

# Engineering Departments Addressing the Issue of Communication

## Introduction

The quality of student learning was and still remains a paramount issue in the educational system of today. With the ABET engineering accreditation requirements (EC2000), including continuous educational improvement, the accomplishment of high results in student outcomes is the central issue in higher education institutions due to constantly increasing demands of the job market. The success in achievement of this goal is determined by effective teaching, appropriate assessment strategies, and faculty expertise, to name a few. However, due to the increasing number of students in a classroom, the quality of work of graduate teaching assistants becomes another important component that contributes to the student performance [Norris 1991]. Indeed, a large classroom makes it impossible for instructors to carry all teaching load alone, and departments assign graduate teaching assistants (GTAs) who help instructors to conduct recitations and lab sessions, proctor exams, answer students' questions, and so on. At the same time due to large proportion of international students in graduate programs, nonnative English-speaking teaching assistants (NNSTAs) represent the major cohort of teaching assistants in many US universities. In the Mechanical Engineering Department at Michigan State University, for example, each semester about 80% or more of all teaching assistants are international graduate students.

Researchers have analyzed the impact of NNSTAs on the performance of undergraduate students for more than two decades [Norris 1991, Rubin & Smith 1990]. The influence of communication skills is here of particular interest [Isaacs 2008, Hoekje & Linnell 1994]. As a result, institutions need to ensure that undergraduate students obtain their knowledge and acquire necessary skills with the highest efficiency through the interaction with teaching assistants. Because of that, many universities require NNSTAs to take and successfully pass on appropriate level special examination of their speaking skills. At Michigan State University in the College of Engineering, international students who are offered teaching assistantship face the *Speak Test*, a listening examination that checks the ability of students to respond verbally to a variety of questions and scenarios. If they do not quite reach the level of acceptance, they can petition for a face-to-face oral speak appeal. If the results are much less than desirable, then they must wait until the beginning of the next semester to try again.

This paper starts with the required speak test for international students and continues to look at how a department can improve the speaking abilities of its entire cadre of incoming graduate students. We analyze the data on the reaction of international graduate students on the speak test

and discuss the benefits that undergraduate students can have working with both international and domestic teaching assistants to improve their own communication skills. Finally, we provide concluding remarks and specify the directions for the future work.

### **Speak Test: challenge or a benefit?**

As we mentioned in the introduction and in a previous paper, international students face an interesting dilemma when arriving at many universities, where in order to be able to perform as teaching assistants they must take and hopefully pass a form of exam in many schools called “The Speak Test.” It is required by many universities that feel it is important to know the level of the graduate students who will be placed in positions of importance in the learning of undergraduates. Tests taken outside the country or even reports on the performance of graduate students who have spent time in the US still require a “taking of the test.” For students who are given the opportunity to spend any time in the role of instructor, whether it be in front of small lab sessions or larger classes, the need for both an understanding of English and the ways to convey it are critical in American academia. Lab sections and classes filled with domestic students have to be provided with instructors who are able to present the technical information in a manner that will keep the course’s students comfortable and provide a reasonable atmosphere for learning. It is also critical that the teaching assistants be able to function within an atmosphere that is conducive for their own learning to continue. Over the past years entering international graduate students in the Department of Mechanical Engineering at MSU who have been assigned to jobs as teaching assistants in the various required laboratory courses in the department have had to at first be able to listen and speak at a reasonable level on The Speak Test. If they are able to respond verbally to a variety of questions and scenarios, they are then deemed suitable to perform as lab instructors. If they do not quite reach the level of acceptance, they can petition for a face-to-face speak appeal. If the results are much less than desirable, then they must wait until the beginning of the next semester to try again. This puts the department that expected them to be in the lab for the semester under the pressure of finding something else for them to do that does not require contact with undergraduates. This begins a costly activity because the jobs that they can be assigned would be done much more easily by senior undergraduates, who also receive a significantly lower pay with no benefits.

Over the past six years, the Department of Mechanical Engineering has been spending more time looking at the difficulties associated with international students and the problems involved with the taking of a standard test that shows competency in English. It has never been a difficult test according to the test givers or anyone who speaks English as a first language. That would be an obvious assumption if one were not arriving from outside of the United States and facing a literal “do or die” exam focusing on English as second language. It is not quite that horrible, but the problem comes in the assumption of the student not in the test itself. Students arrive from around the world, uncomfortable with a new environment and strapped with an almost immediate need to perform in a language to which they may not be entirely at ease. Some students actually arrive

on the day of the test and are given little time to even rest before they are plunged into the sea of English. In years gone by, little thought was taken about why the students failed to do well on the test or even if they understood what was happening during the testing. Those who did fairly well, could follow an appeal process and pursue a face-to-face meeting with a panel to prove their skill in English or the lack thereof. Failure at this level meant courses in English proficiency to take and the inability to function as teaching assistants. Here is where the department started to realize that money was being expended to support students who could not function in positions that required proficiency in English.

In the early years, numbers reached as high as 50% failure on the speak test, and it became a necessity to correct this problem or decide if students unable to speak English at a level necessary to be a teaching assistant would lose their funding. With changes needed, efforts were made to find out what the core problems were in the failure rate. Was it simply inadequate English skills or was there something else triggering the lack of performance on the speak test.

The importance of performing well on any tests, the stigma of doing poorly, and methods that could be used with incoming students to make them both comfortable with the test and address cultural issues were therefore investigated. One of the issues that arose was the simple act of speaking loudly during an interview. In some cultures it is not acceptable to speak loudly when in the presence of “elders.” This required intervention as the individuals literally spoke in whispers. Their English was very acceptable, but it could not be heard. This opens up a whole new area to investigate with next year’s incoming group.

With this, incoming graduate students were questioned on the difficulties of the testing and a number of issues were uncovered. These included the following:

- Students felt that they were ashamed of their English skills and went into the test feeling highly inferior, thus making them less likely to answer quickly.
- Students who had taught engineering courses in their native country, but believed that they were not as good as first-language speakers, performed as if they knew little English simply because they were no Americans.
- Students were fearful of what the questioner wanted as an answer.
- Students tried to find the “right” answer to every question and became muddled down in massive detailing that worked against them because of time constraints.
- Students spoke quietly because they were fearful of raising their voices.
- Students would not ask questions if equipment didn’t work properly or when there was confusion in instructions.

The above difficulties made it clear to the department that not only should something be done, but there was a distinct pattern to the behavior of international students taking the speak test. If the behavior could be modified, the hope was that the failure rate could be reduced and even if

the student could merit an appeal, then there was a good chance that more graduate students could be deemed suitable to function as teaching assistants.

Plans were made to provide all incoming graduate students with materials in their home countries to start the preparation for the speak test. Even if they were arriving at the last minute they would at least be better prepared than they had been in the past. The materials provided included sample speak tests, vocabulary helps, language issues inherent in understanding the ways of US English, suggestions of questions that could be used to test one's ability to understand questions and provide simple answers, and lastly examples of text to read (especially newspapers) to continue to practice English. But the biggest point made in the pre arrival on campus was to tell students that the test had only two goals: TO SEE IF THE STUDENT UNDERSTOOD THE QUESTIONS AND COULD PROVIDE AN ANSWER THAT ADDRESSED THE QUESTION. This was the largest problem that needed to be addressed from the conversations with the previous takers of the test. Well over 90%, when first questioned, responded that they were not sure of what the questioner wanted. If asked what was their favorite color, many thought much too long on what color they should pick – their favorite or the school colors. With too much thinking they lost time and were thought to not only misunderstand the question but unable to provide any answer.

The students at this point arrived with a little better understanding of the purpose of the test and were more likely to feel less intimidated and ready to show that they did understand the questions and could provide answers to those questions. At their arrival, meetings were set up to give them a chance to speak English, provide answers to personal and course related questions, and get comfortable with the surroundings of campus and the people who inhabit this place of higher learning. With the above goals in mind to understand and answer questions, efforts were made to provide as much conversation as possible in the time we had to prepare the students for the speak test. With the previous record in place of failure rates reaching 50%, the expectations were high for a change in the previous results. Fall 2013 saw the need for 13 new international graduate students to take the speak test. The goal for passing was either the speak test itself or the speak appeal if one did not do as well on the speak test itself. The final result – 7 students passed the speak test and 6 passed the speak appeal. We then looked forward to improved performance on the first taking of the speak test and a greater ability to help our students weather those first days in the United States without the speak test being any form of burden.

We stated the process of giving our incoming graduate students the necessary tools to take the speak test, to prepare for it before they arrive in the United States, and to talk with our current graduate students from the varieties of countries that are represented in our population about cultural issues. We have already seen improvement with the efforts that we have performed and expect that there will be less and less difficulties with the testing as we improve our techniques.

Progress was made in our minds about the reaction of the international students and their ability to enter our labs and communicate more easily with the domestic students. Then the table was slightly skewed. A number of students did not do well on the initial test even though conversation with those students seemed to make them appear to be much better speakers than previous students. The immediate question was, “What went wrong?” By questioning the students taking the test, there seemed to be no difference in the type of questions or their response to them. Everything seemed to be the same. The next step was to approach the English Language Center that administers the test and see if its personnel could see any inherent changes. The immediate response was enlightening. We were informed that the underlying focus of the test had changed to be a performance activity. The students were being judged not only on how they were able to speak and respond to questions, the way in which they performed that activity was also judged. Easily understood and capable students failed the test. Again, something had to be done.

It was decided that if performance was being tested, then the students would have to perform. They would need to be able to stand in front of a group and perform the role of teacher and mentor. During fall semester 2015, students acted in plays, read lines, became characters, and made good effort to become not only speakers of English but performers in that language. Students retook the speak test and moved into the speak appeal procedure. The results showed much improvement in many of the students and a greater sense of “performance.”

With that beginning, the plans are being made to collaborate with the theatre department by providing skill training to allow graduate students to become more comfortable not only with the language but with the skills needed to stand in front of an audience (class) and not only speak but project and increase the understanding of the audience.

With this beginning, the importance of dealing with communication issues must be related to the domestic student population. Domestic students need to hear instructions, lectures, and conversations in English. If improvement is made in the speaking abilities of international students, it is easy to see that those improvements will affect the learning of the domestic student. The next step in our process is to survey the domestic students and see if any changes have occurred in their perceptions of the international TA's. With the information gained, we can continue the process of helping our international students to communicate more efficiently.

## **Conclusions**

1. The assumed problem of international students not understanding English may be little more than a fear that those students have of performing badly.
2. Great strides can be made by simply explaining what tests are attempting to show and not assuming that everyone knows their purposes.
3. Being comfortable with test taking can be the difference being passing and failing a test.

4. Looking closely at cultural issues can help to provide assistance in preparing students to take the speak tests and appeals.
5. Collaborating with other departments on campus will hopefully open up the lines of communication between international and domestic students.
6. The work that is being done to improve international TA communication will help the learning going on in ME labs.

### **References:**

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