ASEE 2016
INTERNATIONAL FORUM
NEW ORLEANS, LOUISIANA / JUNE 25, 2016

Paper ID #17485

TEACHING ORAL COMMUNICATION AT A RUSSIAN UNIVERSITY: HELPING ENGLISH LANGUAGE LEARNERS PRESENT THEIR ENGINEERING DESIGNS

Ms. Jennifer Craig, Massachusetts Institute of Technology

Jennifer Lynn Craig is a lecturer in the Department of Comparative Media Studies/Writing at the Massachusetts Institute of Technology where she teaches writing, oral communication, and collaborative skills to engineering students in the Department of Aeronautics and Astronautics. She has consulted in the graduate program of the Department of Mechanical Engineering as well as in industry. Ms. Craig has also consulted and taught in universities in Russia, Singapore, Chile, Costa Rica, and Mexico. She is the author of ”Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-across-the-Curriculum Approach.” She is a co-author of ”Learning to Communication in Science and Engineering: Case Studies from MIT”, a book that was the 2012 winner of the CCCC’s Advancement of Knowledge award.

TEACHING ORAL COMMUNICATION AT A RUSSIAN UNIVERSITY: HELPING ENGLISH LANGUAGE LEARNERS PRESENT THEIR ENGINEERING DESIGNS

Jennifer Craig[1]
Department of Comparative Media Studies/Writing
Massachusetts Institute of Technology

ABSTRACT:
A writing-across-the-curriculum approach was used to teach and refine oral communication skills of English language learners (ELL) at Skoltech, a Russian university. The objective was to develop disciplinary communication skills in English so that students could present their engineering designs during a rapid prototyping project. A pre/post survey assessed changes in self-efficacy as a measure of success in the instruction about, practice and performance of oral presentations. The post-test survey showed a statistically significant increase in self-efficacy for a majority of the students. Survey data combined with faculty observation indicates that the communication pedagogy combined with practice was effective in increasing self-efficacy and in facilitating and refining oral communication skills for the majority of the Skoltech students. However, the presence of a less active population within this group illustrates some of the challenges in teaching and strengthening disciplinary oral communication skills in a group of ELL with varying levels of English proficiency. Suggestions are made for teaching communication skills to low proficiency ELL in disciplinary settings.

KEYWORDS:
writing-across-the-curriculum (WAC), writing-in-the-discipline (WID), oral communication, ELL, English language learners, self-efficacy

INTRODUCTION

This study assessed the effectiveness of the communication pedagogy, Writing Across the Curriculum (WAC), when used with a cohort of English language learners (ELL) in a Russian university. This paper describes the background for this work, the theoretical framework for the work, the methodology used, and the results. This paper concludes by describing 'lessons learned' and offers suggestions for applying what has been learned to other contexts.

BACKGROUND

The work described in this paper took place during fall, 2013 at Skoltech University in Moscow, Russia as a cohort of 55 students participated in a rapid prototyping design project. In 9 days, small teams (4-5 students) worked with a communication lecturer[2] and a design team[3] from the Massachusetts Institute of Technology (MIT). The project was to design and rapid-prototype a mobile device that would motivate end users to monitor and modify their energy use effectively and efficiently.

Established in 2011 by a group of nine Russian institutions and organizations and in collaboration with the Massachusetts Institute of Technology, Skoltech is a graduate

[1] Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA, USA, 02139; jcraig@mit.edu
[2] Jennifer Craig
[3] Federico Casalegno, Catherine Winfield, Cagri Zaman, Jason Lipshin, Laura Poluzzi, Stephanie Lee

university focused on science, engineering and entrepreneurship (Skoltech University, 2014) However, Skoltech's emphasis is not only on high quality education and research but also on innovation and entrepreneurship in these fields. At the time of this project, there were 55 students, but by the end of 2019, the enrollment will increase to 1200 students, most of who may be English language learners (ELL). Thus the underlying research question was how well a pedagogy developed for native speakers would work with ELL's and moreover, how well would it work in a fast-paced, technical project with limited time for instruction and little time for rehearsal.

THEORETICAL FRAMEWORK:

Two theoretical frameworks were useful to this work. Previous work on WAC/WID was the basis for the pedagogy used in this project. Previous work in self-efficacy and group dynamics with ELL was the basis for the survey questions and also helped interpret some of the lack of participation of a small group of students.

Writing-across-the-curriculum pedagogy (WAC) has expanded to encompass not only writing but also oral and graphical communication. In WAC pedagogy, instruction and practice is situated in various parts of a curriculum so that students practice often and with different kinds of material. When WAC is associated with writing-in-the-disciplines (WID), this means that the communication instruction and practice takes place in a disciplinary context, mentored by disciplinary experts with the collaboration of communication instructors. Extensive information about WAC/WID pedagogy can be found on the WAC Clearinghouse web site ("WAC Clearinghouse," n.d.).

WAC/WID pedagogy is characterized by moderate amounts of targeted instruction, frequent practice, feedback from the instructor involved, and meaningful revision by students. In WAC/WID pedagogy, communication is always connected with critical thinking and substantive content. In this way, students learn the standards of excellence in their disciplines and begin to emerge as young professionals who can communicate as knowledgeable 'insiders' in their professions (Bazerman et al., 2005; McCleod & Soven, 1992; Poe, Lerner, & Craig, 2010; Russell, 1991; Zawacki & Rogers, 2011). With its communication-intensive curriculum, the Massachusetts Institute of Technology has used this pedagogy in most departments since 2001, and the overall result has been stronger student outcomes in communication skills (MIT Communication Requirement, 2014)

Although WAC/WID pedagogy is widely practiced and researched in the United States and in Western Europe, it is a pedagogy developed with native English speakers, and its use with English language learners working in the target language has not been widely explored. Thus more precise data on the effectiveness of this method was sought through a survey based on Bandura's classic work in self-efficacy, the beliefs that a person holds about his/her capability in a specific domain(Bandura, 1994). While self-efficacy is not the only predictor of intention, self-efficacy is highly correlated not only with intention (or motivation) but also persistence toward a specific task (Maddux, 2002; Mau, 2003). Moreover, high self-efficacy appears to allow people to withstand unsuccessful experiences since a person with high self-efficacy attributes that lack of success to lack of effort, not lack of skill or overwhelming environmental circumstances (Bandura, 1971) Since success in a variety of tasks correlates with persistent repetition, then assessing self-efficacy can give a good estimate of the strength of a skill and the likelihood that a person will repeat and refine it.

Yet in a fast-paced, collaborative project in which all of the instruction and the demonstration of knowledge is done in English—a second or other language for all but one Skoltech student— intention and persistence were probably influenced not only by a person's self-efficacy and internal control, but also by external factors, actual individual level of language acquisition, and group dynamics (Ajzen, 1991; Chang, 2010; Dornyei & Malderez, 1999;

Dornyei, 1994) As will be described, many of the Skoltech students were still refining their understanding and use of English, thus presenting a very different dynamic than a room full of native English speakers.

Moreover, the practice of oral communication in the target language is more public than writing. A speaker may then be vulnerable not only to his/her internal assessment of skill displayed but also to the possible competition or comparison by peers. In language learning classes, students are usually separated into homogenous groups so the differences in skill usually are not too disparate. However, in a class or project that uses a target language and in which participants are not sorted by language skill level, such a heterogeneous group is likely to exhibit a range of productive and receptive language skills. Then the unevenness or gaps in language abilities may create obstacles to student participation in the technical work. As Peirce points out, the meaningful use of a second or other language can only be refined in the actual act of communication, and each act of communication either with a teacher or a group of peers involves a display of linguistic control as the speaker/writer can understand and then produce the target language (Peirce, 1995). Peirce goes on to suggest that control over a second or other language is linked to power and influence within a specific social network or domain. In addition, obstacles or imbalances in power and influence may also affect group cohesion and collaboration as well as the motivation of the student with lower language level proficiency(Cox, 2011). Understandably, frustration and vulnerability can reduce a student's sense of self-efficacy in that domain, and low self-efficacy correlates with lack of persistence, reticence, and withdrawal (Idrus, Salleh, Ali, & Hassan, 2013). Bandura notes that people who fall into this cycle are also likely to blame themselves for their lack of ability, often experiencing stress and depression (Bandura, 1994).

THE ORAL COMMUNICATION TASK:
As the eight teams worked on their projects, each team gave five collaborative oral presentations during the nine days. The first presentation was a 5-minute informal talk on the first day's brainstorming. The teams continued with a short presentation of each team's ethnographic research and a day or so later, of their progress, and culminated at the end of the project with a 15-minute formal presentation and demonstration to the design team and their peers. As a final event, each team participated in a pitch competition before a general audience in downtown Moscow where one speaker from each team had three minutes and three slides to promote his/her team's innovative design. All of these presentations were given in English.

The focus of the nine days was on design and innovation, but Skoltech leaders asked for an oral communication element, knowing that communication is a key skill for scientists, engineers and designers, especially those working in entrepreneurial environments. Thus the objective of the oral communication pedagogy was to teach students how to compose and deliver various modes of presentations effectively even as they worked on a fast-paced design project. These outcomes were reflected in the pre/post survey questions and guided by the CDIO standards (CDIO, 2014). CDIO is an international engineering education framework developed at MIT and adopted by Skoltech that focuses not only on the technical knowledge an engineer must have but also on the professional, communication, and interpersonal skills so essential to an engineer's success.

RATIONALE and PEDAGOGY:

Oral presentation is often taught as if it is a single genre and as if one lecture can encompass all the complexities of that genre. In fact, oral presentation is a range of smaller genres with some striking and also subtle differences. Thinking of oral presentation not only as performative but also as communicative, we can see that the spectrum is wide. When the topic is framed this way, students begin to grasp the way that oral communication functions

not only at the end point of a project but also how communication allows work to proceed. At one end of the spectrum, there may be the traditional, formal oral presentation or design review. However, the spectrum also may include progress reports, briefings in meetings, design 'crits', desk reviews, bench reviews, to name only a few. Some of these oral communication acts may be minutes long while others may last for several hours. Rhetorical situations and purposes may vary during the life of a project and with shifts in audience. Moreover, engineers and scientists often compose and present as a team, not as a single speakers, so this reality involves a more collaborative and at times heavily negotiated team approach. Clearly, one lecture cannot prepare students to excel along this spectrum.

To be successful, students must be taught to analyze each separate situation. At first, this focus may seem overly elaborate, but students pick up this skill quickly when prompted to think critically about the audience: the listener's objectives in listening, the roles, responsibilities and technical background of those listeners, and the multiple nature of any audience. Then students must be taught to think about their own purpose in speaking. Of course, in engineering and science, rigorous technical content is necessary and that content must be well organized and specific. Based on this analysis (often done in a matter of minutes), a speaker can then determine the scope, style, and organization of what s/he wants to say.

Experienced communicators do this analysis and synthesis without much difficulty, moving efficiently to the appropriate oral communication act. But students are usually novices at this kind of thinking and speaking. Moreover, engineering students may be unused to the standards of excellence in their technical discipline and thus fall back onto older strategies, often adopted from the humanities. Because they are novices, they need to learn actively under the guidance of instructors who help shape student skills.

The design project took place during the first application period at Skoltech, a time in which students were asked to apply the technical skills they had learned during their recent course work. With almost no break, students were plunged into the demanding project. Consequently there was little time to instruct students. Moreover, distance was a factor since the communication instructor did not arrive in Moscow until the first day of the application period.

First, the cohort was surveyed via Survey Monkey to assess their sense of self-efficacy.[4] The response rate was 78% as students answered twelve questions about their confidence in their abilities to perform certain skills in oral communication. The list of survey questions can be found in Table 3 in the appendix.

When the pre-test survey had closed, the instructor posted instructional material posted on MIT's academic site. Students were welcomed to the learning module and told that these would be the concepts discussed in the course on the first day. The concept of the 'flipped' classroom was the basis of this decision (Schell, 2012). The first goal was to have them review this material before they arrived on the first day so that they could begin to apply those concepts to their work on the design project.

Second, since they were ELL, it was important for them to have enough time to read and to absorb information. ELL students often need textual support since the act of listening comprehension in the target language can be taxing for them.

[4] MIT Committee on the Use of Human Subject Approval,#1310005921

The third goal was to create a resource to which they could return during and after the course. Again, young professionals----especially ELL---benefit when they have resource material that they can use independently and review as needed.

In the Skoltech classroom, the communication instructor used active learning techniques rather than long lectures. When a student has numerous opportunities—small, large--- to apply concepts, integrating what s/he has learned into what s/he already knows, the student's abilities are displayed, the instructor can support the nascent skills, and students apply their sklls rather than stay at the conceptual level (Bean, 2011).

As in all WAC/WID pedagogy, feedback on communication organization, style, and content was linked to the tasks that the design team asked Skoltech teams to perform. As teams began brainstorming, the communication instructor moved through the large classroom, making contact with each team. If students were working in a productive way, there was contact but little interruption. However, if a team seemed to struggle as they tried to pull their ideas together for communication, the instructor was more active: questioning, clarifying the expectations of the design team, helping limit the scope of material and perhaps suggesting patterns of organization.

Second, as teams stood up to brief their ideas or to present, the communication instructor took notes and emailed these comments to each team. If a team had noticeable problems, they received support and feedback in a face-to-face contact. The pace of the design project prohibited much rehearsal, but the goal was to improve the next oral communication act.

During the nine days, the communication instructor gave short lectures: pointing out common difficulties that teams were having, discussing audience analysis, giving feedback on graphics, and talking about the more effective modes of persuasion, as well as facilitating discussion and answering questions about communication. However, much of the work was done through interactions with individual teams and then through specific feedback as they presented. What this meant was that each team got feedback tailored to their particular challenges and they got the feedback 'just-in-time' as they worked. The design team also gave verbal feedback not only on the design but also on the ways in which the ideas were communicated, so student teams were consistently directed to not only on the substance of their communication but also to the way in which they were composing that oral communication and the way in which they delivered it.

After the last communication event---the pitch competition in downtown Moscow---the post-test survey was administered via Survey Monkey™. Students were asked about their sense of self-efficacy as a result of the oral communication pedagogy. Post-test respondents also answered about frequency of practice of oral communication acts, not only in the nine-day project but also in the preceding academic year. The response rate was 81%

RESULTS AND DISCUSSION

In all measures, a statistically significant increase in self-efficacy was documented after the nine days of instruction, practice, and feedback. Tables 4 and 5 in the Appendix list the self-efficacy measures and show that the sharpest increases came in items 3, 5, 6 and 8. In those items, respondents described increased confidence in their abilities to know what strategy is best suited to a specific context and audience (Item 3; mean = 75; S.D. = 16)). Respondents also described enhanced confidence in their abilities to choose the appropriate combination of media and an appropriate style (Item 5; mean = 75; S.D.=21) (Item 6; mean=77; S.D. 19) Lastly, respondents described an increase in confidence in preparing for oral communication acts (Item 8; mean= 75; S.D. =18).

At the other end of the spectrum, students reported the least increase in their confidence on Item 1, their ability to identify objectives in speaking about their work, (mean = 76;S.D.= 18). As Table 4 shows, there still was a statistically significant increase in this measure, but not the strong increases shown in Items 3, 5, 6, and 8. Part of this lower measure of self-efficacy may have come from the highly directive approach of the design team in which students were not invited to think about their objectives but instead had a specific activity prescribed. Students then were instructed to complete that activity. A slower pace and more autonomy might have given students time to think critically about their objectives, always a key skill for oral communicators.

In regard to frequency of practice, 45% of the post-test respondents reported that they presented in English in a variety of circumstances at least two or three times in the nine days. And nearly a quarter of the respondents presented four or five times. However, as Table 1 also shows, about one third of the group presented once or not at all, a marginal rate of participation with so many opportunities and such small teams.

Table 1: number of presentations given during the 9-day project period

0-1 presentations	2-3 presentations	4-5 presentations
33%	45%	22%

Varying proficiency in spoken English within the cohort may explain the lower frequency of presentation for 33% of the respondents. For example, 57% of students reported they had been speaking English in their technical disciplines for fewer than 3 years. While that length of time might produce conversational fluency, it might not be sufficient to build the skills, disciplinary vocabulary and critical thinking strength in a second language necessary for students to feel confident in an oral presentation.

Despite the relatively short time in speaking English, 61% of respondents reported that they had given more than 6 oral presentations in English in the preceding year at Skoltech (Table 2). Thirty nine per cent of respondents said they had given 6 or fewer presentations in English in the last year. Clearly, the majority of the students surveyed were active in oral communication both in the nine-day project and in the preceding year.

Table 2: Number of oral presentations given in the preceding year of study.

More than 6 oral presentations in English in the preceding year	Fewer than 6 oral presentations in English in the preceding year
61%	39%

To summarize briefly, the communication-intensive WAC/WID pedagogy was used with a population of ELL working in the target language but in an international setting. There were statistically significant increases in self- efficacy on all measures, and the majority of ELL students practiced their English oral communication skills frequently during the nine-day project. Thus, the data reported here answers part of the question asked earlier: yes, WAC/WID pedagogy combined with practice seems to strengthen the oral communication skills of ELL students even in a fast-paced design project. Based on Bandura's work, it is reasonable to think that the increases reported in this study predict intention, which is likely to lead to persistent effort and hence the progressive refinement and transferability of the skill being practiced (Bandura, 1977; Bandura, 1994).

.

However, just as informative is the smaller population that both Tables 1 and 2 show was less active during the nine-day project as well as in the preceding year. No other data was collected on this smaller group and close observation of student behavior was difficult in the classroom that was informal, busy, and fluid as most design classrooms are. However, it was noticed that on multiple occasions, some students disappeared when there was a briefing or presentation opportunity or they yielded the floor to more fluent (in English) students or tended to stand in the back of the large room or even in the hallway, looking in. When asked about where they had been or why they were not part of a particular presentation, those students shyly explained they '*had not felt well'* or had had '*to leave early'*. However, on two occasions, students said of their peers who were presenting, *"_____ is good at English. It's better for the team if she presents*." or *"_____ knows how to say it better."* Even if the reticent students were clearly engaged in teamwork where some of the discussion was often in Russian, these same intelligent, active, and voluble students drew back when there was an opportunity to present in English, formally or informally.

Subjective observation and several informal conversations cannot offer conclusive data on the reasons for the reticence of students in giving oral presentations in English. However, the phenomenon of the reticent ELL student in the midst of busy collaborative discussion has been observed, and it has been conjectured that this behavior may be linked to a lower level of productive---specifically verbal--language proficiency(Cox, 2011; Craig, 2014; Idrus et al., 2013). Such reticent behavior is understandable. Many ELL are accustomed to speaking in language acquisition classes and in those settings with circumscribed topics, their language abilities may seem adequate to the normative language level of that group. However, when there is a shift to a language use setting—the real world---, a student may find himself unable to perform fluently. Without a significant and readily retrievable vocabulary (perhaps in a specific technical discipline) and a ready command of grammar, the lower proficiency student cannot generate enough language to make meaning in that specific context or perhaps he cannot generate it quickly enough. Moreover, his receptive skills may play a part since oral presentation and interaction usually include listening and then responding quickly. Lastly, oral communication is nearly always a public act so the low proficiency student understandably may feel vulnerable. Thus his intention to practice is limited not only by low-self-efficacy, but also by his/her actual skill level, the way in which s/he compares to the norms of those around him/her, and his/her guess about what is feasible to accomplish successfully in that specific context. Here, Ajzen's theory of planned behavior helps us understand a student's sense of efficacy as only one factor in a complex behavioral scene (Ajzen, 1991)

Bandura claims that learners build a sense of efficacy in several ways(Bandura, 1994). Three of these ways are more relevant for the Skoltech study. First, a learner gains self-efficacy by a mastery experience. Second, a learner gains efficacy vicariously as he watches others perform a task. Third, a learner also can bolster his sense of efficacy through persuasion or encouragement from another. Applying this structure to the high proficiency ELL Skoltech students, we see that the majority of them seem to have had one or more mastery experiences. All of the students had the opportunity to learn vicariously from a range of generally well-done range of presentations. And all of the students received support and encouragement.

However, for a lower proficiency ELL student in the Skoltech study, mastery experiences may have been (or seemed to be) out of reach in the fast-paced project. Since the cohort had not been sorted by language level, opportunities to practice oral communication may have felt like potential failure experiences and public ones, at that. The lower proficiency students certainly could have learned vicariously, but in a heterogeneous classroom where some students are very advanced, vicarious learning may quickly swing into unfavorable comparisons and a lower sense of self-efficacy which then may precede less intention, less persistence and more self-blaming. Of course, support and encouragement from peers and

from the communication instructor and design team may have persuaded the lower proficiency students of their abilities but only temporarily. Such persuasive effects would be quickly erased by any less than successful experience or even the potential loss of face and stature within the group.

Moreover, the psychological effects of low self-efficacy ELL within a heterogeneous group then can affect group dynamics (Chang, 2010; Clement et al., 1994; Leki, 2001) (Craig, unpublished data). Again, data in the Skoltech study can only suggest but not support this conjecture. However in a small cohort of well-acquainted students, it seems likely that the reticence of small sub-group that may feel discouraged, defensive, and unable to meet the norms of the larger group would have some effect on the group dynamic. Their affect and general stress could not go unnoticed by their friends and their teammates. As Peirce argues, communication exists in a network of social relations that incorporate unspoken agreements about power, authority, and hierarchy (Peirce, 1995). When a group of students does not or cannot conform to the group norm, the difference in their self-image and their self-efficacy can begin to influence their identity and their role within the group and to affect their overall experience.

LESSONS LEARNED; SUGGESTIONS FOR APPLICATION

This brief study seems to indicate that using WAC/WID pedagogy helps strengthen the oral communication skills of high proficiency ELL in their discipline through moderate instruction, repeated practice, and feedback. However, working on a fast-paced design project and also practicing oral communication in English does not seem to produce progress in low proficiency ELL. In fact, subjective observation indicates that there may be a disadvantage to self-esteem in the low proficiency ELL and group dynamics in general.
WAC/WID pedagogy can be used effectively with low proficiency ELL since the principles of WAC/WID apply even with restricted language skills, but this success is more likely in groups that are sorted by language level. (Craig, 2012)(Craig, unpublished data)

However, cohorts in engineering classrooms are rarely if ever sorted by English language levels. Moreover the proportion of ELL within a course may vary from semester to semester, and the types of language issues that they present may change, too. Thus, even when engineering faculty design multiple opportunities for students to practice oral communication, those professors may be challenged by the needs of the lower proficiency ELL in their classrooms.

Engineering faculty who are interested in strengthening English language skills among all ELL students in their courses may incorporate a modified WAC/WID approach in their courses:

- Design a sequence of assignments that allows the ELL to use critical thinking, group discussion, and/or writing to organize his/her English language skills and build vocabulary. Oral communication acts that follow such a sequence are more likely to be successful for the ELL.
- Design ‘low stakes’ assignments in which an ELL can practice oral communication skills without being penalized for low proficiency but instead can focus on building skills.
- If communication in English is a desired course objective, adopt a pace in the course that allows time for this cognitive task.
- Avoid the temptation of sending the ELL to an external ‘English course.’ This referral may be well intentioned, but it effectively removes the ELL from the vocabulary and the disciplinary discourse s/he is trying to master.
- If working with a cohort with widely differing English language skills, bringing an English language tutor into the course may be efficient and effective for the low proficiency ELL while allowing the professor to focus on engineering content.

SUMMARY:
The data from the Skoltech study suggests that the WAC/WID pedagogy used here was effective in improving the self-efficacy of the majority of this cohort of ELL as they practiced along a range of individual and collaborative oral communication skills in an intense, focused, prescriptive design project. Data does show statistically significant increases on all measures of self-efficacy. Moreover, observation of the active classroom, and the high quality of oral presentations also showed students' application of these skills. However, it is less clear that this pedagogy was effective with the lower proficiency ELL who were less confident speakers of English and who seemed to evade the numerous opportunities to make oral presentations. However, there are modifications that may allow faculty to see the benefits of WAC/WID pedagogy while still working with both high and low proficiency ELL in engineering courses and design projects..

SOURCES CITED

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.

Bandura, A. (1971). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, *84*(2), 191–215.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/847061

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of Human Behavior* (pp. 71–81). New York: Academic Press.

Bazerman, C., Little, J., Bethel, L., Chavkin, T., Fouquette, D., & Garufis, J. (2005). *Reference Guide to Writing Across the Curriculum*. (C. Bazerman, J. Little, L. Bethel, T. Chavkin, D. Fouquette, & J. Garufis, Eds.). West Lafayette IN: Parlor Press.

Bean, J. (2011). *Engaging Ideas: A Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom* (2nd ed.). Jossey-Bass.

Chang, L. Y.-H. (2010). Group Processes and EFL Learners' Motivation: A Study of Group Dynamics in EFL Classrooms. *TESOL Quarterly*, *44*(1), 129–154.

Clement, R., Dornyei, Z., & Noels, K. A. (1994). Motivation, Self-Confidence, and Group Cohesion in the Foreign Language Classroom. *Language Learning*, *44*(3), 417–448.

Cox, M. (2011). WAC: Closing Doors or Opening Doors for Second Language Writers? *Across the Disciplines*, *8 (4)*. Retrieved from http://wac.colostate.edu/atd/ell/cox.cfm

Craig, J. (2012). *Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-across-the-Curriculum Approach*. New York: Routledge Taylor Francis.

Craig, J. (2014). Teaching Writing in a Globally Networked Learning Environment: Diverse Students at a Distance. In T. Zawacki & M. Cox (Eds.), *WAC and Second Language Writers: Research towards Linguistically and Culturally Inclusive Programs and Practices* (pp. 369–386). West Lafayette IN: Parlor Press.

Dornyei, Z. (1994). Motivation and Motivating in the Foreign Language Classroom. *The Modern Language Journal*, *78*(3), 273–284.

Dornyei, Z., & Malderez, A. (1999). The Role of Group Dynamics in Foreign Language Learning and Teaching. In J. Arnold (Ed.), *Affective Language Learning* (pp. 155–169). Cambridge UK:: Cambridge University Press.

Idrus, H., Salleh, R., Ali, R. M. M., & Hassan, W. N. W. (2013). Self-efficacy in English language oral communication skills of technical trainees. In *IEEE International Conference on Teaching, Assessment and Learning for Engneering* (pp. 800–805).

Leki, I. (2001). " A Narrow Thinking System ": Nonnative-English-Speaking Students in Group Projects across the Curriculum. *TESOL Quarterly*, *35*(1), 39–67.

Maddux, J. E. (2002). Self-Efficacy: The Power of Believing You Can. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 277–287). New York: Oxford University Press.

Mau, W.-C. (2003). Factors That Influence Persistence in Science and Engineering Career Aspirations. *The Career Development Quarterly*, *51*(3), 234–243.

McCleod, S. H., & Soven, M. (1992). *Writing Across the Curriculum: A Guide to Developing Programs*. (S. H. McCleod & M. Soven, Eds.). Newbury Park CA: Sage Publishing.

N.a. (n.d.). Skoltech Institute of Science and Technology. Retrieved from http://www.skoltech.ru

N.a. (2014). MIT Communication Requirement, http://web.mit.edu/commreq/

Peirce, B. N. (1995). Social Identity, Investment and Language Learning. *TESOL Quarterly*, *29*(1), 9–31.

Poe, M., Lerner, N., & Craig, J. (2010). *Learning to Communicate in Science and Engineering: Case Studies from MIT*. Cambridge, MA: MIT Press.

Russell, D. (1991). *Writing in the Academic Disciplines: A Curricular History* (1st ed.). Carbondale IL: Southern Illinois University Press.

Schell, J. (2012). Student-Centered University Learning: Turning Traditional Education Models Upside Down. *ReVista: Harvard Review of Latin America*, *Fall*, 20–23.

WAC Clearinghouse. (n.d.). Retrieved from http://wac.colostate.edu/

Zawacki, T., & Rogers, P. M. (2011). *Writing Across the Curriculum: A Critical Sourcebook*. (T. Zawacki & P. M. Rogers, Eds.). Boston MA: Bedford St Martin's.

BIOGRAPHICAL INFORMATION:

Jennifer Craig, M.S., M.A, is a Lecturer II in the Department of Comparative Media Studies/Writing at the Massachusetts Institute of Technology. She teaches in the Department of Aeronautics and Astronautics. She is the author of *Integrating Writing Strategies in EFL/ESL University Contexts: A Writing-across-the-Curriculum Approach* (2012*)* and co-author of *Learning to Communicate in Science and Engineering: Case Studies from MIT* (2010*)*, Her work has been included in collections about teaching and tutoring English language learners. She has taught at and consulted with universities in Chile, Brazil, Russia, Singapore, Costa Rica, and Mexico.

ACKNOWLEDGEMENTS: At Skoltech in Cambridge, MA, I appreciate the support of Brian Anthony, Diane Soderholm, Jason Torres, Lissa Natkin, Gerri Powers, and Samantha Young. Special thanks to Bill Lucas and Yashu Kaufman for their help with data collection. At Skoltech in Moscow, I appreciate the support of Mats Hanson, Bram Caplan, Ekaterina Malyuzhinets, Olga Tenisheva, Madina Tyuryaeva, and Vitaly Buldakov.

APPENDIX

Table 3: Pre/post averages for the oral communication module during the Application Period, Skoltech University, Fall, 2013

How confident are you in your current ability to do each of these tasks without any further preparation?	**Pre-test average** **n=43**	**Post-test average** **n=45**
Identify my objectives in speaking about my work?	8.23	8.59
Understand the objectives and expectations of the audience in listening?	7.67	8.58
Know what oral communication strategy is best suited to that context and audience?	6.44	8.50
Understand the appropriate level of formality expected in an oral communication event?	7.14	8.74
Choose the appropriate combination of media for a specific oral communication event?	6.40	8.56
Select the appropriate style for the oral communication?	6.49	8.74
Select and organize the right content for a specific oral communication event?	7.19	8.52
Prepare and participate in an interactive briefing?	6.14	8.61
Prepare and practice formal oral communication?	6.64	8.45
Use appropriate delivery style (stance, gestures, eye contact, voice quality) in oral communication?	6.55	8.27
Demonstrate answering questions effectively during and after an oral communication event?	7.00	8.33
Work as part of a team in preparing and delivering oral communication?	7.19	8.73

Table 4. Paired sample statistics in oral communication survey

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Identify my objectives in speaking about my work?	69.1% 76.1%	33 33	22.131 18.865	3.852 3.284
Pair 2	Understand the objectives and	65.6%	32	20.936	3.701

	expectations of the audience in listening?	75.9%	32	18.984	3.356
Pair 3	Know what oral communication strategy is best suited to that context and audience?	53.3%	33	23.274	4.051
		75.2%	33	16.978	2.956
Pair 4	Understand the appropriate level of formality expected in an oral communication event?	58.2%	33	20.533	3.574
		77.6%	33	18.376	3.199
Pair 5	Choose the appropriate combination of media for a specific oral communication event?	50.9%	33	26.500	4.613
		75.8%	33	21.799	3.795
Pair 6	Select the appropriate style for the oral communication?	53.0%	33	23.517	4.094
		77.6%	33	19.208	3.344
Pair 7	Select and organize the right content for a specific oral communication event?	59.4%	32	20.625	3.646
		74.4%	32	17.586	3.109
Pair 8	Prepare and participate in an interactive briefing?	55.0%	32	23.962	4.236
		75.3%	32	18.489	3.268
Pair 9	Prepare and practice formal oral communication?	57.1%	32	19.344	3.420
		74.1%	32	21.532	3.806
Pair 10	Use appropriate delivery style (stance, gestures, eye contact, voice quality) in oral communication?	53.!%	32	23.086	4.081
		73.1%	32	20.703	3.660
Pair 11	Demonstrate answering questions effectively during and after an oral communication event?	57.0%	32	21.317	3.768
		73.1%	32	23.478	4.150
Pair 12	Work as part of a team in preparing and delivering oral communication?	62.0%	32	24.814	4.387
		76.0%	32	21.013	3.715

Table 5. Paired differences in pre/post test surveys in oral communication survey

Paired Differences		Difference	Sig 2-tail	Std. Error Mean	t	df	Sig. 2-tail
Pair 1	Identify my objectives in speaking about my work?	6.9%	24.249	4.253	-1.639	32	ns
Pair 2	Understand the objectives and expectations of the audience in listening?	10.1%	25.334	4.479	-2.303	31	.05
Pair 3	Know what oral communication strategy is best	22.0%	28.445	-4.406	4.051	32	.001

	suited to that context and audience?						
Pair 4	Understand the appropriate level of formality expected in an oral communication event?	19.4%	23.041	4.011	-4.835	32	.001
Pair 5	Choose the appropriate combination of media for a specific oral communication event?	25.0%	27.964	4.868	-5.104	32	.001
Pair 6	Select the appropriate style for the oral communication?	24.6%	28.514	4.964	-4.945	32	.001
Pair 7	Select and organize the right content for a specific oral communication event?	15.0%	24.626	5.353	-3.446	31	.005
Pair 8	Prepare and participate in an interactive briefing?	20.3%	27.880	4.929	-4.121	31	.001
Pair 9	Prepare and practice formal oral communication?	16.5%	29.139	5.151	-3.215	31	.001
Pair 10	Use appropriate delivery style (stance, gestures, eye contact, voice quality) in oral communication?	19.7%	29.236	5.168	-3.809	31	.001
Pair 11	Demonstrate answering questions effectively during and after an oral communication event?	16.3%	25.495	4.507	-3.606	31	.001
Pair 12	Work as part of a team in preparing and delivering oral communication?	15.0%	28.398	5.010	-2.988	31	.004