

e-Learning and the Development of Road Traffic Technology

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The Korea Highway Corporation (KHC) has planned, designed, constructed, maintained and managed highways spanning about 3,000km in the course of Korea's development into an industrialized society over the last 37 years. With the advent of the knowledge and information based society, KHC started to provide the first e-Learning service on road traffic technology in Korea (*e-learning.freeway.co.kr*) through systematization of accumulated knowledge and information on road construction. This research targets technicians at home and abroad, as well as relevant departments of universities.

☒ Problems with technology education in the construction industry

When it comes to the construction industry, it is not an exaggeration to say that the educational environment is inferior in terms of both time and space, and access to education is also limited. From a cost perspective, apart from the pure educational costs spent on participation in education, a lot of loss is caused by opportunity costs such as business trip and vacancy. In addition, not enough educational opportunities are being provided to technicians in charge of hands-on work in the field to allow them to participate in the educational courses they need. On top of that, students easily become skeptical about the theoretical knowledge they acquired at school when they actually start to work in construction field. This is one of the reasons students may have avoided a major in engineering and science, which can lead to a decrease in technological prowess at the national level.

☒ Establishment of the e-Learning team

The conception of the e-Learning team at KHC dates back to 2001. At that time, the in-house technology management department completed the 'Technology Management Portal System' after more than a year of hard work. Under this system, technological knowledge scattered around KHC was systematized and a database linking them as each knowledge category was established. In 2004, the e-Learning team was launched with the purpose of establishing an e-Learning system that enables external sharing and distribution of the knowledge and information on road traffic technology which was accumulated internally.

☒ e-Learning on road traffic technology

e-Learning on road traffic technology offers a knowledge service that arranges road construction knowledge and information, such as designing, construction, maintenance and quality, in a systemic way and provides education online. Capitalizing on its wealth of past experience in road construction, KHC launched an online e-Learning site (*e-learning.freeway.co.kr*) on March 6, 2006 which offers practical knowledge and information on road traffic technology in the form of video clips on each course that allows even novices to use the web site easily. A period of about two years from 2004 to 2006 as well as a total of KRW 1.34 billion were spent to build the web site. Furthermore, more than 240 people were mobilized, including 130 script writers, composed of experts in each field of road construction.

As for the content of the site, pictures taken in the field, video clips, and 3-D graphics were utilized on the basis of expert



knowledge and the knowledge accumulated in the technology management portal system. They are easy to understand and easy to apply to the field. Main users of the site are : internal staff of construction, relevant technicians of service providing companies, and college/university students. The education curriculum is composed of a total of 20 courses which are 420 hours in total.

☒ Reflection of road traffic technology e-Learning on college/university courses

The e-Learning team of KHC first came up with 10 courses in 220 hours including road construction and construction history, and started to offer the service early 2006. And from that moment on, more than 4,000 people, mainly, internal staff, staff of other businesses and college/university students have used the service until now. Meanwhile, the site offers a free-of-charge service to subcontracting companies, putting into practice the management of co-existence.

In particular, Korea University, Konkuk University and Kyonggi University adopted these courses as regular academic curriculum in order to adjust and administer the academic courses in a way to help students majoring in engineering to narrow the sense of discrepancy between the practical knowledge required in society and the theories they study at university. For this kind of academic course, students taking them are educated online for three weeks per month and offline on campus for one week per month. Furthermore, they are provided with a chance for a field study trip once a semester during which they take a trip to a highway construction site to gain broader practical experience. This is a method called 'blended learning' that

can provide engaging and active training.

In a departure from the traditional academic courses focusing on theory, students get to acquire first-hand experience of construction sites while receiving academic credit for the course (three credits).

☒ Expected benefits and future plans

From an internal perspective, the e-Learning system on road traffic technology is expected to improve the performance of internal staff, enhance knowledge competitiveness, and contribute to creating added value by utilizing KHC's intangible knowledge of design, construction, and maintenance know-how as tangible assets. Meanwhile, by expanding the exchange of knowledge and information between industries and academic communities through an external service, the overall level of the construction industry can be improved and KHC can become the leader in the domestic road traffic technology knowledge industry. KHC's e-Learning aims to achieve the establishment of a 'ubiquitous highway' across all sectors involving customers, from highway design to provision of traffic services. While continuing to collect a variety of opinions, the KHC's e-Learning team aims to identify and develop additional courses in the research area apart from the 20 courses currently being developed. In addition, it plans to develop and provide education courses in English, targeting road construction technicians in other countries. It will also ensure that educational effectiveness can be maximized through the introduction of 'blended learning', combining online and offline education while expanding linked education with college/university. Through these efforts, KHC will strive to contribute to society in the future. KERIS@