captured on digitized video. In contrast to real-time coding methods, discourse analysis of digitized video allows for close and repeated observation of interactions within a time frame of seconds. Also, reliance on coding video directly rather than coding transcripts allows for a more nuanced analysis. (Adoption of the video coding strategy led to the development of custom video coding software by an undergraduate computer science engineering Research Experience for Undergraduates (REU) student hired by the RCS and funded by a supplemental NSF grant).

In addition to discourse analysis and ethnographic methods, this research employs concepts about human interaction from sociolinguistics and sociology as a framework for analyzing the character of RCS participants' discourse. The present study takes up Austin's notion of linguistic performativity: Speakers take action through their linguistic contributions [33]. Also, following work in linguistic pragmatics, the analysis assumes that the form of an utterance does not always match its pragmatic function; that is, a linguistic event or speech act may be indirect, requiring shared assumptions on the part of the interactants for its interpretation [34–37]. These theoretical concepts provide an avenue for operationalizing the discursive processes through which students engage in active learning, in turn offering a characterization to guide engineering educators.

B. Justification of the Construct "Speech Event"

Because the elements of this analysis are richly detailed and specific to a particular social activity, they are referred to as speech events, in order to distinguish them from Searle's generalized taxonomy of "speech acts" [35, 36]. In his evaluation of speech act theory from an applied perspective, Flowerdew acknowledges that although "empirical accounts" of speech acts (such as the present study) cannot offer generalizability, "[they] are more satisfactory in accounting for the data upon which they are based" [38]. Accordingly, the present study aims for a close description of the linguistic activities that constitute active learning in the small group setting of the RCS—at the expense of generalizability.

The concepts of performativity and speech act theory have been applied to the description and analysis of specific interactional contexts in other research. Like Flowerdew, Candlin et al. approach speech act theory from the practical standpoint of second language teaching, but for the purpose of developing curricula for physicians who are non-native speakers of English [39]. In their analysis of doctor-patient communication, they categorized 23 speech functions with which physicians would need to gain pragmatic competence, including *greet, elicit, interrrogate, action–inform*, and *diagnosis-inform* [39]. Labov and Fanshel's set of 35 linguistic actions, central to the progression of a psychotherapy session, include *give evaluation, demonstrate, agree, challenge*, and a range of *requests* [40]. Speech act theory has likewise been applied to describe classroom interaction in previous research (as previously mentioned in section II. Motivation) [11, 12].

Thus, framed by linguistic constructs—and informed by pedagogical constructs upon which the RCS was created, and which are taught explicitly and implicitly to the students—the analysis of the RCS participant interaction proceeded "bottom-up". Preliminary categories of speech events were based on several weeks of participant observation during RCS sessions and a focused observation of a digital video recording of a session. Following the preliminary observation, the single session was coded on an utterance-by-utterance basis by the two researchers. Any of the identified speech events occurring within an utterance were recorded in a spreadsheet along with a time stamp (minutes/seconds) corresponding to their onset. This was carried out first independently, and then collaboratively, in order to resolve discrepancies in coding and thereby refine definitions of the speech events. Thus, the process of coding informed revision of the categories.

C. Analytical Procedure

Preliminary definitions and examples of speech events were presented and discussed with other RCS staff over multiple iterations, resulting in further revision of the categories. For example, the researchers first distinguished between *adopting* (displaying application of) a suggestion offered by a group member and discursively *internalizing* (showing awareness of) critique, contextualization, or another kind of event occurring earlier in the discourse; however, they later merged these two categories. Ultimately, seven distinct speech events were defined (see section V. Analysis).

During initial coding and subsequent recoding, each of the identified speech events was recorded, even where several events occurred within a single linguistic turn at talk [41]. For instance, within one conversational turn, an RCS participant might explain her research, request a critique of a poster from the rest of the group, and explain that she wants to incorporate a group member's

suggestions into the next revision of her slide show presentation. Here three speech events occur within one turn and would be recorded separately.

Based on two researchers' close study of the single session, and taking into account participant observation conducted by the entire staff, including one former undergraduate participant, we investigate the processes underlying distributed cognition in the RCS environment by describing and defining seven categories of speech events that constitute active learning within an environment of distributed cognition. The following section discusses the analysis, which may serve as a guide for engineering educators who seek to encourage active learning in various settings.

V. Analysis

Studies of interaction in engineering settings have attended little to the linguistic actions that constitute active learning. The present analysis focuses on what participants accomplish linguistically during the session; it builds on an earlier version of the study carried out using the same data [42]. The analysis begins by describing the speech events identified during the session—which, as descriptors of the interaction, are reported as primary data; next, subsection B reports on how the participants enact the different speech events during the session; and subsection C discusses the pedagogical relevance of the findings. Finally, in subsection D, possible applications of the research in engineering education are outlined.

A. Speech Events

By describing the speech events that characterize active learning in the RCS session, we offer an understanding of how learning occurs as students construct an emerging community of practice [5]. As a group, the following seven speech events characterize socially constructed learning that takes place in the RCS, in other words, a processual view of active learning in an environment of distributed cognition:

- Elicitation of Critique
- Critique
- Internalization
- (Direct and Indirect) Instruction
- Contextualization
- Explanation
- Negotiation and Consensus-Building

Figure 1 provides a definition of each speech event and includes an illustrative excerpt from the session analyzed. (Acronyms that could identify particular projects the students worked on have been changed to fictitious ones.)

The categories of speech events identified here, along with the segments of discourse that illustrate them, reflect how the theoretical foundation of the RCS is manifested in participants' interactions. Elicitation of critique and critique are prominent in the RCS session studied; the example discourse segments for these categories of speech events (presented in Figure 1) illustrate the process of distributed cognition at work. Contextualization and explanation also contribute to the group's interactive development of knowledge.

Internalization reflects a concept central to a hypothesis behind the inception of the RCS: A curriculum founded on theories of metacognition, as well as distributed cognition, promises to expedite students' cognitive development as researchers, provide them with effective tools for managing their self-directed learning, and enhance their effectiveness as team members in collaborative learning, research and design. Although not a facet of distributed cognition as Winsor describes it, metacognition, or knowledge about one's learning, has become an important aspect of social constructivist theories of learning.

Instruction, although routinely associated with lecture-oriented pedagogy, captures not only direct "transfer" of knowledge or facts, but also indirect modeling of professional stance or protocol. The indirect instruction exemplified by a segment in which the graduate mentor models his use of research notebooks shows the importance of authentic, situated learning within a community of practice, as Edwin Hutchins documents in "Learning to Navigate" [43]. Negotiation and consensus-building further illustrate how RCS participant discourse is embedded in shared practices and norms, while at the same time contributing to the formation of those norms.

By identifying speech events that characterize distributed cognition in the RCS, our study offers a first step towards characterizing active learning in multiple contexts. The research shows how the linguistic interaction among peers and near-peers in programs like the RCS orients students towards communal practices and tools, while providing them needed feedback on their development, as called for by education researchers [44–46].

In the following section of the analysis, we turn our attention to the manner in which the speech events pattern during the session: Which of the participants assert various events and in what contexts do the events themselves occur?

B. Participant Roles

Although the speech events themselves constitute important data, the distribution of the events among the interactants is important as well. Notable in the data is the fact that during the session all the participants contributed most types of events, to some extent. This fact contrasts with the level and type of participation documented in classroom or lecture-oriented pedagogical discourse. In addition, some participants contributed certain events predominantly, and this is critical in defining their roles in the situational discourse. (Future study will shed light on how this patterning contributes to participants' shifting and emerging roles in the developing community of practice throughout the semester.)

In the session studied, Janice and Mike participate the most overall, perhaps because their final deliverables are the ones being discussed; although Stewart participates by talking with them about their deliverables, he does not have a deliverable of his own to discuss for that session. Mike seems to participate less than Janice does because he does not contribute as frequently during the discussion. Although he reads and discusses his abstract for several minutes, his colleagues do not contribute to the construction until he is finished speaking, largely because he is asking for feedback on a written deliverable. In contrast, during Janice's discussion of her poster deliverable, all of the participants contribute. The pie chart in Figure 2 summarizes the number of speech events each participant contributes to the group's interactive learning.

Clearly, at first glance, the graduate engineering mentor appears to contribute the greatest number of the events (described in the previous section), but his participation in terms of the events defined (40) is only a little over half that of the students taken as a whole (70). This balance of participation can be expected, given that the graduate mentor's role is to provide feedback and advice to the students. Also, in this particular session, there were lengthy discussions of professional best practices. The graduate mentor is

Elicitation of Critique

Requesting feedback on an idea or mode of presentation—including prompting others to give feedback.

Faculty: *What do you need to do with your poster?*

Janice: *All right, uh, and I want, uh, you guys' opinion on if you think I should change anything.*

Critique

Analyzing, or making suggestions about the mode of presentation, logic of argument, or depth of knowledge of one's own or another person's work—inside or outside of the group—including commenting on work that is being read aloud to the group.

Mentor: *Yeah. You know with the alternate GLS design process— The font's really small, so you can even*

Janice: *Right, stretch that out for a couple of slides.*

Mentor: *like— Yeah, yeah. Because that really is your— That's the focus of your presentation, right?*

Internalization

Responding to feedback from other members of the group, as indicated by verbal reference or other demonstration—including mention of how a student's work has changed (or will change) as the result of adopting or adapting a critique.

Janice: *And I can change the— Why the GLS method is better by, by putting in that sentence that um, Stewart was talking about, you know— Trouble-shoot through the code and...*

(Direct and Indirect) Instruction

Contributing procedural, professional, or other knowledge to the group discussion.

Mentor: *One of the things you said a couple weeks ago was "I've got three legal pads with notes". The problem with legal pads is the pages can be separated out. If you have something—even if its just a cheapie one like this, that's just stitched binding—everything's in chronological order and it's yours and when it's time to write papers and stuff you'll have it and everything's in place.*

Contextualization (C1, C2)

Situating research within a scholarly/professional environment.

C1 – Contextualization of one's own research

Janice: *We have ah, we have two weeks to go through two chapters and I'm— I have to figure out what we're going to go over because... kids have CALP testing coming up... But we also want to build a mousetrap car, and there's a lot of different ways to do it...*

C2 – Contextualization of others' research

Mike: *I think for Stewart's project especially... Rather than trying to find like a direct, educational application— SGM is obviously incredibly... good for pure research... [in] any discipline, whether it be, like, molecular modeling of chemical reactions, or any kind of engineering.*

Explanation (E1, E2, E3)

Clarifying, expanding on, rephrasing, or restating research or related concepts.

E1 – Explanation of one's own research

Mike: *...One of the direct motivations for the model is that Dr. Smith basically wants to split up his process controls class and instead of having ... a class of 30 people and one system ... you can break it up and then maybe over two days have a group of five people work on the real system and then five people go to the computer lab and run the simulation model—you should have comparable results.*

E2 – Explanation of others' research

E3 – Explanation of procedural knowledge

**Examples for E2 and E3 do not appear in the session studied.*

Negotiation and Consensus-Building

Collaborative synthesis of information or knowledge across multiple speakers and turns—including problem solving, and other contributions that, taken individually, may not appear significant.

Mentor: *Can I make a suggestion ... Just write it yourself.*
Janice: *He doesn't like them to—*
Mentor: *You, you— He doesn't like that?*
Janice: *He does not like that.*
Mentor: *Write the recommendation and send it to him and say now go ahead and edit this?*
Janice: *—He won't even show you what he wrote.*
Mentor: *Really? Ah...*
Stewart: *Oh yeah.*

Figure 1. Categories of speech events characteristic of active learning in the RCS.

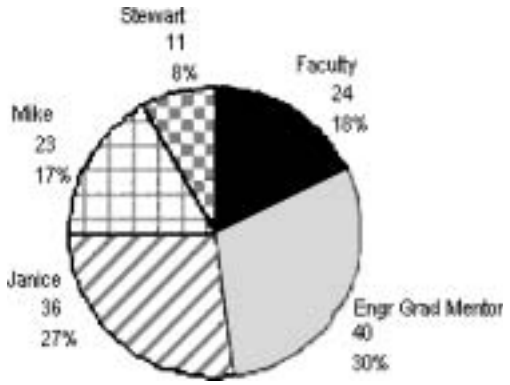

Figure 2. Total identified speech events contributed by each RCS participant.

the expert in the field; his insights help the undergraduates increase their sense of professionalism.

In contrast to the graduate mentor, the faculty member might appear to make fewer contributions compared to the other participants. However, rather than fewer contributions, she makes contributions in fewer categories of speech events, as illustrated in Table 2. Elicitation of critique represents 50 percent of all the identified speech events contributed by the faculty member. Clearly, her role is principally defined by elicitation. Along with the other members, she also contributes to consensus-building.

In terms of the character of the group as a whole, the breakdown of contributions among the other participants is telling. Participants' roles are defined by the kinds of speech events they contribute. These data reflect an important RCS goal: to encourage the students to shape the sessions through their interactions, rather than to merely respond to the faculty or mentor.

As illustrated in Table 2, most of the graduate mentor's participation constitutes critique of the ideas and work that the undergraduate students bring to the RCS. Janice primarily contributes critique during the RCS session. Mike likewise frequently critiques his own and other students' work and explains his own research; also, he frequently participates in consensus building. The majority of Stewart's participation zconcerns his analysis of his remaining work toward his honors college requirements, as well as reflection on how his RCS experience improved his communication skills.

Another interesting pattern in the types of interaction is the way they cluster for the different conversational topics that develop during the session. On this particular day the students discussed the following topics: industry jobs, Janice's poster, the poster plotter, Stewart's Honor's Thesis, research notebooks, Janice's lesson plans, faculty letters of recommendation, Mike's poster abstract, and audience analysis of abstracts. Table 3 illustrates the number of speech events per conversational topic in the RCS session. (Table 3 represents a somewhat lower total number of events, compared to those represented in Table 2, because Table 3 does not include the entire portion of the final topic, which lasted for some time). Characterizing the types of topics that arise in the RCS overall, the topics in Table 3 also provide a view of the single session over time. In addition, topics may give rise to some categories of speech events more readily than others. Whereas the topic of Janice's poster involves only elicitation and critique, discussion of the plotter additionally involves some instruction and internalization. Instruction overwhelmingly characterizes talk about Stewart's honors thesis, as well as Janice's lesson plans. Contrary to expectations, instances of instruction do not occur as frequently as, for example, critique, but occur throughout the session; the graduate mentor in this session contributes 25 percent of those instances, but the undergraduates also initiate them. Internalization occurs relatively infrequently but is initiated by the undergraduates.

Not surprisingly, both critique and elicitation appear to be present throughout the entire session; however, negotiation occurs

Category	Faculty Member		Graduate Mentor		Janice		Mike		Stewart	
Elicitation	12	50%	2	5%	6	14%	2	9%	1	9%
Critique	2	8%	16	40%	9	25%	6	26%	4	37%
Instruction	--	--	10	25%	3	8%	2	9%	--	--
Internalization	--	--	--	--	2	6%	1	4%	3	27%
Contextualization 1	--	--	--	--	1	3%	--	--	1	9%
Contextualization 2	1	4%	--	--	1	3%	1	4%	--	--
Explanation 1	--	--	--	--	5	14%	6	26%	--	--
Explanation 2	--	--	--	--	--	--	--	--	--	--
Explanation 3	--	--	--	--	--	--	--	--	--	--
Negotiation	9	38%	12	30%	10	27%	6	22%	2	18%

Table 2. Percentages of participants' total contributions in each category.

Time Stamp	0:00	1:42	3:30	5:38	9:45	16:31	25:34	27:54	37:40
	Industry Jobs	Janice's Poster	Poster Plotter	Stewart's Honor's Thesis	Research Notebooks	Janice's Lesson Plans…	Letters of Recom-mendation	Mike's Poster Abstract	Audience Analysis (abstract)
Elicitation	*	3	2	*	3	2	3	2	4
Critique	*	2	8	*	*	1	11	*	12
Instruction	*	*	1	3	1	7	1	2	*
Internalization	*	*	1	*	2	1	*	*	*
Contextualization	*	*	*	*	*	1	*	*	*
Explanation	*	*	*	*	*	2	2	2	4
Negotiation	*	*	*	1	*	13	6	12	3

Table 3. Clustering of speech events within the nine topic segments of the session over time.

towards the end of the session when participants discuss Janice's lesson plans, letters of faculty recommendations, Mike's poster abstract, and a related topic involving audience analysis. Notably, explanation of students' own research also seems restricted to these same three topics. One reason for this might be that the session is less focused toward the end, such that participants' roles are less strictly defined so that all participants may take on a relatively equal role as co-negotiators.

C. Discussion of the Findings

The speech events and the way they pattern among participants reflect a contrast with the social organization of the traditional classroom setting, which, as previous studies have shown, fails to optimize learning through the collaborative social alignments that students naturally form and mainly serves to manage students rather than engage them [9–12].

The RCS complements lecture contexts that have been modified to achieve a more engaging learning environment, since even these settings do not afford students the range of interaction described in RCS participants' discourse. According to Harris and Cox, in classrooms modified along *HPL* guidelines that do result in an increase in participation, an equal portion of class time (40 percent) is still spent on lecture, reflecting a knowledge- (if not teacher-) centered approach toward learning [13]. By contrast, the RCS encourages interaction that facilitates learner-, community-, and (self)-assessment-centered stances to learning in an authentic communicative project [1].

The events we have described, while not wholly distinct either from previous inventories of speech acts or characterizations of classroom discourse (for instance, Sinclair and Coulthard's study, like the present analysis, includes *elicitation* [11]) are unique because they describe the linguistic processes important to a culture of inquiry [18]. Moreover, the speech events in the present interaction constitute interwoven contributions among all the participants, rather than a series of dyadic exchanges between a teacher and individual students. Instead, the RCS encourages and legitimizes multiple types of alignments among all members of the group, thus increasing group cohesion and breaking ground for incipient community ties.

Such multiple and varied alignments may even promote learning more successfully than interactions between peers and near peers in tutoring contexts, such as Graesser's et al. [14]. In contrast to the two tutoring contexts Graesser et al. describe, RCS participant discourse features not only active student learning, but also sophisticated pedagogical strategies; convergence toward shared meanings; feedback, error diagnosis, and remediation; and affect and motivation. Notably, RCS discourse occurs among *multiple* peers and near-peers (with perhaps comparably minimal pedagogical training); therefore, all RCS members are potential "tutors". Also, in the RCS, topics are prompted by students' authentic communicative and cognitive needs, rather than introduced via a pre-determined curricular script.

Given these contrasts, the data call for investigating whether the five components Graesser et al. found lacking might be facilitated by a structure such as that used in the RCS. This kind of structure prompts interactions between multiple participants with varying levels of experience and expertise (i.e., peers and near-peers)—a context which fosters the development of an authentic community in which student-directed and group-negotiated learning may occur.

RCS participant interactions are also different from many of the small group interactions reviewed in section II in this paper. In Haller et al., and in many of the other studies, the nature of the task is narrowly defined; the problem is given and the students' goal is to solve the problem, rather than to ensure that they understand the process (although some classroom protocols do guard against this [19]). The students in Haller's et al. study have a primary stake in getting the "right answer", since they are graded on the homework. In the RCS, students direct session goals and often direct the RCS group members as to what kind of feedback they are interested in; at the same time, other participants are encouraged to direct their own input. This different nature of goal orientation means that different types of knowledge may be foregrounded at different times, depending on students' needs and requests.

This difference in setting may account for how explanations and other events differ somewhat from explanations described in other studies [19, 20]. In the RCS, explanations are embedded in the context of community practices, both those of the RCS "micro-community", which facilitates the interactive norms and processes, and those of the broader engineering communities of practice. Likewise, *instruction*, through peer and near-peer modeling of those practices, includes procedural and social knowledge, again, set in the context of engineering research. Moreover, instruction is not limited to direct statements of procedural or epistemological fact, or solutions to challenging logistical impasses, such as troubleshooting problematic computer code, but includes both direct and indirect modeling of professional norms.

Some events featured in RCS discourse do not seem to characterize the other pedagogical contexts discussed: the *negotiation* of social and procedural knowledge, such as conventions of scientific presentation; *critique* and *elicitation of critique*; and *internalization* (including metacognitive reinforcement) of learning. Also notable is the fact that students frame their critiques, internalizations, contextualizations, and explanations both in terms of their own and others' research or deliverables. These characteristics, too, seem specific to the social context of the RCS, in which students are given the opportunity (and responsibility) to display their developing expertise and to receive feedback from their peers and other participants. The RCS serves as a micro-community that helps to transition students into the larger communities of their subdisciplines. However, it is important to note that the types of linguistic events, or activities, that characterize RCS discourse do not merely socialize students in the conventions of their subdisciplines. Rather, through their construction of the micro-community that is the RCS, students and other RCS participants encourage the spread of practices of inquiry within the larger engineering community of practice, and the advancement of a culture of inquiry [18].

This larger educational dimension of professional development that the RCS addresses—and which includes communicative, social, and cognitive skills that extend beyond the technical knowledge covered in most curricula—seems increasingly important for engineering educators to consider, not only for meeting ABET engineering requirements, but for equipping students for lifelong learning, whether they graduate into industry or academia [47].

D. Implications for Engineering Educators

Although the labor-intensive nature of the methodology used in this study limits the number of engineering educators who will undertake discourse analysis, the research offers a close analysis of what constitutes "active learning" that would not otherwise be possible. It offers a tool for guiding engineering educators in facilitating and optimizing interaction in existing environments that foster distributed cognition—such as independent study projects, research group meetings, lab sections, and other research settings. Faculty who work in such environments might look for, raise awareness of, and encourage these behaviors among their group members—not only among undergraduates, but among graduate students and colleagues as well.

The potential benefits of the speech events that arise from the RCS model force the question as to how far the RCS model can be scaled up to benefit a greater number of students—sustainably. In the context of the other studies of interaction in educational settings, the findings speak to the ways the speech events bring about a more holistic learning experience that has social context, in ways that traditional classrooms cannot. The research focus of the RCS, due to the ownership it affords students, may largely drive these activities; however, the RCS approach may be adaptable to a number of other environments that are not necessarily focused on independent research projects.

For example, metacognitive strategies can be explicitly taught and practiced (through habitual verbal reference and reflective writing assignments), as they are in the RCS, so that students can more readily trace the path of their learning. Likewise, the concept of distributed cognition can be introduced to learners, both through explicit discussion and through the creation of group structures that value different perspectives, knowledge bases, and skills among members. Thusly, faculty members are encouraged to seek means of creating environments in which such activities could arise, where they are not conventionally thought possible.

Faculty members might find innovative ways to facilitate some of these types of speech events in introductory classes, homework groups, and/or large lecture courses, or even through chapters of professional societies that faculty members mentor, in which students from various places on the novice/mature professional continuum may interact regularly in a mentoring relationship. Also, faculty members might encourage students and colleagues to take on the multiple roles exhibited in participant discourse, including a facilitator role that elicits participation from other group members.

Since the authentic communicative context, environment of distributed cognition, and small group format of the RCS are key, the kind of interactions that the RCS facilitates would be most robust in a setting that preserved those features; accordingly, multiple, interdiscipinary small groups could meet under one course listing, even as attached to an existing course or lab section, so as to nurture professional development.

VI. Conclusions and Future Directions

Through the close analysis of one particular RCS session we have begun to describe active learning in an environment of distributed cognition—as it occurs in RCS sessions—as a process that involves *critique, elicitation of critique, internalization, direct* and *indirect instruction, contextualization, explanation*, and *negotiation*. Moreover, we have begun to describe the social process of learning in the context of professional and academic practice. Many of the interactive characteristics of the RCS distinguish it from the pedagogical contexts reviewed in the motivation section of this paper. They appear to set it apart as an emerging micro-community of practice in which strategies for inquiry are taught, and social and procedural knowledge is made accessible to novices, thus facilitating their entrance into the larger engineering research environment.

Future study will include further consideration of the speech event categories and analysis of their distribution among other groups and topics; analysis of discourse structure in multiple sessions and patterns by gender; and longitudinal analysis of individual student discourse. The patterns of students' participation across semesters may reveal further insights about the course of their individual cognitive and professional development as well as their interactive development as a team. Such a direction might be able to address the incipient formation of communities of practice, as well as the avenues by which individuals join them.

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Authors' Biographies

Lori Donath is a Ph.D. candidate in linguistics at the University of South Carolina and a graduate research assistant for the RCS. Specializing in sociolinguistics and linguistic anthropology, she is currently working on her doctoral dissertation on the emergence of identities and communities of practice in the discourse of RCS participants. Her research has focused on discourse and learning, language and identity, the discursive construction of social norms, and the role of interaction in second language acquisition.

Address: 406 Welsh Humanities Building, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.1217; e-mail: donath@engr.sc.edu.

Roxanne Spray is a Ph.D. student in composition and rhetoric in the Department of English at the University of South Carolina. She served as a graduate research assistant for the RCS during the 2003–2004 academic year. Her research interests include composition pedagogy, writing in the disciplines, and service-learning pedagogy.

Address: Writing Center, Department of English, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.3746; e-mail: roxanne_spray@yahoo.com.

Nancy S. Thompson, Professor Emerita in the University of South Carolina English Department, is Co-PI and director of the Research Communications Studio in the College of Engineering and Information Technology. With Dr. Rhonda Grego, she developed the Writing Studio Program [26], which provided an early prototype for the Research Communications Studio. Dr. Thompson continues to pursue her academic research interests in applying cognitive and metacognitive learning theory to communications instruction. She participates actively in the education of graduate teaching assistants.

Address: Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.1217; e-mail: nancythompson@sc.edu.

Elisabeth M. Alford, currently the director of the University of South Carolina Writing Center, was a Co-PI of the Research Communications Studio and coordinator of professional communications instruction within the College of Engineering and Information Technology, University of South Carolina at the time of the research described here. She received her Ph.D. in English—Composition and Rhetoric from USC in 1993. Her current research interests include the use of collaborative methods for teaching communications in the disciplines.

Address: Writing Center, Department of English, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.3746; e-mail: emalford@gwm.sc.edu.

Nadia Craig, an engineering graduate mentor in the RCS during 2004–2005, is currently conducting research in the Laboratory for Sustainable Solutions while completing her Ph.D. in mechanical engineering at the University of South Carolina. Her research interests include engineering education, sustainable design, and complex systems science. Her dissertation, "Integrating Complex Systems Study into Engineering Education" involves benchmarking engineering education in the US against Australia and developing a way to incorporate complex systems study into engineering education. She is a recipient of the National Science Foundation's Graduate Research Fellowship.

Address: Department of Mechanical Engineering, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.4327; e-mail: craign@engr.sc.edu.

Michael A. Matthews is PI for the Research Communications Studio and a professor of Chemical Engineering and adjunct professor of Orthopedic Surgery at the University of South Carolina. Dr. Matthews conducts chemical research in the area of supercritical fluids and hydrogen energy. His interests in communications and undergraduate research stem from over 15 years experience as a faculty researcher, student mentor, and teacher of a variety of lecture and laboratory courses.

Address: Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208; telephone: (+1) 803.777.0556; fax: (+1) 803.777.0973; e-mail: matthews@engr.sc.edu.

Appendix

Transcription Of The First Ten Minutes of the Session

RCS Wednesday Group, April 2003

Participant Key:

F = Faculty J = Janice
G = Grad. Mentor M = Mike
G2 = Comm. GA S = Stewart

Transcription Key:
[ ] frames paralinguistic events such as laughter
( ) denotes questionable part of transcription
{ marks overlap with previous speaker; excludes minimal responses and side conversations
? denotes questions (information-seeking)
^^^ marks unintelligible speech
" " marks reported speech

F: Which do you say "Oh no" to?
J: Ah, I was just joking. Industry's not so bad.
F: [laughs]
J: I like industry. Well, the little part that I saw. The little—
G: {I did too when I started. "This is so cool I have so much responsibility." Then it became, "Ack, God, I have so much responsibility."
J: {Well, see I—I only had it for a few months at a time, so I…I didn't have ^^^. How many credit hours does a full time student have?
G: Twelve
F: What do you need to do with your poster?
J: Um, I just want to swipe it off the wall, and…
[Everyone laughs]
J: And also—
G2: {You can't ^^^
J: Well, it's going to; it's going to. Because then you can say "Hey, through RCS she was able to win 500 dollars." And ^^^
F: {That's right.
G2: {That's right.
F: I've got to take a picture of you swiping your poster.
J: All right, uh, and I want, uh, you guys' opinion on if you think I should change anything, (well) I mean I know that the slides aren't exactly in the right order that they're supposed to be; they're going (in unusual orders).
01:05
F: Okay so you want us to help you look at these.
J: Right.
G2: I don't know if you need it; we still have that ^^^ presentation as well if you need to make changes.
J: Well (of course there is still room for change). I have it somewhere.
G2: Cool.
J: It will be returned afterwards. Hopefully
F: {Hopefully for our decor.
01:25
J: Right. Hopefully a big first prize written on it.
[Everyone laughs]
G2: {There you go; that sounds good.
G: I'd like to see a few more slides.
J: [Looking at poster] Will they fit on there?
G: Make that nine, make that nine slides. [Nodding]
J: Ok. That'll work. [Nodding]
G: That's what I'd like.
F: What what what would you put in the slides?
G: Well, I'm not—I haven't quite gotten to that point yet but I think that if you can extract some more information…
01:50
J: {And I can change the—why the GLS method is better by by putting in that sentence that um, Stewart was talking about, you know, trouble shoot through the code and… ^^^
02:05
G: Mhm. [Nodding]
J: And in the paragraph I didn't say anything about the 401 car. Do you think I should leave that in or take it out? ^^^ (because it's an application)
G: {No, I think you can leave it in, as, as an application of GLS, absolutely.
F: That's a neat picture, two pictures.
G: Yeah. You know with the alternate GLS design process,

F: Good Morning, Mike.
G: The font's really small, so you can even–
J: {Right, stretch that out for a couple of slides.
G: like—Yeah, yeah. Because that really is your That's the focus of your presentation, right,
J: {Basic ^^^
02:50
G: is the GLS design process(?)
J: What about the (basic design process there)?
03:00
G: I'd try to make the words (a little bigger if you could, maybe put arrows between ^^^. so that they're not like ^^^
J: I can do that. [Nodding] {If they can't go from one to two to three,
F: Good morning, Stewart.
J: and it actually says step one, step two, and then just three; there's no step three ^^^.
G: Yeah. [Nodding] [Turning to camera] Oh we're being video taped.
S: Is it EE or civil engineering, one of them has a plotter and that's what ^^^ ^^^
G: {Civil has.
S: {Civil has.
S: That would make sense. Civil has a plotter. ^^^ 'cause ah
G: {We do too but (it won't make posters); it's really bad.
M: Well, there's a way to do it 'cause that's how Will Short did his for the graduate symposium.
G: Yeah, supposedly the ChemE group has some sort of agreement with Civil, so I would talk to… (your) advisor.
03:50
M: {Well I've already, like ^^^ set up 'cause Will knows the guy because he did it all before. Uh, but I think that's what Clark wants me to do. ^^^ (Make a big poster).
G: (To have a big poster, yeah).
04:05
M: It's just something about the formatting and the slides just like you were saying before about setting it to four by, or three by four size… So ^^^…
M: Yeah. ^^^
F: In civil? That's where ^^^
G: It is in civil. They have a very good plotter in civil.
F: And Annabelle's working on us getting access to it, right? I think.
G: Oh, well maybe to the same plotter yeah. Could be.
F: Oh, I don't know. It was to make a poster.
G: Yeah, well that's, that's probably the (only machine in this building that's capable of doing it).
F: Stewart would you ^^^ for just a little bit; you can kind of report.
G2: Okay.
J: Ah, I (submitted my abstract so I'm just waiting).
M: Okay.
04:50
[M writes his objectives for the session on the board while others look on]
05:08
S: Well, ah, basically I ^^^ so I can go back to getting some sleep.
[Laughter] I actually went (to class on two hours of sleep. ^^^
F: So, when now when do you have the defense?
S: I need to find some time that Dr. Smith is free to go, and Annabelle. And scheduling Dr. Smith to anything is difficult, but I'm going to try (Smith) for next week.
F: Uh huh.
G: Now are you going to do a run-through? Like we talked about?
S: [Nods] {I would like to. I would like to. Um, at the end of this week or the beginning of next week ^^^ (possibly).
05:53
G: Well um, if you want to do it down in my lab with a screen projector the whole nine yards you can do it. Just let me know when. Afternoons are better for me, personally, so.
S: Afternoons are better (for me too).
06:10
J: I (won't be awake)….
[Everyone laughs]
S: ^^^ wake in the afternoons (either). [laugh]
F: So you're almost done; do you have it written?

S: I have the um, I have completed the uh thesis, I haven't sent it to you yet but I will do that. The thesis and I will turn- as soon as I have the schedules that will put what to do in I will turn that in to the Honors College. And after the defense I will (revise it so that that's finished). Final draft.
F: All right. So are you, do you feel like you're pretty much ready when you get the schedule?
07:02
S: Yes, I believe so, I still have to finish off the slides. I think I have ^^^.
F: That's great.
S: There will be, I'm sure there will be a lot of changing that (I will have to do) because I personally can't judge how my own presentations are going; I found that out. Early enough, you know.
07:30
F: When did you find that out?
S: Um, well I—Last semester RCS was also one of those great helps when I realized that other people would actually be able to help me to do better. But, before that I just thought that I could just not do a good presentation (and I left it at that).
[Everyone laughs]
G: Did you um, did you give any thought to making a handout with terms?
S: I will be making my handout on Thursday.
08:00
G: Um, tentatively, do you want to do something Friday afternoon?
S: Sure.
G: What time is best for you?
S: Um, any time (after three).
G2: We have a projector if you guys need it.
G: Do you have a, do you have a laptop that the presentation is on?
S: Yes, I have my laptop to bring. To put the presentation on.
08:30
G2: We can bring the projector on Thursday ^^^so it will be here on Friday.
G: Okay.
G2: We'll make sure (you guys have it).
S: Thanks.
G: Let's, let's tentatively say Friday at 3.
S: Okay.
G: Do you know where (the lab) is?
S: No.
G: The mechanical side of the building.
S: Um huh.
G: In the basement. Room A021.
G2: Doesn't that (want to keep you from wanting to do) the presentation?
[Everyone laughs]
F: (That's a nice place down there).
J: (Experiments).
09:00
G2: (That's right). ^^^
J: The (sub) basement?
G: It's the floor below mine.
J: It's freaky down there.
G: It's scary. There used to be people that lived down there.
F: Really lived there?
G: Yes.
F: Homeless people?
G: Yes.
J: Well if no one else wants to go there…
S: What's the room number again?
09:30
G: A021
F: We see, always see Allen [the graduate mentor] with his notebook—Um, I don't want to get too involved in this question, but we're thinking of next year having uh, students—we're considering—having RCS students keep a, a notebook that they can bring to RCS meetings. What would you think of that?
10:05