

## Reading Future Connect 1

### Unit 1. A City on Mars

Elon Musk is the imaginative, internationally famous CEO of Tesla. He runs both Tesla and Space X and simultaneously pursues innovation and the development of future societies. Space X, one of the five businesses operated by Elon Musk, is a private aerospace company that aims to send humans to Mars, thereby creating a new home.

Unlike Mercury which is too close to the sun, and Jupiter which lacks sufficient mass, Mars is located at a reasonable distance from the heat of the sun and could be a potential home for humans. Mars is a planet that revolves just outside Earth's orbit and has the most similar environment to that of Earth. Like Earth, Mars's axis tilts 25.2 degrees to change the seasons, and the rotation period is 24 hours and 37 minutes.

Though thin, there is an atmosphere, and gravity which is weaker than that on Earth. The temperature of Mars drops to -140 degrees Celsius and the average temperature around the equator is -50 degrees Celsius. Mars's atmospheric pressure is only 0.6% of Earth's, and mostly consists of carbon dioxide, which is not a good environment for humans to live. However, it is possible to overcome these obstacles. To this end, scientists have been collecting information on the survival on Mars since the 1960s, and Space X succeeded in launching Falcon Heavy, a launch vehicle for transporting materials to build structures on Mars.

Elon Musk announced plans to launch unmanned spacecraft to Mars every two years starting from 2018, and set a goal of sending humans to Mars in 2025. He said that the goal is to send the first probe to Mars by 2018 and build the first space colony in 2024. Musk's goal is 6 years ahead of NASA's plan to send manned explorers to Mars by 2030.

At the heart of the plan is the Interplanetary Transport System (ITS), which Space X is developing. Space X plans to build the ITS, a rocket equipped with 42 engines that are 4 times as powerful as conventional rockets, which can transport 100 people or 100 tons of cargo. The rocket can reach Mars in about three months, and Space X plans to build a total of 1,000 spaceships and send 100 passengers to Mars every 26 months. The ultimate goal is to establish a city in which a million people live self-sufficiently.

## Unit 2. What to Wear

The official garment of Muslim women is the hijab. The hijab refers to the cloth women wear to cover their heads when they go outside. The chador, on the other hand, is a garment that covers one from head to toe. It is worn by many Arab women. The niqab covers everything except for the eyes. It is widely used by women in Pakistan and Morocco. The biggest garment worn by Muslim women is called the burqa. It covers the neck, head, and face. There is a slit for the eyes but even that is covered by a veil.

There are a few reasons why women wear these garments. First, the Middle Eastern deserts are so hot that women cover their skin to protect it from the sun. The second reason is a religious one. According to the Koran, men and women should not expose any skin and must wear conservative clothes. The garments are also used by women to avoid contact with men who are not their husbands, and hide their bodies from view.

In recent years, these garments have become fashion items. Some famous fashion brands have started to manufacture and sell their own line of hijab.

Although Muslim women are required to wear these traditional garments, some countries ban these clothes. In 2011, the French government banned burqas from public spaces. However, some women make the decision to wear the hijab for religious reasons. On the other hand, some women are taught to wear the hijab from an early age without any say in the matter. There are also women who wish to take off the hijab but cannot do so because of societal pressures of Muslim communities. As such, the clothes that Muslim women wear have become controversial not just in Muslim communities but all over the world.

## Unit 3. A Place to Relax

The Dragon Hill Spa & Resort is an enormous spa resort located in the downtown area of Yongsan, Seoul. There is an outdoor pool on the first floor for guests to enjoy swimming and sunbathing.

At the Royal Orchid Spa, guests can enjoy massages, acupuncture, meridian massage etc. There's also a fitness center for exercise as well as a screen golf center.

Because the resort is popular with families, there are many areas dedicated to entertaining children. A well-equipped arcade room offers the latest games in a variety of genres such as board games, sports, action, and racing. In addition, a state-of-the-art karaoke room provides kids a space to enjoy themselves.

If at any time the guests feel hungry, they can dine at a Korean restaurant. They can also enjoy cold beverages and snacks after a day sweating at the spa.

For the convenience of the numerous foreign guests, all of the resort's signs are also written in English, Chinese, and Japanese. This ensures a comfortable 24-hour experience for all guests.

Korean spas have recently become popular in other countries as well. A 24-hour Korean spa in Koreatown in the U.S. has gained the attention of guests who visit to enjoy a variety of facilities including a large swimming pool, facial massages, and 24-hour food court and resting areas. Although the entrance fee is a bit expensive at around 25 to 40 US dollars per person, it's still quite popular.

Korean spas are popular not only in U.S., but also Germany. In Bad Soden, a city near Frankfurt, a new Korean spa has brought with it a yellow ochre room and charcoal room, and many other themed rooms. The spa is known to be quite popular with the locals.

## Unit 4. Colors for Brides

When one thinks of a wedding, a snow-white wedding dress comes to mind. But when did we start wearing wedding dresses? It all started in ancient Greece. Brides during those times wore a yellow dress and veil called the flammeum.

In the Middle Ages, the colors of dresses diversified and white dresses were exclusively worn by Christians. Because of this, white dresses became synonymous with purity and obedience. This symbolic meaning has been passed down into modern times where we associate brides with purity and obedience.

The first official record of a white wedding dress dates back to the 15<sup>th</sup> century England when Princess Philippa wore a white silk cape and dress. After 16<sup>th</sup> century, European brides began to wear white as a symbol of virginity.

However, the color of wedding dresses varies by country. In the case of China, brides do not wear white wedding dresses. This is due to a superstition that wearing white will lead to divorce. Instead, brides and grooms wear red because reds symbolize luck in Chinese culture. They even wear red accessories in their hair. In India, women wear red saris as they also believe that the color red brings good fortune. In the case of Ghana, brides wear traditional garments that are a mixture of bright yellow, green and red.

In Korea, western garments were introduced during the Japanese Annexation. During that era, grooms would wear a tail-coat and brides would wear white skirts and vests in a western-style ceremony. Traditional Korean wedding ceremonies were banned during the annexation. Following the ban and the beginning of the Saemaul Movement<sup>1</sup>, the majority of Korean traditional wedding ceremonies disappeared. Western-style weddings became the norm and traditional garments were no longer worn during the ceremony.

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<sup>1</sup> a political initiative launched on April 22, 1970 by South Korean president to modernize the rural South Korean economy

## Unit 5. Robots That Look Like Animals

The biological characteristics of animals that have evolved to adapt in nature is being actively implemented in the development of robots. This is because scientists have taken a great interest in robots that can mimic living organisms.

The stingray robot can float in water without an internal engine. Its components are similar to that have real stingray with a speed of 2.5mm/sec. Its movement can also be controlled by touching its wing.

The lizard robot can climb up walls that are made of slippery surfaces such as metal, marble, and glass. It was designed so that its legs can stick to such surfaces and it climbs upwards.

There is even a robot that is a hybrid of the cockroach and the bird. It can move like a cockroach and then use its wings to fly when met with obstacles on the ground.

The crab-shaped robot called the Crabster CR200 is a multi-jointed robot that can walk and swim in the water. It is equipped with an ultrasonic camera and can navigate even in murky waters.

The humanoid robot DURUS can walk like a human by placing its heel on the ground first and then pushing out with its toes. It is modeled after real humans such that it possesses a very natural and fast-paced walk.

The robot fish called MIRO is designed to resemble a sea bream. It can swim for up to 22 hours with its lithium ion battery. Scientists are planning to upgrade the robot with communication and camera functions so that can be an intelligent robot. It is expected to be used in swimming pools, aquariums, and science exhibits. Because of its international popularity, it is also expected to be placed in global theme parks or aquariums.

## Unit 6. Kinds of Coral

You've probably seen the colorful coral in pictures of the ocean. But have you ever wondered what exactly coral is? Is it a plant or an animal? Coral are a breed inside the class of cnidaria<sup>2</sup> that has existed on earth for a very long time. It possesses no sensory and internal organs, or anus. However, it is made up of polyps that act as mouths and gastral cavity and lives on a diet of tiny sea creatures and plankton. In Greek, "polyp" means "many legs".

There are approximately 6,000 different kinds of coral in the world. In Korea, there are roughly 130 kinds. Although some kinds are mobile, most coral stay in one place.

Coral comprises of many little polyps like leaves on a tree. Sometimes, they live independently. Near the mouth of polyps, there are many tiny little tentacles that are used to hunt for food. Coral lives off of zooplankton, small fish, shrimp, and crabs. These little tentacles are closed during the day, but then open up during the night to wait for its prey. When prey comes in contact with the tentacles, the tentacles paralyze the prey using anemone<sup>3</sup>, and then the prey is eaten up by the mouth of the polyp and moved to the coelenteron, the central gastric cavity. The coelenteron then digests and absorbs the prey, and the leftover waste is excreted through the mouth.

Because the anemone's toxin is strong, it may cause a rash if you touch it. Although the coral feeds on little organisms, it also feeds off of zooxanthellae<sup>4</sup>. Corals usually rely on the zooxanthellae's ability to photosynthesize, which can only occur in clean ocean water.

Although corals only take up 0.1% of the ocean, roughly a quarter of all ocean creatures live in and around coral. In addition, the coral is a natural shield that protects ocean shores from hurricanes and tsunamis.

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<sup>2</sup> a phylum under Kingdom Animalia containing over 11,000 species of animals found in aquatic environments

<sup>3</sup> a garden plant with flowers

<sup>4</sup> single-celled algae

## Unit 7. Giant Water Babies

Blue whales are known to be the largest animals in the world and are referred to as the great whale. If one were to look down upon one of these creatures swimming in the ocean, they would look bluish grey in color. They can grow to 33 meters in length and weigh roughly 179 tons. The whales have long slim figures and have U-shaped heads.

These whales can shoot water through their airholes as high as 10 to 15 meters, and only eat krill shrimp. Female whales are usually larger than their male counterparts, and are 23 to 27 meters in length while a baby whale is roughly 7 meters long and weighs 160 tons.

Since the late of the 19<sup>th</sup> century, many people witnessed a steep decrease in the number of whales due to the poaching, recent studies have shown that these whales are no longer endangered and are steadily increasing in number. It's been reported that there are an estimated 2,200 whales, which represents a similar number of whales that existed during 1990's.

Blue whales usually eat shellfish like krill. When krill are near, the whale opens wide and charges forward using the force of its tail. Blue whales can swim at speeds of 11 to 50km/h. When it hunts krill, it brakes to ensure that the krill neatly lands in its mouth.

Blue whales are also known to sing. At low ranges of 10 to 40hz, their voice is low and grand. By comparison, humans can only hear sounds as low as 20Hz. The whale's song is the loudest on Earth and can be heard from hundred of kilometers away. With the proper equipment, the whale's song can be heard from thousands of kilometers away.

In Canada, a blue whale's heart was preserved. The whale itself was 23 meters and 30 centimeters long while its heart alone weighed 181kg. It is said that the heart is so big that it could easily fit 3 grown men. In fact, it's roughly the size of a small car.

## Unit 8. Camel Humps

The camel is a mammal that lives in the deserts of western Asia and northern Africa. Camels are used as a means of transportation in deserts. Its shoulder reaches a height of 2 meters tall. The camel weighs 250 to 680kg. Its feet and neck are very long, and it has two toes on each foot. The hoof grows on the front of its foot. It has no horns but possesses two layers of eyelashes to keep out the sand.

The camel has evolved to adapt to the desert environment. Because it is important to keep one's body as far away from the sand during summers where temperatures can go up to 70 degrees Celsius, camels have developed very long legs. Their long legs allow them to maintain a temperature that is roughly 10 degrees Celsius lower than the sandy ground. In addition, camels have developed flat feet, making it easier to walk on sand.

The camel also has strong and firm muscles in its legs that enable it to move heavy loads across the desert. It has pads on its knees that support it when it walks or sits. In addition, the camel uses its thick coat to reflect sunlight and blocks the heat that radiates up from the sand below.

The camel's large forehead droops down and shades its eyes from the sun. Its tear ducts keep the eyes moist and prevent it from drying out.

The most interesting characteristic of the camel is its hump. People assume that it is filled with water, but it is actually filled with fat. Because the camel cannot keep a consistent diet in the desert, it stores the nutrients of its meals in its hump and carries it around. The fat that is stored in its back can even be turned into water when mixed with oxygen. A camel that hasn't eaten for a long time has a shrunken hump and may even have indentations.



## Unit 9. Skiing on the Moon

The moon is the closest celestial body to the Earth. It is located roughly 384,400 km from Earth. The moon does not shine on its own. Because it shines based on the sunlight it reflects off of its surface, the shape of the moon looks different depending on the location of the sun, moon, and Earth.

The first time a manned spacecraft landed on the moon was when Apollo 11 landed successfully in July 1969. Neil Armstrong became the first person to set foot on the moon, thus symbolizing a big step forward for mankind.

Neil Armstrong said that gravity was no problem when he was walking around the surface of the moon where the gravity is only one-sixth of Earth. He also stated that it is much more comfortable walking on the moon than it was during his training. He also said that the moon's surface looked 'bright and looks like a powder.'

The astronauts who landed on the moon moved as if they were swimming, moving in a large semicircle. Each time their feet reached the ground, dust rose around them. Their footprints remained clear as if they had stepped in wet cement.

Dr. Harrison Jack Schmitt, who went on a lunar exploration in 1972 on Apollo 17, said:

"When I landed on the moon, I was able to walk faster than others on the lunar surface of the moon because of the skiing I had learned in Norway during my childhood."

"So anybody going to the moon in the future will have to take skiing lessons."

He also said that anyone would be able to move up to 10 miles per hour if they had learned to ski properly. Although astronauts don't need to wear skis on their feet, he recommended using ski poles for balance.

## Unit 10. Two Board Sports

Skiing and snowboarding are two of the most popular winter sports. These two sports are made possible by underlying scientific principles.

Skis slide and stop through the adjustment of friction and gravity. Gravity pulls the object to the center of the Earth, making it easier to move on slanted slopes while making one immobile on flat surfaces. One way to reduce friction is to apply pressure on the skis, which creates pressure and friction heat. This reduces the friction as the snow melts. It is also necessary to increase the frictional force appropriately by performing a turning motion at the right moment. When turning, you can lean in one direction and let the snowboard's edge dig into the snow.

There are also summer sports that are actually based on scientific principles. Surfing is a sport where surfers ride incoming waves. Surfers often ride inside the curve of a wave that is commonly known as a “tube” wave.

Surfing requires a high level of balancing and swimming skills. Typically, surfers will use both arms to balance on top of their boards. Weaving in and out of the waves while balancing on the board and paddling with your hands while lying down is very important.

The scientific principle in surfing lies in the use of using the crest and trough of the waves. The crest refers to the highest point of a wave, while the trough refers to the lowest point. When the surf board comes down on a wave, the potential energy turns into kinetic energy, allowing the surfboard to move faster. It is actually easier to balance on the board when moving at a fast speed than when it is stationary. To prevent the board from slowing down, surfers spread wax on the bottom of their boards to reduce the friction between the water and the board.

## Unit 11. Soccer Tennis

Soccer tennis is a game in which two teams use the head and feet only to pass the ball to the opposing team. Players are allowed to touch the ball with any part of their body except for their arms and hands. They are not allowed to touch the net, if they do, the opponent team is awarded a point.

Soccer tennis is a fun game where the players can use their entire body, and can be played in a relatively tight space without any other equipment or clothes.

The rules are simple: once the judge gives the signal, the game begins within 5 seconds within the service area without any bounds. Serve rotations occur in clockwise direction. The ball can fall on the floor of the court or come in contact with a player for a maximum of 3 times each. Defense and offense occur at any area of the court and points are gained and lost when the ball goes out of boundaries, the ball touches a teammate before it is passed to the opponents' side, the ball gets caught in the net, or the ball falls outside of the opponent's court boundaries.

Players can only use their head and legs, and cannot claim balls that have rebounded after hitting the net. However, if the players catch the ball before it hits the floor, it is considered as a save. If the ball hits the net, rebounds and hits the floor, it is called a "two bound" and the team loses a point.

The preliminary rounds and semifinals consist of 1 game, best 2 out of 3. The final rounds consist of 1 round, best 3 out of 5, where the first team to reach 15 points by a margin of 2 points wins. The maximum number of points per set is 19.

## Unit 12. Tennis Sisters

Let's take a look at the siblings of the tennis. These siblings rely on each other for moral support and motivation because they are athletes of the same sport.

First of all, there are the famous Williams sisters. Serena and Venus Williams are both top athletes, and it's difficult to find tennis players that could rival the skill of these two.

In an ESPN survey that asked people to vote for the best black athlete, Serena and Venus ranked 6<sup>th</sup> and 15<sup>th</sup> respectively. The two have done immensely well for themselves in the past few years. Serena won the Grand Slam Open in Australia, beating her sister Venus on the way to the top.

Despite being 38 years old, Venus has done incredibly well, ranking 5<sup>th</sup> in the world after 2011. Although she didn't place first last year, she still came in second place at Australian Open, Wimbledon, and the WTA finals. If Venus wins next season, she will be in the top 3 oldest athletes to achieve such a winning record.

In South Korea, the brothers Jung Hong and Jung Hyun are star tennis players. Their father is a tennis coach and so their introduction to tennis was only natural. Jung Hong, the older brother, was an excellent junior tennis player and a star hopeful in Korean tennis. He was the youngest player to be in the quarter-finals in 2011.

Jung Hyun has renewed his personal record this year is considered a top contender in the international sport of tennis. He currently ranks number one and is the 2017 Next Generation ATP Finals Champion. It is surprising to note that his parents were initially unsupportive of Jung Hyun's desire to become a tennis player. However, his decision to eventually become a tennis player was due to his health problems. He was born with amblyopia and missed the opportunity to treat it early on. As his condition deteriorated, he decided to immerse himself in the world of tennis where the courts and balls being green meant that they had a lesser impact on his eyes than studying in school. Because of this, his parents gave in and allowed him to pursue a career in tennis.

## Unit 13. Thought Hackers

Neuroscience is a study of all nervous systems, including the brain. It is a study that focuses on identifying how we perceive and experience the external environment, how we interact with others, and so on. Neuroscience is closely related to genetics, physiology, pharmacology, and pathology, and it is actually helped by other disciplines such as psychology, computer science, statistics, medicine, and philosophy.

Techniques used by neuroscientists are developing rapidly, and scientists have started research on neural networks in recent years.

The brain controls most movements and behaviors, and maintains homeostasis in the body. The brain controls the functions of all organs through the use of roughly 100 billion nerve cells constantly exchanging information. It is also responsible for the complex mental activities of humans, such as thinking, remembering, and imagining. In other words, it regulates heartbeat, blood pressure, blood concentration, and body temperature, and is responsible for cognition, emotion, memory, and learning.

Recently, researchers at one medical university in the Netherlands developed a device to control a tablet PC by inserting a device into the brain. Without lifting a finger, one can write on a tablet using the chip implanted which transmits brainwave signals from the brain to the tablet.

In addition, in the United States, scientists used an electroencephalography (EEG) cap equipped with an electrode to successfully control flight only using thoughts. These devices are still in the early stages of development, but they are expected to grow into new industries in the future.

By further developing this technology, neuroscientists will be able to analyze people's memories, thoughts, and dreams. These memories and experiences can then be retrieved at any time. In other words, using implantable chip system means expanding your thinking and memory capacity like a computer.

## Unit 14. From Hobby to Job

Some people have hobbies that develop into their full-time jobs.

Let's look at the example of boardgame otaku (a Japanese word that refers to a young person who is obsessed with a particular aspects of popular culture, and lacks social skills) Kim Gun-Hee. He says that he enjoys his life of work-play. Because of his great love for boardgames, he quit his job and started creating boardgames full-time.

He has loved board games since he was a child, and has enjoyed buying foreign board games since then. His collection consists of about 1,000 board games. After that, he began making board games as a hobby. In 2003, he made a board game developer meeting, received feedback, and has been a professional boardgame maker for the past four years.

He said that he loves the fact that his hobby is now his job. He notes that he would've enjoyed the work even without the pay but that's even more enjoyable because he can make money from it. He is now able to spend more time doing his hobby now that his hobby is his job. His advice to others is to think about ways to turn one's passion into a job.

Bae Yong Tae is a pop-up book collector used to be a young man who liked to read books. He is a poet, a book collector, and operates a store that sells collected items. He mainly collects pop-up books. He said he started to collect pop-up books after buying a Cinderella pop-up book during his trip to Japan. He gained information and knowledge about collecting books in a variety of ways.

He compiles information about rare books and offers customers products that are best suited for them. His collection is a way of satisfying both his own personal satisfaction as well as his customer's desire for collecting. Although collecting is costly and can lead to loss of profit, he says that discovering long-awaited products is his greatest joy. He says that as long as both he and his customers can find joy in collecting, his job will continue.

## Unit 15. Flight Camp

Between May and June every year, a Korean aerospace academy operates a weekend aerospace camp for young people living in the Seoul and Gyeonggi province. This one-day aerospace camp offers a similar experience to the boarding-school style camp offered during summer and winter breaks. This program allows students to experience a variety of jobs in the field of aerospace such as being a pilot or an air traffic controller.

The curriculum consists of three courses: 'Flight Simulation Theory and Practice', 'Air Traffic Control Theory and Practice', and 'Hybrid Rocket Production and Practice.' Students learn basic knowledge, experience air traffic controller work, and develop a dream to become active in the field of aerospace. Starting in 2018, more professional training will be conducted with the help of small rocket manufacturers. In addition, career counseling will be provided by the admission team of the airline and current students.

The camp is divided into programs for elementary, middle, and high school levels. For elementary school students, programs such as flight principles, rocket principles and production, and the use of 3D printers in the aerospace sector were conducted on the first day. On the second day, aeronautical museum tours, flight simulation exercises, and drones and hovering take place.

In the case of the middle school program, group activities include glider creation contests, and CanSat theory and practice. This is followed by aerospace museum tours and mock control exercises.

Lastly, the high school program consists of mock flight control training, flight simulation training, air maintenance exercise training, hybrid rocket production and launch experience.

## Unit 16. Can You Do It?

All children want to mimic the actions of their mother. When the mother uses the vacuum cleaner, the child wants to try too, and if she cooks the child wants to cook. too. Children are said to develop self-consciousness when they copy what adults do. The psychology of a child who wants to do housework is also a stage of learning.

If a mother let her child do some of the housework, she can clean faster, and the child can discover new pleasure in cleaning. In fact, *The Wall Street Journal* reported that a child who does a lot of housework like cleaning and errands since childhood is able to develop into a well-rounded adult. The sooner a child works, the sooner they are likely to develop insight, responsibility, and self-confidence.

But the important thing is that the household work that a child can do differs by age.

If the child is at a stage where they can walk, they can throw their diaper away directly into the trash bin. They can also learn to organize their cluttered toys.

Also, putting washed clothes in the closet can be a form of play. The same can be said of learning to numbers by counting out the number of cups and spoons as they set the table.

As the child grows older, the number of household chores increases. If there is a pet, the child learns to give it water and food, tidy up the bedroom, and help with grocery shopping. When they become an elementary student, a child can wash the windows, clean the bathroom, organize closets, and mow the lawn.