

# SKorean moves to turn science fiction into fact

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Suh Nam-Pyo, president of the Korea Advanced Institute of Science and Technology, South Korea's top technology university, which is leading a drive for creativity over conformity to equip the economy for the 21st century

A computer screen that folds up like a pocket handkerchief, a harbour that goes out to a ship and a road which recharges electric vehicles -- it sounds like the stuff of science fiction.

These projects and others are well under way at South Korea's top technology university, which is leading a drive for creativity over conformity to equip the economy for the 21st century.

The state-financed Korea Advanced Institute of Science and Technology (KAIST) was set up in 1971 as [South Korea](#) raced to industrialise its way out of post-war poverty.

Since then, the country has become the world's biggest shipbuilder and an international force in electronics, telecommunications, autos and steel.

Now, says KAIST president Suh Nam-Pyo, it's time to move on.

"Korea can no longer develop its economy by following what everyone else has done already, because it is at the leading edge of a number of these traditional industries," he told AFP in a recent interview.

"I think Korea needs to have a very different kind of education where we produce more people who can think, who can lead by conceiving solutions to problems that humanity has to solve in the 21st century."

The intensely competitive education system, geared to getting students through crucial college entrance exams and into prestigious universities, is seen as part of the problem.

Parents spent 20.9 trillion won (16.4 billion dollars) on private education last year to supplement the state system, but Suh said results are questionable.

"They are not really providing education as such, they teach people how to take exams," he said. And many of the exams consist of multiple choice questions.

"So students don't really get to practise how to define what the problem is, how to reason and how to drive solutions."

For the system to change, Suh said, universities must change.

"Based on that philosophy we eliminated written (entrance) exams altogether," he said, outlining some of the changes which have made him a much-discussed campus reformer.

In another departure from tradition, professors who fail to make the grade are denied tenure. Students who underperform lose their right to free tuition.

In a bid to become one of the world's 10 leading science and technology universities, KAIST by next year will teach classes exclusively in English.

"One of our goals is to produce graduates who can become global leaders in science and technology. Nowadays, unless one is fluent in English it's hard to function in a global setting," said Suh.

Suh, 73, was an assistant director at the US National Science Foundation from 1984-88 and headed the department of mechanical engineering at the Massachusetts Institute of Technology from 1991-2001. He came to KAIST in July 2006.

He believes there are some areas in which KAIST can compete even with MIT.

"EEWS -- energy, environment, water and sustainability -- is the area where we think we need to be good," Suh said. The online electric vehicle is one example.

KAIST decided that lithium ion batteries are not the best way forward because of cost, weight and finite lithium resources on land.

Its "recharging road" involves burying power strips just under the surface. Vehicles suck up power from the strips via a magnetic device on their chassis as they pass over them, without coming into direct contact.

The system would allow smaller batteries or extended range for [electric vehicles](#).

A prototype at KAIST's campus at Daejeon, 140 km (90 miles) south of Seoul, already powers a bus service.

KAIST has also received a sizeable government grant to develop its mobile harbour, designed to cut the huge costs involved when big container ships queue up to berth at deep-water ports.

"Why should ships come into harbour? Why not have a harbour go out to the ships?" said Suh.

Mobile harbours -- automated vessels with a shallow draught -- would pull alongside big ships in

open waters to offload containers and ferry them closer to their final destination.

An automated system creates a stable platform and a special loading system eliminates the need for cranes. One design could handle 1,250 containers at a time, another 250.

Suh sees potential for the harbour in Africa, Malaysia, the Middle East and in the shallow Yellow Sea between Korea and China.

Both projects are going ahead fast, he said. During the economic downturn, "we want to see if we can create new technologies and new industries...good research and development does not have to take years."

As for the flexible laptop, the idea came from an undergraduate student. KAIST solicits ideas and gives prizes in return.

"The message for students is that everybody has the right to think creatively," he said. "Creativity is what we are trying to instil in our students."

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