

Science and Science Editing in South Korea

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Despite many historical difficulties, such as the Korean War and the division of Korea into two countries, the economy of South Korea has grown rapidly. Therefore, South Korea has been called the “Miracle on the Han River”. South Korea has many world-class companies, including Samsung, LG, and Hyundai. Science has been fundamental to Korean economic growth, so it has been important to cultivate science and the scientific environment in South Korea.

South Korean scientific journals and science editing have grown with the development of South Korean science. Scientific journals have played a central role in educating scientists and developing science in South Korea by publishing scientists' accomplishments and sharing their knowledge.

These days, South Korean scientific journals appear to have two substantial impediments. First, the number of submitted articles is decreasing because South Korean scientists generally prefer to publish in international journals. Second, South Korean journals prefer to publish papers in English for the greatest visibility, but South Korean scientists and editors often have difficulty with English. Helping South Korean scientists and editors to improve their English could alleviate this situation.

South Korean Science

South Korea, a democracy formally known as the Republic of Korea, is between China and Japan. Despite cultural and historical similarities to those countries, South Korea has its own distinctive culture and language. About 48 million people live in South Korea, of whom about 10 million live in Seoul, the capital.

Statistics about education, science, and technology in South Korea are readily available. All statistical data presented in

this section come from the Korea National Statistical Office (www.nso.go.kr/eng/).

South Koreans value education highly, and increasing numbers of South Koreans have been pursuing higher education. In 1975, 5.8% of South Koreans 25 years old and older were college or university graduates; in 2003, the figure was 24.3%. There are 169 colleges and universities in South Korea.

The number of persons holding doctoral degrees in South Korea was 49,667 in 2004, an increase of 6.3% from the previous year; and the number of master's degree holders was 64,121, an increase of 10.7%. Most researchers in South Korea have doctoral degrees. Engineering researchers are most common, constituting 67.9% of researchers (128,930 persons). Next come researchers in natural science, 17.3% of researchers (32,778); medical science, 6.9% (13,096); agriculture, forestry, and fishery, 3.2% (6,040); and others, 4.8% (9,044). Among engineering researchers, those in electrical and electronic engineering are most numerous, constituting about 29% of engineering researchers.

To develop its economy, South Korea has been investing greatly in science and technology. Like the number of researchers, research and development (R&D) expenditures have been growing: The percentage of gross domestic product invested in science and technology rose from 0.76% in 1981 to 2.91% (US\$14 billion) in 2002.

The South Korean government has been supporting and guiding science and technology, but the private sector also is active in this regard.

Two funding agencies, the Korean Science and Engineering Foundation and the Korea Research Foundation, support most of the basic research funded by the government. Funding for the two foundations comes mainly from the Ministry of Science and Technology (www.most.go.kr/) and the Ministry of Education and Human Resources (www.moe.go.kr/en/index.html).

The Ministry of Science and Technology coordinates government policy regarding research in science and technology. There are other government institutes and foundations for science and technology, such as the Korea Institute of Science and Technology, founded in 1966 to support industrial needs in such fields as geoscience and telecommunication, and the Korea Science Foundation, whose mission is to foster public understanding of science and technology.

In 1971, to help educate future scientists and engineers, the South Korean government established the research-oriented university called the Korean Advanced Institute of Science and Technology. Because of the government's financial support, this institute has become the best academic environment in South Korea for education in science and technology.

In 1986, the Pohang Steel Corporation established the Pohang University of Science and Technology. Funded by the private sector, this university has achieved considerable prominence. The private sector is the main source of funding of R&D in South Korea. In 2002, 73.3% of R&D expenditures (US\$10.6 billion) came from the private sector, and 26.3% (US\$3.8 billion) came from the government and the public sector. The remaining 0.4% was from other countries.

South Korean Scientific Journals

The Korea Institute of Science and Technology Information has established the Academic Society Village (society.kisti.re.kr/index.html), an academic information Web site that includes many databases about science and technology and has links to Web sites of academic societies and their journals. General information about South Korean scientific journals for this article came from the Academic Society Village.

According to the Korean Association of Academic Societies, there are 662 societies of science and technology, including medicine and pharmacy, in South Korea. Most publish their own journals. As of May

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2004, 239 societies listed their journals in the Academic Society Village. Of the 239, 96 were in engineering; 61 in science; 30 in agriculture, forestry, and fishery; 19 in medicine and pharmacy; and 33 in other scientific and technical fields.

As of February 2005, 110 medical journals were listed in KoreaMed (www.koreamed.org/SearchBasic.php), a database for accessing articles published in Korean medical journals. KoreaMed was established by the Korea Association of Medical Journal Editors (kamje.or.kr) in 1996 and has been evaluated by its members.

One of the main medical journals in South Korea is the *Journal of Korean Medical Science*, a peer-reviewed general medical journal with a circulation of 5000. The Korean Academy of Medical Sciences publishes this bimonthly journal, which is in English. The journal was the second South Korean medical journal to be listed in *Index Medicus*; the first was the *Yonsei Medical Journal*, which is published by Yonsei University College of Medicine. The academy has about 100,000 members and encompasses 131 academic associations, including associations in various medical specialties. It supports medical education, research, and training and publishes several medical journals.

The Korean Chemical Society (kcsnet.or.kr) also publishes medical journals. The *Journal of the Korean Chemical Society* accepts articles written in English, Korean, German, and French; the articles are then published in English. Also, the society has published *The Bulletin of the Korean Chemical Society* since 1980. It accepts only papers written in English. The *Bulletin* is supported by the Korea Research Foundation and the Korean Federation of Science and Technology Societies.

To determine general characteristics of South Korean scientific journals, I looked at the Web sites of 50 journals listed in the Academic Society Village (10 each in engineering; science; agriculture, forestry, and fishing; medicine and pharmacy; and other scientific and technical fields). For each journal, I gathered information on

such items as circulation, publisher, size of editorial board and staff, and types of editors. From that information, I drew two conclusions. First, although some accept articles in both Korean and English, South Korean scientific and medical journals prefer to publish in English, because they want to be internationally recognized. Second, most South Korean scientific journals are published by professional societies to enhance their disciplines and give members a chance to publish their work. Thus, the number of subscribers to a journal is almost the same as the membership of the society.

Perspective of a South Korean CSE Member

To gain additional perspective, I interviewed by e-mail Kack-Kyun Kim, a CSE member who is president of the Korean Academy of Oral Biology and an associate professor at Seoul National University School of Dentistry. Kim is on the editorial board of the *International Journal of Oral Biology*, which is published jointly by the Korean Academy of Oral Biology and the UCLA Dental Research Institute. The journal accepts only manuscripts written in English. Its editorial board has both Korean and American members.

Kim emphasized that to make South Korean journals international, it is important to find trained science editors who can use English fluently. He said that the lack of science editors is a serious problem for academic science and technology journals in South Korea. Most South Korean science editors are professors at colleges or universities, and it is hard for them to work as science editors while they teach, do research, and do administrative work. Because specialized science editors are rare, scientific-journal editors learn by themselves from writing articles, participating in academic societies, and following the previous editing style.

Barriers to Korean Science Editing and Its Improvement

English seems to be the biggest obstacle to editing in South Korean scientific jour-

nals. Even researchers who are experts in their fields often have difficulty in writing, reviewing, and editing scientific papers in English.

Kim said that the *International Journal of Oral Biology* tries to help South Korean researchers write articles in English much as the Korean Association of Medical Journal Editors does. The association has a Web site with links to online English editing services. It also helps medical-journal editors edit articles in English by helping them exchange information and educating them.

Another problem that South Korean scientific journals face is that many researchers prefer to publish their articles overseas. That preference decreases the number of important articles published in South Korea and hampers the development of science and technology there.

Researchers in South Korea prefer to publish their papers in journals indexed by the Science Citation Index (SCI). Universities, research institutes, and the government in South Korea evaluate articles by whether they have been accepted by journals covered by the SCI. Those who publish more articles in such journals have greater chances of promotion and research funding. Kim says that many researchers do not want to submit their major articles to journals that are not in the SCI. This issue is serious for South Korean scientific journals because few are covered by the SCI.

To solve that problem, the South Korean government needs to protect and improve South Korean scientific journals. The Korea Research Foundation has prepared an official list of South Korean journals that it considers to be of as high quality as the journals covered by the SCI, and it is encouraging scientists and engineers to publish in the listed journals. That effort may also facilitate the listing of South Korean journals by the SCI. Kim said that the *International Journal of Oral Biology* was in the process of being listed. 