

A Communicative Approach to Teaching Science English Contained in Basic Science College Courses

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“When I was orbiting the Earth in the Space Shuttle, I looked down at Africa and saw the stark golden deserts, the long winding Nile, and the great rift valleys, but the boundaries between nations were invisible. The view from space makes it vividly clear that the human-made borders separating one group of people from another are artificial.”

Sally K. Ride, First U.S. woman in space

Learning about the language and culture of another country, while fascinating, helps erase boundaries between nations. Since science in itself is a kind of “universal language”, a goal for technology transfer is increasing peoples’ ability to communicate about basic science using a language different than their own, in this case, English. Since April 2001, the elective course ‘Science English’ has been taught at Rikkyo University by Michael Faudree. He has been teaching this course in Japan since 1996 and previously worked for General Dynamics and NASA.

The course content is different than recent Science English courses in that it focuses primarily on the English used in basic science core courses – rather than current science topics that, interesting as they are, may become “passe” after a couple of years. Of course, current science topics are sometimes chosen according to students’ interests and preferences.

The text used is “Basic English for Science and Technology”, (Eihosha, 2001) coauthored by Michael Faudree and Arata Fujimaki. The English content included in this course is usually learned through a theme. For instance, through the theme of “satellites”, students learn the English of basic circular motion in physics. Through the theme of “stars”, students learn the English of chemical elements, and

fusion reactions. Through the theme of “Are computers good or bad?”, students learn the English of computer parts, software, and networks. Through the theme of “Was the past better than today?”, students learn the English of basic electronics and circuits. And through the theme of “Are silicon life forms possible?”, students learn the English of (very basic) organic chemistry.

Other topics include mathematics (powers, roots, calculus, etc.) ; human health and longevity; Apollo rocket to the Moon; and NASA. How to articulate descriptions of chemical reaction equations, and mathematical formulae in English are also incorporated.

In general, the communicative teaching method is employed. The emphasis is on speaking, in particular, vocabulary building and pronunciation of difficult scientific terminology. The teacher may write ‘Kanji’ explanations on the board if needed. Students usually work in pairs and groups, engaging in various speaking exercises and discussions. To a lesser degree, some reading and writing activities are assigned.

Students are evaluated on their attendance, class participation, quizzes, and a final scientific presentation in English.

The final presentation is given at the end of the semester and students choose their topic. Topics could be related to the student’s major field of study. Last year, they ranged from ‘microorganisms’, to ‘the life cycles of stars’, to ‘ESL learner proficiency vs. starting age’. The week prior to their speech, students practice the language associated with English scientific presentations. This includes that of describing charts, graphs, and diagrams, with a successful conclusion.

The purpose of the Science English course is for students to gain confidence academically and professionally, and to promote technical communication on an international level. After graduation, many students who attended this class went on to graduate schools in English speaking countries, or to work at international companies.

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