

North Korean College Students Join the “Battle of the Brains”

Each year, the world’s top computer programming college students participate in an international computer programming contest the organizers call “the most prestigious in the world.” Through the [International Collegiate Programming Contest](#), organized by the Association for Computing Machinery and funded by IBM, tens of thousands of students compete in three-person teams in local, regional, and, finally, the world final to win one of three or four medals. Here is the organizer’s [description from this years’ website](#):

Battle of the Brains: *The contest pits teams of three university students against eight or more complex, real-world problems, with a grueling five-hour deadline. Huddled around a single computer, competitors race against the clock in a battle of logic, strategy and mental endurance. Teammates collaborate to rank the difficulty of the problems, deduce the requirements, design test beds, and build software systems that solve the problems under the intense scrutiny of expert judges. For a well-versed computer science student, some of the problems require precision only. Others require a knowledge and understanding of advanced algorithms. Still others are simply too hard to solve—except, of course, for the world’s brightest problem-solvers. Judging is relentlessly strict. The students are given a problem statement—not a requirements document. They are given an example of test data, but they do not have access to the judges’ test data and acceptance criteria. Each incorrect solution submitted is assessed a time penalty. You don’t want to waste your customer’s time when you are dealing with the supreme court of computing. The team that solves the most problems in the fewest attempts in the least cumulative time is declared the winner.*



In the second issue of the NCNK Newsletter below, Dr. Stuart Thorson, Professor of Political Science at the Maxwell School of Citizenship and Public Affairs at Syracuse University and Fredrick F. Carriere, Vice President and Executive Director of The Korea Society, describe how college students from the DPRK began competing in this annual “Battle of the Brains.”



Dark Horse



Written by:

Stuart Thorson (Syracuse U.)

Frederick F. Carriere (The Korea Society)

KUT, SU and TKS

This story begins in 2002, when Syracuse University, working closely with The Korea Society, began a bilateral research collaboration in the area of integrated information technology with Kim Chaek University of Technology in Pyongyang, DPRK. Kim Chaek University of Technology (KUT) is one of several comprehensive universities in the North. The collaboration with KUT led to the design and implementation of North Korea's first digital library. "Digital library" is the formal name for categorizing, storing, and retrieving information from a computer server. Materials include those "born digital" as well as those originally created in more traditional media and transferred into a digital format. We tend to take "digital libraries" and the systems for retrieving information for granted, but the protocols guiding information retrieval are complex and adhere to international standards that have been developed over time. Through the collaboration with Syracuse University (SU), the digital library at

KUT is standards-based and conforms largely to international protocols for information storage and retrieval.

This ongoing cooperation has built up a significant reservoir of interpersonal and institutional trust among The Korea Society (TKS), SU, and DPRK and KUT officials. The Korea Society (TKS), SU, and the DPRK. The KUT Chancellor and Vice Chancellor have visited SU and senior officials of both SU and TKS have visited the KUT campus. Over time, the collaboration has grown to include workshops with KUT researchers focusing on technical English to help make English language computer science literature more accessible and to prepare for potential participation in international scientific meetings. One of the key goals in this work has been collaboration on programs involving international science standards.

The 2006 International Collegiate Programming Contest

One of the graduates of the 2005 English workshop was an official in the DPRK Ministry of Education whose responsibilities included, among other things, computer science education. In 2006, she requested a meeting with SU and TKS to discuss the possibility of DPRK participation

in the International Collegiate Programming Contest run each year by the Association for Computing Machinery (ACM). The International Collegiate Programming Contest (ICPC) is the computer programming Olympics for undergraduates. There are three rounds of competition. The first is local, and produces three teams to send to regional contests. Out of the regional contests, one hundred teams are invited to the world finals. Of course we welcomed this request as it fit in well with our focus on standards-based science cooperation.

Following a meeting with the principal partners, a DPRK Ministry of Education official provided letters authorizing us to request and arrange for DPRK participation in the ICPC. ACM officials were extremely responsive and, as a result, in 2006 the DPRK sent three teams of three students each, plus coaches, to the regional competition in China: Red Star, from the Natural Science University; and Dark Horse and Orion from KUT. In 2006, the first time teams from the DPRK had ever participated, they won three regional medals. Although they did not make it to the world finals, this was still a remarkable feat for first-timers.

The 2007 ICPC

Last fall the DPRK again elected to send teams to the Beijing regional. This time SU and TKS held a pre-competition workshop for the teams focusing both on technical English (English is the language of the competition) and on the logistics of the rather grueling regional competition. The DPRK teams and their coaches—Dark Horse from KUT, Red Star from the Natural Science University, and Jon Mang Bong from the Communication University—worked extremely hard in Beijing preparing for the contest.

This year the KUT team did even better than last year: they performed well enough at the extremely competitive Beijing regional to be invited to the World Finals this April in Banff, Canada. This is an enormously impressive accomplishment. Overall, there were 6,700 teams representing 1,821 universities from 83 countries vying for one of the 100 spots in the finals. For the Dark Horse

team from KUT to make it to the finals is quite an achievement and provides solid evidence of the quality of education at KUT.

Even more impressive is the fact that the standards-based ICPC competition is held using internet technology and most of the contest study guides and preparatory materials are available only on the global internet. Yet, although the DPRK teams did not have unfettered internet access at their home universities, they were still able to compete successfully.

Several lessons seem clear. First, at least in several areas involving science cooperation, the DPRK is quite willing and able to engage international standards. Second, their best students are able to compete effectively with top students worldwide. Third, sincere cooperation begets trust and more cooperation. A research-focused effort on digital libraries produced, along the way, an eagerness to send undergraduates to Beijing to participate in global science academic

competitions. Academic exchanges, once trust is developed, can result in unanticipated and high value outcomes for all participants.



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