

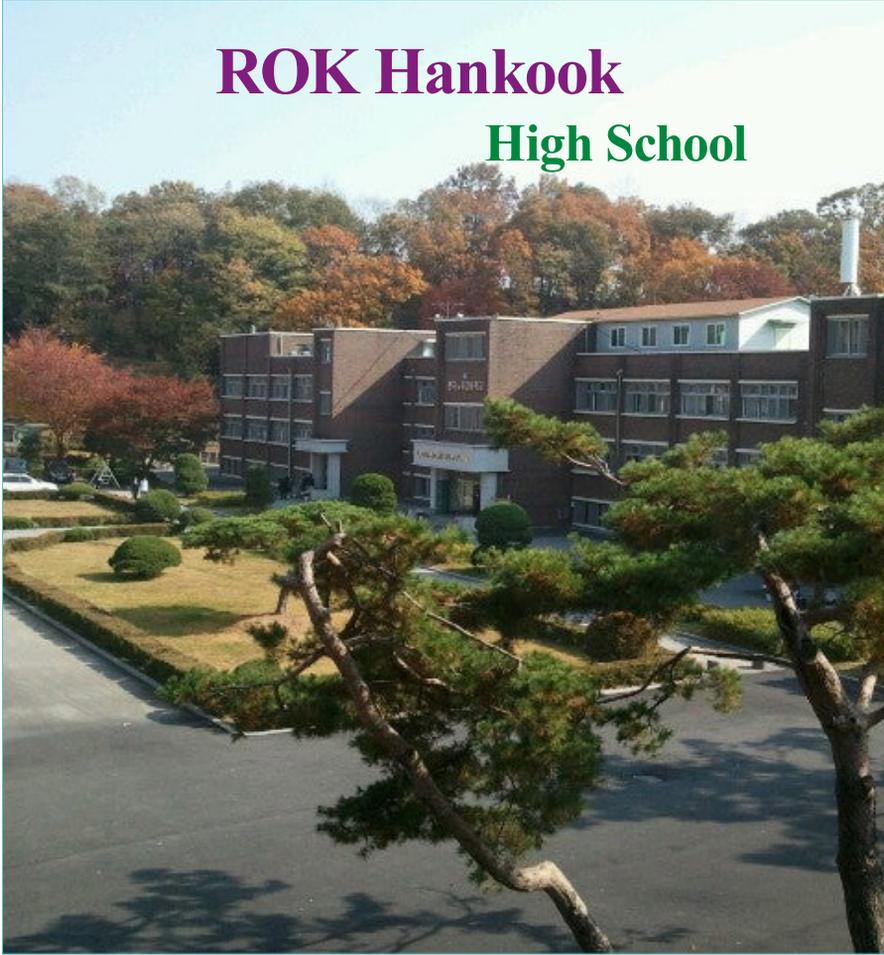


# Hankook Times

2020 Edition

Publisher: Hong Gil-dong (교장선생님)

Editor: Kim Tae-hee (교사)



## Contents of Hankook Times

- 02
  - ▶ Korean medical reformation for all citizens
  - ▶ How new media provide individuals more possibilities
- 03
  - ▶ What kind of efforts should be made for social integration?
  - ▶ Urban redevelopment: Good or bad?
- 04
  - ▶ People's perception towards nurses
  - ▶ Emotional labor and social workers
- 05
  - ▶ My experience and future dream
  - ▶ The benefits of physical therapy
  - ▶ The current position of the nursing assistants
- 06
  - ▶ Moral life: Lesson from the Shepherd Boy's lies
  - ▶ Have you read the book titled *Silent Spring*?
- 07
  - ▶ The reasons why we should learn Spanish
  - ▶ Netflix, a language content platform
  - ▶ UNESCO supports schools in East Timor
- 08
  - ▶ Rising 'bio-pharmaceuticals', new trends!
  - ▶ Problems of genetic research and their solutions

## Korean medical reformation should be dealt for all citizens

By Maruna Kang (1101)

Amid our fight against COVID-19, Korea has suffered from a serious internal conflicts. Korean doctors decided to go on strike to resist the government's stringent medical reform plan. The government has announced plans to expand the medical school admission quotas by 4,000 over the next 10 years. Their agenda is to utilize these extra resources to solve the shortage of doctors, improve the medical imbalance between rural and urban areas, and cultivate extra medical specialists. Idealistic as it may sound, the medical community strongly disagrees on the government's plan.

First of all, the shortage of doctors isn't a serious problem in Korea. Each Korean has received an average of 16.6 medical treatments per year since 2010, which is the highest in the world. Also, the number of medical practitioners is increasing at a rate of 3.1 percent per year. At this rate, by 2026, the doctor-to-patient ratio will surpass the OECD average of 3.4.

Secondly, the government believes that they can resolve the medical imbalance across South Korea by having the new doctors serve a 10-year mandatory service in rural areas. However, after their 10-year service, doctors will most likely seek better working conditions offered in the metropolitan area, causing an even greater medical imbalance between cities.

*"Korea has the best health care access among OECD member states, and the doctor-to-patient ratio will surpass the OECD average by 2028."*

*Thus, adding more doctors is the "cheapest solution" to the medical challenges Korea faces.*



The reform plans, the core of which were increasing medical school admission quotas and building public medical schools, had prompted thousands of doctors to stage a walkout.

Finally, an effective medical system has little to do with the number of doctors. According to OECD statistics, most countries with a higher doctor-to-patient ratio than Korea had a higher rate of confirmed cases and deaths by COVID-19. In other words, a great health care system is ultimately about how effectively the country utilizes limited medical resources and manpower.

My dream is to become a doctor. So, I was exhilarated

when I first heard about the reformation plan, but I realized that this problem must be dealt with more carefully for the best interest of our country as a whole. For now, the problem is brought to a temporary halt, however, and it will resurface once the coronavirus pandemic ends. I sincerely hope that the medical reform brings a better future for the government, the medical community, and the citizens of South Korea.

## New media provide individuals with more possibilities

By Young-ju Song (1213)

New media have transformed the way we receive and produce content. New media such as the Internet are making it easier for people to get their opinions across, which, in turn, creates content and allows a two-way dialogue. New media and technologies such as social media networks change the way a person perceives the world. In the past decades, old styled media were the only form of media used to receive content and sharing content was not as easy as it is nowadays.

The Internet can be easily accessed and its transformation process still continuing. It is now easy for the public to create and upload content which causes discussions. New media are broadcasted through digital media and online sites such as Facebook and the Internet.

Content is shared and created through social media by uploading or publishing products such as images, videos and text. New media allows individuals to receive and share content. The rapid development of computer science leads to the emergence of brand-new type media which are transforming the world and the way how people perceive the world.

Based on the powerful computer science and technologies, new media quickly engulf the whole world. Rather than evolving from traditional media and extending to new fields traditional media fail to reach, new media are completely another tool with totally different structure and mechanism.

The interactivity closely associated with new media enables them to transform the conventional communication mode as well. The one-way information flow in traditional media changes into the two-way dialogue, then into group discussion.

Online social networking communities are transforming the way we are experiencing television/network channel content. Social media connect people from local areas to global society. Online communities talk about everything that excites and entertains, or anything that creates an emotional bonding with certain kinds of stuff. Social sites like Twitter and Facebook are the platforms where communities share information, ideas and insights.

In conclusion, new media quickly engulf the whole world. Communication participants are no longer persons in conventional sense. A single person can have various roles to present

*"New media can be created easily. Users' ideas, thoughts, and information can be shared via the Internet. Thus, new media can be used in various fields and diverse ways."*



in different spaces created by new media. Cultural representation and communication are no longer what they used to be in face of the powerful engine. This is what new media mean.

## What kind of efforts should be made for social integration?

By Won-gyun Shim (2215)

Tensions in the United States regarding racial discrimination and social injustice are higher than ever, particularly after Donald Trump was elected as President of the United States. Trump's anti-immigration rhetoric and unpopularity have divided the nation and created political, racial, and social divides. Here in South Korea, the future is uncertain as we are facing internal political division after former President Park's impeachment and external threats from China, Japan and North Korea. With the world divided in so many areas, it is clear that efforts should be made for social integration.

In representative democracies, it is difficult for minorities to influence public policy. However, since public policy is most likely to directly affect members of minority groups, it is important that minority groups have adequate representation in the government. Therefore, one of the ways social integration can be achieved is to increase the ways in which minority groups can be represented in the government. To achieve this, some countries have turned to quotas.

While some may think the use of quotas may be harmful, it is necessary to promote the rights and voices of minority groups. There are instances where the "minority group" actually makes up a considerable chunk of the population, but is shockingly under-represented in the government. Research by the Women's Donor Network revealed that just 10 percent of officeholders are people of color, despite representing more than 37 percent of the population. Therefore, quotas are necessary to ensure that minority groups can be represented fairly according to their population.

Also, efforts should be made to reduce income inequality using educational grants. Members of minority groups are more likely to live in poverty. In the United States, 45.8 percent of young black children live in poverty, compared to 14.5 percent of white children, according to the Economic Policy Institute. Therefore, efforts should be made to support minority groups both financially and educationally.

There are countless ways to bridge gaps and promote social integration. Quotas, and educational grants are just a few. Only when social integration is achieved can political and social divisions be eased.

“ Political leaders must not divide their people for achieving their political goal. A real leader unites, inspires, and heals the nation, not divides it ”



“The number of countries with violent conflicts is the highest in the last 30 years. If we compare with 2007 and consider the number of violent situations that can be qualified as war according to the number of casualties, they have tripled,” said United Nations Secretary-General António Guterres.

## Urban redevelopment: Good or bad?

By Eun-jin Go (2401)

Urban redevelopment means the introduction of new functions and the physical, environmental, industrial, economic and socio-cultural development.

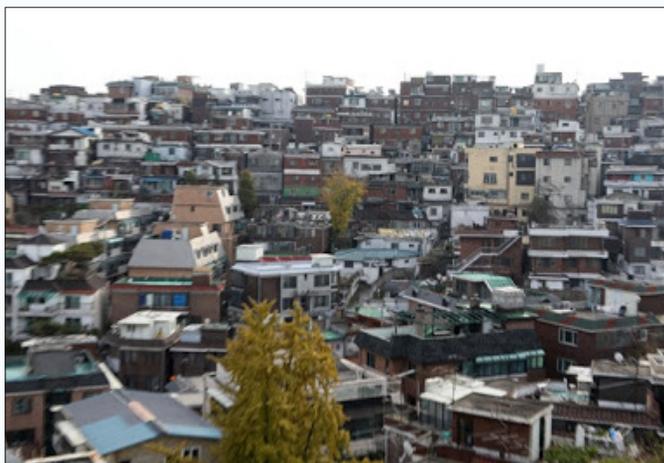
In order to prevent 'urban hollowing out' caused by old cities and to revitalize the sluggish urban economy, many residents and political leaders prefer urban redevelopment.

To meet the increasing demand for housing, new town-oriented development is carried out. The population of the old city decreases, especially due to the outflow of young people, and the city is becoming an aging society.

This weakens the urban function of commerce, culture, education, and welfare, which causes 'urban hollowing out', a phenomenon the population of the central city decreases and the population of the surrounding areas increases.

So urban redevelopment is necessary. After urban redevelopment, efficient land use is achieved to promote

“ Unfortunately, in the process of trying to expand and update a rundown area, urban redevelopment can destroy buildings that have cultural heritage, relocate businesses and people, and tear apart communities. ”



economic activities and improve the urban environment. In addition, walking spaces and parks are expanded to provide a pleasant environment, which makes urban views beautiful.

However, redevelopment increases the burden on public facilities as the population increases. In addition, High-rise buildings can lose the beauty of the city.

A desirable urban redevelopment must be fully discussed and the public opinion should be adjusted. We must prevent only a small number of people from benefiting only a few. All members of the community, including residents, community groups, and administrative agencies, should discuss redevelopment through democratic procedures.

## People's perception towards nurses

By Seong-hyun Jeong (2118)

“ *The driving force of labor comes from the rewards of work. The reward of work comes from the honor of the job.* ”

What do nurses do? Do you know? Most of people think that nurse's sacrificial and noble work is to be praised. But do other people think in the same way? What do people think about nurses? How about you?

The public perceive a nurse as just someone who assists a doctor during and after treatment of the illness helping the patient in keeping up his or her personal hygiene, giving the medications as prescribed by the doctor, dressing the wounds. There are also people both male and female who are of the view that men have no business working in the field of nursing due to lack of capacity to care compared to a woman. Even young people do not recognize the educational requirements or the career pathways in nursing and describe the status of nursing as low in society. Actually, nursing is the part of building a relationship, piling up trust about the treatment in the manner of having a conversation, changing a bandage, or giving an injection. So it can be true that nurse's work is of little importance than professional medical treatment. But the fact that the difference between them is only the difference between who has the right to decide the patient and who has the right to execute the treatment is clear.

The driving force of labor comes from the rewards of work. The reward of work comes from the honor of the job. If your job is only recognized as an assistant to someone, there will be nothing more dishonorable than that. I think it must be done socially to improve people's perception.



## Emotional labor and social workers

By Jung-woo Lee (2115)



“Service workers are equal to us and they also have the rights to be respected. They should not be treated as lower classes”

In the 4th Industrial Revolution era, service industry became very important in our society. Service industry means industry related to helping others, working for the convenience or improving the quality of our life. For example, many people working at a hotel, medical and health industry or NGO are generally called service workers who work in service industry. Their work looks very comfortable and easy job.

However, nowadays service workers are having a lot of difficulties because of the emotional labor. Emotional labor always means working and doing their duty, regardless of their real emotions. Emotional laborers must always control and hide their emotion because they must entertain their customers. Many

service workers are having mental disease because of emotional labor, rude attitude of customers and people's power abuse.

In 2014 December 5, there was a very controversial incident called “peanut rage” incident caused by a Korean Air executive. From that incident, citizens started to have interest of power abuse and emotional labor. But still social workers are having too much difficulty, and still Korea's system and punishment are not enough to protect social workers.

We need to strengthen the system to guarantee their emotional rights. Also, citizens should change their mind that service workers can be pushed over freely. They are born equally just like us and they have the rights to be respected.

## A key to find new uses for existing drugs: Using AI

By Gun-woo Jin (2519)



I read an article about “Using AI To Find New Uses for Existing Drugs,” and I would like to briefly introduce this article. The article says drugs that already exist can be used for new treatments. Also, AI's help is absolute to find it. In order to obtain new uses for a drug, a time-consuming and costly mix of random clinical trials is required to ensure that the drug, generally considered effective for one disorder, is useful as a treatment for something else.

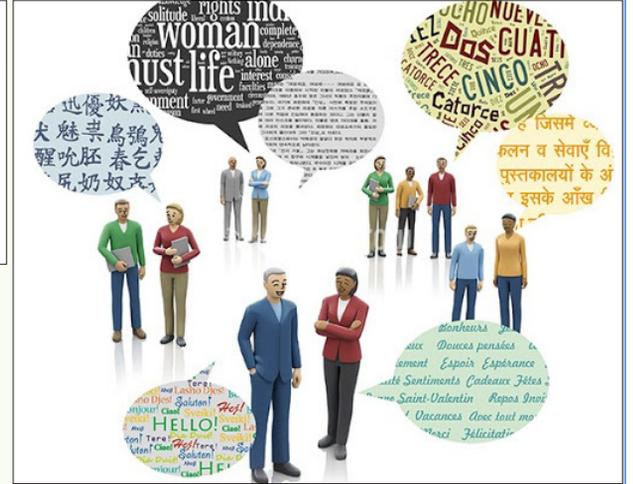
Therefore, multiple data should be interpreted to be reduce this time, with many confounding factors in real data. AI is used to solve this problem. In this article, a team of researchers used an AI called ‘Deep Learning Algorithm’ to eliminate disturbances from real data and to effectively use real data. It can be seen that AI has become an essential element to find other uses of drugs. As a result, I thought that not only pharmacology should be used in modern society where technology is developing, but also high-tech technologies such as AI should be combined with pharmacology.

# My experience and future dream

By Joon-hwan Seol (1311)



Hello, my name is JoonHwan Seol. I am a student of Hankook Sahmyook High School. And I'm really happy to share my future dream here with you. Today, I'll tell you about my dream that I've been planning



for so far. The dream that I really want to accomplish when I'm an adult. When I was 15 years old, I had a chance to live in Paraguay. That was the greatest turning point of my life. I can confidently say that it has had a great impact on my life. I experienced a lot of new things there. I met friends from various countries all over the world, I experienced new cultures, languages and foods. But if I only have to pick one thing among my experiences in South America, I would choose my experience of learning foreign language, to be exact, Spanish. It was a great experience that changed almost everything in my life. I learned Spanish when I lived in Paraguay for 2 years. When I just started learning Spanish, it was very hard for me. When my native friends spoke Spanish to me, I couldn't understand anything like a baby. But I didn't give up. I continued to study Spanish. About one year later, I could speak Spanish more fluently. And then I took a deep interest in learning Spanish and I really liked learning it. I'm still learning Spanish even

“ **No matter what job I'll have in the future, what I really want to do is to help other people with my talent that God gave to me.** ”

though I left Paraguay. I haven't made a decision yet on exactly which job I'll have in the future now. But no matter what job I'll have in the future, one thing that I really want to do is to help other people with my talent that God gave to me. Probably I will do my best in any field: Something

like working as a volunteer at a medical service to translate doctors' words to native people, at a local church to translate a pastor's sermon, or at a tourist attraction to help a foreigner who has language problems. And I will find more things to help other people with my talent in the future.

## The benefits of physical therapy

By Hwan-joon Yoo (2412)



When people think of physical therapy (PT), they usually associate it with someone who was injured. But physical therapy isn't just for those who suffer from physical injuries, but can be used by anyone looking for a way to improve their mobility, manage pain and chronic conditions, recover from injury, and prevent future injury and chronic disease.



Physical therapists are experts in movement in the body who can improve a patient's quality of life through exercise regimens, hands-on care, and education. They will assess your current ability and review your goals in order to create a treatment plan to meet your needs. So please, don't be reluctant to receive physical therapy if you need it!

## The current position of the nursing assistants

By Ha-neul Kim (2406)



“Nursing assistants help patients of all ages perform the most basic daily tasks. Since they have extensive daily contact with each patient, they play a key role in the lives of their patients and in keeping the nurse up to date on vital information about the patients' conditions.”

The need of nursing assistants is increasing due to the lack of nursing staff, COVID-19 and the commercialization of hospitals.

Meanwhile, medical accidents occurred due to the negligence of a nurse's assistant, such as plastic surgery, excessive bleeding, and death in 2016.

Let me explain about the difference between nurses and nursing assistants.

A nurse is a profession that specializes in understanding and applying the scientific method of nursing to individuals, families, and communities in a holistic manner.

On the other hand, nursing assistants assist

doctors and nurses in nursing.

While the Korean Medical Law defines only nurses as medical personnel and licenses are issued only to them and, nursing assistants can get certificates that only care for nursing and medical support.

Nursing assistants are not recognized as medical personnel, and the distinction between nurses and nursing assistants is ambiguous, even though they cannot perform medical activities. For the safety and health of the people, I think we need to come up with a clear distinction and concrete measures

## Moral life: Lesson from the *Shepherd Boy's* lies

By Jae-rim Yoon (1519)



“Norms, or rules are devices in which we can mutually benefit by protecting myself in social relationships without harming others. By keeping these we can keep our social relationships good.”

**M**an is a social animal, and goes through the socialization process to belong to that society.

Socialization means creating an environment in which a human being can learn the language of the community, the way of thinking, the history, the lifestyle necessary for survival and development within the community, and the moral norms that regulate relationships with other members. In the definition of socialization, the word I want you to notice is ‘moral’. When you look at all human relationships, morality, especially faith, is the basis. Therefore, I think that destroying faith is to move away from socialization. Lying is its representative.

For example, there is a fairy tale called *The Shepherd Boy and The Wolf*. If you lie, you will be blinded by immediate interests and will tell a lie again. And if you repeat them, there will be an error in your words one day and eventually will return negatively to you. Such acts of betraying faith, such as lies, would fail the social relationship with the other party, and you would then be expelled from society. Just as a shepherd boy can't defeat a wolf alone, a person exiled from society cannot live alone.

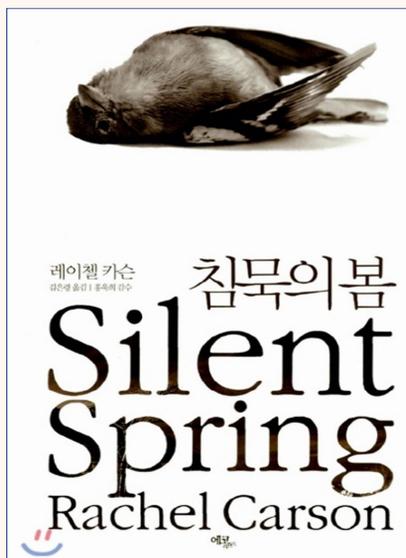
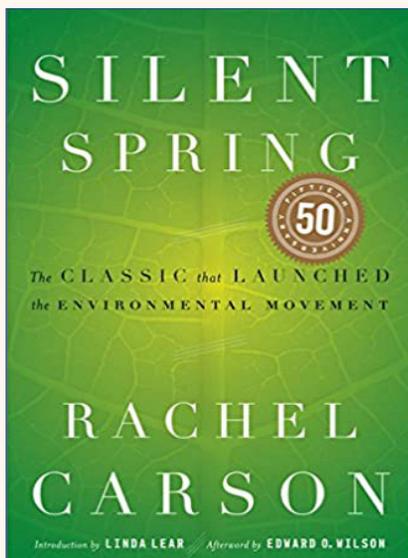
To prevent this, we should not do things that hinder the maintenance of our smooth social relationships. To this end, one must pay attention to the word “norm” in the definition

of socialization. Norms, or rules and laws, are devices in which we can mutually benefit by protecting ourselves in social relationships without harming others. By keeping these we can keep our social relationships good.

Writing this article, I realized that a moral life is difficult but important. Even if it seems like a losing game right away, it's not like that at all for the future. I hope that we will behave and think morally and keep order well so that we will not be left out of society through easygoing or self-indulgent social relations.

## Have you read the book titled *Silent Spring*?

By Yeon-hee Park (1310)



“ In 1958, a friend of Carson's wrote to *The Boston Herald*, describing the death of birds on her property after the area was sprayed with DDT to kill mosquitoes. She sent a copy of the letter to Carson, inspiring her to study environmental issues associated with chemical pesticides.

**A** letter from a friend of hers made Rachel Carson, the author of the book, examine the use of pesticides and their dangers.

She explained how environmental pollution begins and how it affects the creatures and environment by revealing the complexity of environmental problems and the destruction of wildlife through indiscriminate use of pesticides.

The book raises awareness of environmental pollution by showing that the excessive use of chemicals can cause

enormous confusion in the ecosystem.

But do you know that this silent spring may soon become our reality?

In fact, it may cause bigger problems.

According to some studies, there are viruses that have never spread into the air in glaciers. However, because of global warming, as the glaciers melt, the viruses can be exposed to the air and it can cause a serious disease to mankind.

Also, due to the expansion of tropical regions caused by global warming, diseases

that used to exist in only a few regions can move, evolve, and cause genetic mutations.

In the worst case scenario, the viruses that we've never experienced before can appear, and the bacteria that have been co-existing with humans can turn into pathogens because of climate change.

I thought maybe this Covid 19 that we're going through is a warning that informs the beginning of a second silent spring.

Environmental pollution is no longer

limited to natural problems where Arctic ice melts and polar bears have no place to stand on.

If we don't change, mankind will have no choice but to face a tragic scenario of climate disaster.

Why don't we change the environment around us before we go through the silent earth?

## The reasons why we should learn Spanish

By Joon-hwan Seol (1311)

Hello, My name is Joonhwan Seol. I'm in the first grade of Hankook Sahmyook High School. Today, I'll introduce the benefits of learning Spanish. First, let me tell you briefly about Spanish. Spanish is the 2nd most spoken language next to Chinese. In more than 30 countries, 460 million people speak Spanish as a first language. Today, in the 21st century, we are living in the era of globalization. We have a lot of trades with countries from all over the world. South Korea is one of the countries most dependent on export trade and you'll certainly doubt the association between our economy and Spanish.

South American countries have a bright future outlook. Have you ever heard of lithium? Yeah, that's exactly what you think it is. Lithium is gaining more attention in the 21st century. The background of lithium's gaining more attention in the 21st century is the rise of secondary batteries. It is widely used in portable electronic devices such as laptops and mobile phones, and commercially available batteries of A. A size are commonly used as primary batteries. It's really economical and eco-friendly. According to the recent US Geological Survey, the global lithium mineral reserves is 9 million M/T (metric tons) in Bolivia, 7.5 million M/T in Chile, 2.5 million M/T in Argentina, and these countries are sometimes called lithium triangles. POSCO (Pohang Iron and Steel Company) tried to build an industrial lithium production factory in the South America. and they did it in February, 2020. This production factory will be located in Pozuelos Salt Lake. This factory will produce more than 2,500 tons of high-purity lithium for secondary batteries per year and supply them to domestic and

**“Spanish is the second most spoken language next to Chinese. In more than 30 countries, 460 million people speak Spanish as a first language.”**

foreign manufacturers that produce cathode materials for automobile batteries.

South America has more future industries in addition to lithium. Also, the average minimum wages are much cheaper.

2020 minimum wage of Latin America (including Bolivia, Argentina, México, Perú.. etc) is 246 U.S dollars, and by comparison, the average minimum wages of Latin America was cheaper than minimum wages of China (328 U.S dollars). Our global major companies, Samsung, Hyundai and KIA, built a lot of factories in South and Central America. and they will expand or construct more factories in South America.

Lastly, let me introduce some tips to learn Spanish interestingly and effectively. Tips that I got through having lived in Paraguay for 2 years is that before you start learning any language, you have to remember the phrase “¿Cómo se dice ~ en español? This phrase means “How to say ~ in Spanish.” I think this phrase is absolutely more important than other things in learning a language. “I'm not going to introduce ways to learn Spanish fast because you can't learn a language in the short term. If you have already decided



to learn Spanish, use this way to learn it. It's quite simple. Just take any note and one pen, and bring them wherever you go. First, write any words you hear in your common life, such as the pastor's sermon or common conversation among friends. Second, look into these words in the Spanish dictionary. Finally, memorize those words.

Next, I will introduce some tips from our school's Spanish teacher, Mi-Kyung Hong. Her tips to learn Spanish is fun. Take any Latin music that you like to listen to, such as *Despacito* and then search Korean translation on the internet. You can learn some vocabularies and grammars. Repeat these ways everyday and some day you'll speak Spanish more fluently than native Spanish speakers.

## Netflix, a language content platform

By Ye-rim Kwak (2101)

What media do you think shows common English language in everyday life like slang? Maybe it's a drama or a movie. So when people want to improve their daily English conversation, they study the language through movies and dramas. This has always been a well-known method. However, the lines pass by in no time, and the idiomatic expressions are confusing.

That's why beginners give up easily. However, Netflix solves all these problems. To be exact, if you use a program called “Language Learning with Netflix.” This program not only allows you to see English subtitles and Korean subtitles at the same time, but also makes it possible to see the subtitles that passed at high speed again. The advantage of this program is that it is convenient for users to manipulate.

Like this, users can change the type of translation they wish to learn. The program offers two types of translation: machine and human translation. “Machine Translation” translates English as it is, so you can understand the structure of English. “Human translation” is very useful for English conversation because it accurately interprets idioms and expressions.

There is a saying that people who make efforts cannot beat people who enjoy. Why don't you enjoy studying English with Netflix? It offers a variety of languages besides English. Try it now.



## UNESCO supports schools in East Timor

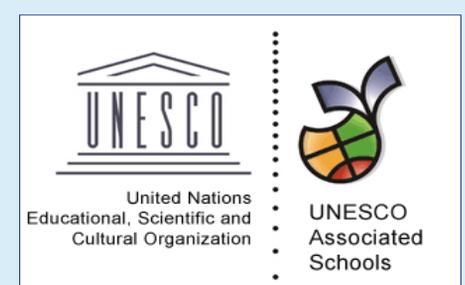
By Ye-rim Dan (2103)

The Korean government joined hands with UNESCO to support remote education for students in East Timor who are unable to go to school due to a new coronavirus infection. KOICA (Chairman Lee Mi-kyung) announced on the 19th that it signed a business agreement with UNESCO online for cooperation in the remote education business in East Timor.

East Timor declared a state of national emergency in March to prevent the spread of Corona 19, and so far, most schools have been closed or opened every other week, so education has not been properly conducted.

The local education ministry provides remote education through TV for students in the basic curriculum (1st to 9th grade), but the educational effect was not significant due to poor TV educational content and poor remote guidance by teachers.

After understanding the situation, KOICA and UNESCO decided to develop contents for science education and broadcasting for students and teachers for remote TV education. The plan is to produce and transmit educational broadcasts for 90,000 students in the seventh and ninth grades.



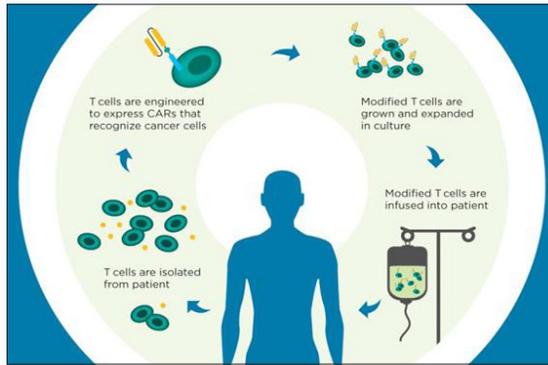
In addition, some 8,000 teachers will be trained on remote maps. The project is part of the Korean government's “Development Cooperation Initiative for a Safe World Together,” which was pushed by KOICA's “ABC Program,” including support for vulnerable countries in health and medical services, strengthening the ability to manage infectious diseases in developing countries, and strengthening global solidarity to utilize Korean experiences. KOICA and UNESCO previously worked together to develop East Timor's math and science curriculum from 2014 to 2017. It is planning to use the contents of science education developed at this time for this remote education.

## Rising 'bio-pharmaceuticals', new trends!

By Seo-yoon Lee (2415)

**B**io pharmaceuticals leading the healthy future!  
What kinds of 'bio-pharmaceuticals' are there?

A bio-pharmaceutical (biological or biologic), which consists of sugars, proteins, nucleic acids, living cells, or tissues, is a medicinal product manufactured in extracted or semi-synthesized from biological sources like humans, animals, or micro-organisms. There are six main types of bio-pharmaceuticals: biological preparation (containing substances derived from living things or produced by using living things, such as vaccines), gene recombination medicine (a drug that is made of peptide or protein made using gene manipulation technology, contains antibodies, peptides, or protein medicines, etc.), gene medicines (changes the wrong gene to normal or uses a gene that is therapeutic), cell therapy, biosimilar (a biomedical drug that has already been approved for manufacturing or imported items and has proven to be of equal quality and clinical and clinical comparison), and bio-better (drugs recognized by the head of the Ministry of Food and Drug Safety as having improved safety, efficacy, or usefulness compared to those already licensed bio-pharmaceuticals or as progressive in medical technology).

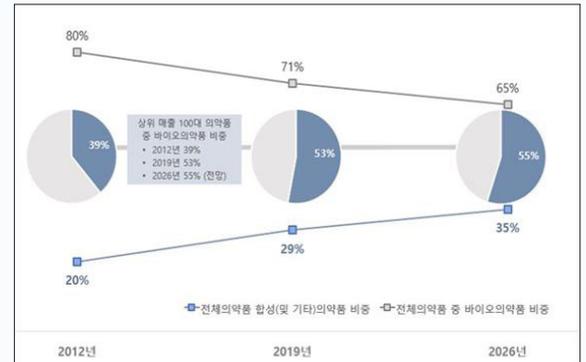


▶ Cell therapy method for re-injecting the body

### Global bio-pharmaceuticals Outlook, National Assembly Enacts 'High-tech Bio-Medical Act'

The proportion of bio-pharmaceuticals among the top 100 drugs in the world's sales is increasing.

Experts say that the proportion of bio-medicine sales is currently steadily increasing, and the global market for bio-medicine is expected to continue to expand in the future. In addition, the "High-tech Regeneration Bio Act" was implemented in the National Assembly of Korea on August 28, 2020. In addition, the "High-tech Regeneration Bio Act" was implemented in the National Assembly of Korea on August 28, 2020. This law includes activating clinical research on regenerative medicine, expanding



treatment opportunities for rare and incurable diseases, and establishing a rapid licensing system for the characteristics of advanced bio-medicine, and a full-cycle safety management system for long-term follow-up.

Bio-pharmaceuticals are very promising for disease control and prevention due to their characteristics and multiple advantages over traditional drugs. Many novel bio-pharmaceuticals are being developed and may be applied for clinical application in the near future, though some scientific and regulatory issues are still unsolved. Experts expect research works including the discovery, production, applications, prospects, and challenges of bio-pharmaceuticals to gain the fruitful outcome and have a great impact over the humans.

## Problems of genetic research and their solutions

By Da-hyun Yoon (2413)



**C**urrently, our society is aging rapidly, has a higher interest and understanding of individual health than ever before, and public interest and demand for personalized healthcare and customized medicine is increasing.

From the existing medical level, genetic testing was conducted for diagnosis or treatment of patients with symptoms or suspected diseases, so it was operated within existing medical regulations and systems were well established. However, the fundamental goal of the pursuit of tailored pharmacology is to conduct genetic tests on 'healthy' people as a pre-emptive medical practice through disease prediction or genetic testing. This is a new field that has never been encountered in most countries, and various challenges arise. Let me tell you about them.

First of all, we face the challenge of genetic discrimination, genetic determinism, and genetic stigma caused by abuse of genetic testing. An example is genetic discrimination against insurance subscriptions. Insurance companies will try to use genetic information to obtain 'customers' genetic information. Assuming that there is a 50 percent chance of cancer in the future, the insurance company will set the premium much higher than it is today. What is important in working relationships is not the disease that is already present, but the risk of getting it. In principle, a user may be required to undergo a medical examination before signing a labor contract under the Labor Law. However, health examinations for employment are aimed at identifying current health conditions. Thus, denial of employment by genetic

“ *No matter how good technology development and social changes are, they can never grow or develop significantly without the right perception, understanding, and interest of the public.* ”

information intended for the purpose of future diseases or risks cannot be justified.

Secondly, the majority of people think that the most sensitive issue in genetic information is the subject and possession of genetic information. There are many disagreements over whether this should be viewed as medical information or personal information. Limiting and preventing this from being seen as medical information and becoming available to the general public can be a matter of depriving them of their right to know about their information legally. Furthermore, it also raises discussions about the definition of disease and health.

To solve these problems, an education system consisting of experts from all walks of life must first be constructed. It should also be considered to create a re-education system for experts who can consult as well as the existing medical and scientific communities so that they can make the most of their existing manpower and systems. Old-fashioned systems, regulations, and exclusivism approaches to specific groups are a form of cultural lag in that they cannot keep up with technological development and social changes in the genetic field.

Moreover, the most important thing before new technologies and industries that revolutionize the world occur is the public's understanding and awareness of the changes. No matter how good technology development and social changes are, they can never grow or develop significantly without the right perception, understanding, and interest of the public.