

## **Reading Future Change 1**

### **Unit 1. Hyperloop**

The Hyperloop is a type of vacuum-tube train conceptualized by Tesla CEO Elon Musk. The idea behind the Hyperloop is that it connects its departure location and destination with a vacuum tube, which will carry a capsule at a speed of 1,280 kilometers per hour. However, due to its high speeds, Hyperloop occupants must be able to withstand higher gravitational pressures because the train runs at near-to the speed of sound.

Musk estimates one capsule will be able to carry approximately 28 passengers. Despite that small number, the train will be able to transport a lot of people because it is capable of making many trips at a rapid pace. Thus, it predicted that 15 million passengers will one day be able to travel on it annually.

It is an environmentally friendly transportation method which involves the use of solar energy. Solar panels installed on the roof of the Hyperloop would create enough power to run the entire system in an eco-friendly manner.

Musk said to build the Hyperloop route would cost around \$11.5 million dollars per mile. This may sound like a lot, but it is actually cheaper than alternative project proposed, a high-speed rail system, which is projected to cost close to 68 billion dollars.

Hyperloop is a project ready to launch—Musk has already created full-scale test tracks, and is under contract to build an 18 mile link between O'Hare Airport and the city of Chicago.

Korea is also developing its own unique hyperloop by combining self-propulsion methods and vacuum compression technologies. They have since run a successful test, with speeds reaching 700 kilometers per hour, leading the rest of the world in terms of technology. If the Korean Hyperloop is successful at its goal of 1,200 kilometers per hour, it will be four times faster than the 300 kilometers per hour KTX, and will reach Busan from Seoul in just 16 minutes. If hyperloop commercialization is achieved within the next decade, a traffic revolution will take place in South Korea.

## Unit 2. City Animals

The largest species of the New World deer subfamily in North America is the moose. An adult moose weighs 840 - 1500 pounds and is around 4.5 to 7 feet tall. Moose are immediately recognizable by their broad antlers, which can span nearly 6 feet end to end. New-born baby moose, called calves, weigh in at 30 pounds and gain more than 300 pounds of weight in their first five months. The moose's average lifespan is 16 years.

Moose are mainly found in the swamps and woodlands of Northern Europe, Alaska, and Canada. However, they are notorious for wandering into large cities such as Anchorage and Fairbanks in Alaska. This is especially common during the winter because the animals are drawn out of the snowy forests in search of food. During the summer, they move around looking for food, but during winter, they try and move as little as possible to reserve energy for the winter.

North American ski resorts are another place to commonly see moose. It can be dangerous, as it is easy to bump into moose and there are also quite a few accidents involving deer.

Drivers should be cautious, especially at dusk and dawn, and slow down when they see deer crossing signs. It is important not to swerve too hard if a deer leaps out in front of your vehicle, as this may cause the vehicle to tip over and roll, causing serious injuries.

Due to the large number of moose and bear traipsing through the city of Anchorage, at the beginning of each year, a map detailing the population numbers of moose and bears' and their current habitat areas are published to alert residents. This is because they are coexisting with the wild animals; all hunting is prohibited in the city. Outside of the city, only the male may be hunted and only if the horn is of a certain, mature size.

Other animals to be cautious of in the city include: foxes, raccoons, coyotes, and skunks.

## Unit 3. The Chunnel

The English Channel, also called simply "the Channel" is a body of water between Britain and France; it is 563 kilometers long and 240 kilometers wide. The Strait of Dover, also known as the Dover Strait, is the narrowest part of the channel and represents the boundary between the Channel and the North Sea.

The Eurotunnel is an underwater tunnel that started being built in 1988. After much delay, it opened in 1994. The tunnel runs directly under the Strait of Dover, transporting people between Cheriton, in the United Kingdom, and Nord-Pas-de-Calais, in France. The Eurotunnel reduced transportation time across the channel from 90 minutes via ferry to just 35 minutes via shuttle train.

The name Channel Tunnel was combined and shortened to the nickname "Chunnel." Eurotunnel is the name of a private company responsible for the construction and maintenance of the Chunnel. After its completion in 1994, the governments of the U.K. and France handed over ownership to them.

The tunnel is 50 km long and is drilled at an average depth of 45 meters from the ocean floor. Two types of shuttles operate in the tunnel, one dedicated to passenger trains and the other used to carry cargo trucks or cars. Eurostar, French, high-speed railway, runs through the tunnel, making it possible to travel between London and Paris in three hours.

Recently, Britain's Foreign Minister has proposed building a bridge over the English Channel and French Prime Minister Mark Long is in agreement. Dover Strait is the best place for the bridge, as it is the shortest distance, but it is still a whopping 32 kilometers, which would make the proposed bridge the world's longest once constructed. However, many are arguing against the bridge, because it would interfere with one of the most frequent shipping routes in the world, so whether or not construction of the bridge will actually happen is uncertain.

## Unit 4. Manaus

Manaus is the capital city in the state of Amazonas, northwest of Brazil. The city is located in the middle of the Amazon rainforest; this rainforest is often called: 'the lungs of the world.' The growth of Manaus city was largely influenced by the British auto industry in 1890. As the demand for cars rose, the industry required more rubber supply for the wheels. As it happened, Manaus grew rubber trees. The period of 1879 to 1912 was known as the 'Amazon Rubber Boom,' during this time the city became extremely prosperous and even garnered the nickname 'Paris of the Tropics.'

After the boom, the economy saw some decline. Since then, Manaus has been designated a free trade zone (Zona Franca), making it possible for about 450 foreign companies to enter the market. As a result, Manaus was transformed into the largest industrial area in Brazil. Many mobile phone companies, like Nokia, LG Electronics and Samsung Electronics have manufacturing plants in Manaus' industrial park.

Samsung's plant has some 104 acres of land, 6,000 Brazilian employees, and 24 Korean employees. They make everything from basic home appliances, including TVs, and mobile phones.

LG Electronics currently ranks first in the Brazilian TV market with a 30 percent share, and 90 percent of basic home appliances such as LG Electronics' TVs and air conditioners are sold on Brazil's domestic market. LG Electronics also topped the list of Brazilian brands.

If you want to transport products from Manaus to other parts of Brazil, you have to use shipping or aviation, load the products into cargo containers, and take them along the Amazon River to northeastern Brazil.

Manaus is the largest city in the Amazon region, with a population of 2.1 million. It has a poor public education system, so many make use of private schools. Recently, the city hosted the 2014 FIFA World Cup; it was the most isolated city to ever host the event. With a tropical monsoon climate, the air is hot and humid. Winter is dry, and summer is very rainy. As the sea level is not high, and Manaus is located just below the equator, the average temperature, even in the evening, is about 40 degrees Celsius.

## Unit 5. The Science of Sleep

It has long been known that sleep is one of the most important aspects of good health. While scientists don't fully understand yet why it is essential, people who are deprived of proper, healthy amounts of sleep suffer from many ailments.

The longest recorded time a human has stayed awake is approximately 264 hours—just over 11 days. However, it is much sooner than this that the effects of sleep deprivation begin to show. Lack of sleep impairs our ability to make memories and therefore impairs our ability to learn. While one night without sleep may simply make you irritable and tired the next day, long-term sleep deprivation is dangerous and can cause mood swings, high blood pressure, heart disease, obesity, and diabetes.

There are five stages of sleep: 1, 2, 3, 4, and REM, or rapid eye movement sleep. These five stages represent one full cycle; one cycle takes approximately 90 to 110 minutes to complete.

Stage 1 is an extremely light sleep, during which you experience slow eye movements. Stage 1 sleep is easily disrupted by slight noises or motions. The body begins to relax and brain waves slow. 'Hypnic jerks,' or muscle spasms, sometimes occur during Stage 1 sleep.

During Stage 2 sleep, relaxation of both brain and body deepens. The body's temperature drops and the heart rate slows. Sleep deepens and you are less likely to be roused by noises or movements. The slow eye movements experienced during Stage 1 sleep stop.

Stage 3 sleep is when restorative work begins to happen, your body and brain start to replenish themselves. It is difficult to wake someone from Stage 3 sleep. If you are prone to sleepwalking, talking in your sleep, or night terrors, this is the stage in which they will occur.

Restoration continues during the REM stage. REM sleep is arguably the most important stage of sleep. It is also the period of sleep during which dreams happen. Over an 8 hour night's sleep, we usually experience 3 or 4 REM cycles. Both stage 3 and the REM stage are referred to as 'deep sleep' states and this is when both physical and mental restorative work takes place.

## Unit 6. Control Your Dreams

A lucid dream is a dream in which the dreamer realizes that he or she is dreaming. They can then take control of the dream and influence what happens.

During controlled dreams, the brain experiences increased 'gamma waves,' these sorts of brain waves are associated with consciousness. Scientists have studied lucid dreaming and have invented a headband which detects and enhances lucid dreaming. It focuses on increasing the frontal lobes' gamma activity, which is what enables the dreamer to take more control over their dreams.

The Lucid Dreamer headband wraps around your forehead at night. The headband uses data drawn from its built in electroencephalogram, (EEG), machine to detect the onset of a dream. An EEG measures the electrical activity in the brain; The Lucid Dreamer uses advanced algorithms drawn from the EEG to detect dreaming so that the next sequence of events to enable lucid dreaming can occur.

Once a dream is detected, the headband uses transcranial alternating current stimulation, (tACS), to enhance gamma waves. tACS delivers tiny electrical shocks to the frontal lobes using a current strength which is about 2000 times smaller than that used in electroshock therapy. For safety reasons, the amount and duration of tACS is limited to 5 continuous minutes up to a total of 20 minutes throughout the night. The band also applies light and audio stimulation.

The light, audio, and ACS lightly signals to the dreamer that a dream has begun, rousing enough consciousness in the dreamer that they can take control over the dream but not waking them enough to eject them from the sleeping.

One possible practical use of this lucid dreaming headband in the future is to practice skills. It is hypothesized that, given enough control during a dream, the dream should be able to do things such as dream-practice at a sport, public speaking, driving, and more.

## Unit 7. Sleeping Habits

Sleeping is a necessary activity for all living things. During sleep, our brain works to highlight experiences we've had when we are awake, we feel relaxed, and we subconsciously analyze and process events.

They say that if children are chronically sleep deprived before they become teenagers, as adults, they are less equipped to cope with daily stresses and changes in their lives.

Scientists have examined sleep patterns in children who were about to enter kindergarten, and published a study that suggested that children's sleep patterns can be used to predict their future adaptation to school. Adaptability means their capacity to listen to teachers, follow directions, show enthusiasm for learning, and control of impulses. If children do not get enough sleep, they find it difficult to do even simple tasks. That is how important and impactful sleep patterns and sufficient sleep time are to overall quality of life.

'World Sleep Day' happens every March. Its goal is to create awareness about the importance of sleep. The organization has published a list of seven rules for healthy sleep. The rules are as follows:

1. Keep a regular schedule: always go to sleep and wake up at the same times each night and day.
2. Avoid excessive sleep on the weekend.
3. Enjoy bright lights, especially sunlight, during the day and avoid light, particularly screens, at night.
4. Avoid excessive caffeine intake and alcohol.
5. Take a nap during the day if you feel sleepy.
6. Avoid late night exercise.
7. If you're having trouble sleeping, make sure you talk to your doctor.

Getting the proper amount of good quality sleep helps ensure you will live a happy, productive life.

## Unit 8. Testing Dreams

In 2007, Professor Björn Rasch published a study that found that smells associated with previous memories could stimulate the brain into reinforcing the memory during sleep.

For the experiment, one set of participants were asked to remember the location of an object, smell the rose in the process of remembering, and then sleep in the laboratory. Rasch then had the participants exposed to the smell of the rose again as they went into deep sleep.

For a control group, Rasch asked other participants remember the location of the object but did not have them smell the rose during the process.

The participants who smelled the rose better remembered the location of the object than the ones who did not; those with the best memory recall were the participants who smelled the rose during the waking memory creation, and then again during deep sleep. This study proves that scent has a powerful impact on the brain and can enforce and trigger memories.

It turns out that not only smells but also sounds can affect dreams and enhance memory. In another experiment, participants were shown a picture with a cat in the lower left corner and the kettle in the upper right corner. They then had participants sleep. During sleep, one set of participants were played a sound of a cat crying, and the other set were played the sound of a kettle boiling. When they woke, each set was better able to recall the location of the object for which the associated sound was played during sleep.

These selective memory enhancements are called targeted memory reactivations, and brain scientists are using these methods to conduct a variety of experiments to further test how dreams influence our waking lives.

## Unit 9. The First in Flight: The Wright Brothers

Wilbur and Orville Wright were the first American brothers to take flight in a powered plane. Prior to their invention, it was widely believed that creating such a flying machine was impossible due to the materials involved being so much heavier than air.

The brothers were born in Ohio in the United States. From childhood, the brothers showed a keen interest in inventing, playing with and disassembling things, researching how they worked. Their toys included gyroscopes, discarded sewing machines, and small, helicopter-shaped toys that operated using rubber bands.

The brothers, who did not finish high school, began studying aeronautics in 1899 and quickly became self-taught experts in the field. They collected information from many institutes, including the Smithsonian.

Their first step in creating a manned flying machine was to make a glider that could carry a person's weight. Strong headwinds were needed to test the glider, so they spent four years studying and experimenting on the windy Sandhill near North Carolina.

In 1900, they built a glider that was successful in supporting a man's weight, but it was difficult to maneuver. Wilbur, the older brother, observed birds flying in the sky, studied the birds for hours, and found that as they changed direction, their wings changed shape. By designing a pulley and cable system that changes the shape of a glider wing in a similar way, maneuvering was successful in their 1901 experiments. As a final step, the brothers added a lightweight engine to propel the aircraft forward. The engine was also designed and built by them.

They created the world's first powered plane, the 'Wright Flyer,' in 1903. The plane made its first flight on December 17 of that year. Although the flying time was a mere 12 seconds, and it traveled only 37 meters, the second and third gliders saw more success and started to gain attention for potential commercialization in the United States and Europe.

## Unit 10. Amelia Earhart

Amelia Earhart was an author and pilot. She was born in 1897 in Atchison, Kansas in the United States. Everyone commented that she possessed a precocious disposition from childhood. She received her first flight training from Neta Snook, a female pilot, in 1921, and became the 16<sup>th</sup> woman in the world to receive a pilot's license.

In 1932, Earhart made the first solo flight across the Atlantic Ocean, taking off from Newfoundland and landing in Ireland. In 1935, she was the first to fly solo across the Pacific, from Hawaii to California, a 2408-mile trip.. She also flew from Mexico to California non-stop. As she gained more attention for these daring flights, people nicknamed her "First Lady of the Sky" and "Lady Lindy," because she looked as though she could have been related to another famous American aviator, Charles Lindbergh.

Earhart was scheduled to make her next daring departure on May 21, 1937: a trip around the Earth following the equator. In 1937, she got on the plane named the 'Electra' with navigator, Fred Noonan, and crossed the Atlantic Ocean to reach New Guinea. They made it back to the 'Electra' for departure to their next destination but did not show up at their next scheduled stop, a small, uninhabited island in the middle of the Pacific.

After six hours of contact with the U.S. Coast Guard's ship 'Itasca,' the Electra vanished from the sky. A massive search of the South Pacific was made, but not even fragments of the plane were found. Two years later, in 1939, her death was assumed.

In 2018, *Time* magazine listed her disappearance in the "Top 6 Mysterious Airplane Disappearances in Aviation History." In 2017, a new theory was raised that Amelia hadn't died in a plane crash, but had been captured by the Japanese army. A black and white photo of a woman in the Marshall Islands with a shape and hairstyle similar to Earhart was discovered at a shoe store. However, this claim has yet to be proven.

To this day, people debate about the possible circumstances surrounding her unsolved death.

## Unit 11. Flying Around the World

After the Wright brothers achieved flight in 1903, humankind's next goal became to fly around the world.

Aptly titled 'First Flight Around the World,' in April 1924, 8th U.S. Army Air Service pilots and mechanics boarded four airplanes and left from Seattle, Washington. Their plan was to circumnavigate the globe by air. 175 days later, on September 28, two of the four planes had completed their journeys.

Each of the four planes was named after American cities: Seattle; Chicago; Boston; and New Orleans. Only Chicago and New Orleans were able to finish their flights. 24 days into the flight, Seattle crashed over Alaska due to dense fog. The crew survived, walking to the nearest town. Boston was forced to make an emergency landing in the Atlantic due to oil problems; there was an attempt to tow the plane into land for repairs; however, it sunk and was lost to the ocean. The crew survived and continued in another plane named the Boston II.

Despite losing two aircraft, the overall flight project was a success, and marked an important milestone in the 'Golden Age of Aviation.'

In 1933, Wiley Post was the first aviator to accomplish a solo flight around the world. It took him 7 days, 18 hours and 49 minutes. He began and ended his journey in Floyd Bennett Field, New York.

It wasn't until 1986 that technology had advanced enough for someone to fly nonstop around the world, without refueling. This feat was accomplished in the airplane 'Voyager,' piloted by Dick Rutan and Jeana Yeager. It took off and landed at Edwards Air Force Base in California.

## Unit 12. Solar Flight History

Solar energy, or the ability to draw electricity from sunlight, was first discovered by Alexandre Edmond Becquerel in 1839. Over the next hundred years, many other discoveries and inventions were made in this vein. Albert Einstein was one of the contributors; he received a Nobel Prize for his theories in solar energy in 1921.

In the 1950s, the first practical-use solar cells were invented. Nowadays, you can see solar panels on everything from buildings to toys. It can be used in several forms to help power your home or business. It has low maintenance costs and can help lower your electric bill.

In 2015, two men, Bertrand Piccard and Andre Borschberg, set out to be the first pilots to travel around the world using only solar energy. In addition to being an aeronaut and explorer, Piccard is a medical doctor who specializes in psychiatry. He is also the first person to make a non-stop, round-the-world flight in a balloon.

Borschberg is an engineer as well as a fighter pilot and a professional airplane and helicopter pilot. Together, they possessed the ideal combination of experience and intellect to achieve this no-fuel flight. They completed it in hopes of promoting the use of renewable energies; they hope that the world will look at them as an example representing the power and impact solar energy can have.

Piccard and Borschberg are big supporters of solving climate change. They also believe it is an expensive problem which needs innovative problem-solving. They believe that solutions to climate change will provide great business opportunities. In the words of Bertrand Piccard himself, "We need to embrace technologies and efficient solutions because they are much more than 'ecological,' they are also 'logical.' They create jobs and generate profit, while also reducing CO2 emissions and preserving natural resources. Even if climate change didn't exist, they would make sense. Clean growth is much better than the dirty status quo we have today."

## Unit 13. Smart Sportswear

For athletes to get the best results, taking care of their bodies comes first. Having high-quality exercise equipment and sportswear is a close second. Thanks to research and development, combined with emerging technologies, sportswear is being built and used in more sophisticated ways.

One example is in shoes. Shoes protect and support the foot, which is very important in almost every sport. One of the highest tech shoes available are Nike's HyperAdapt 1.0's. They feature smart-sensor technology which automatically laces the sneakers to a perfect tension. Once your heel contacts a pressure sensor in the shoe, the system will automatically tighten the laces. The system also makes quick micro adjustments as the wearer moves, ensuring the shoe will always fit just right.

High-tech swimwear uses scientifically developed materials. Since the cost of a swimsuit is anywhere from 300 to 600 U.S. dollars, its use is usually restricted to professionals. In 2010, the Olympics allowed these suits to be worn in competition; since then, over 130 world records have been broken due to the use of these hi-tech fabrics.

In soccer, football, and other intense sports, the risk for injury is high. That's why some leagues have considered allowing players to wear 'smart shirts.' These shirts contain computer chips at the collar of the player's shirt, which transmit data such as heart rate, temperature, and how far the player has traveled. This way, the coach can better monitor the player's condition. In 2012, player Fabrice Muamba, collapsed at a football match. His heart stopped for 78 minutes. He was revived, but never made a full recovery; this medical event cost him his career. In the future, smart shirts will prevent such tragedies by altering staff that a player is overexerting themselves, and therefore, they can be pulled off the field before it is too late.

## Unit 14. Water Safety

Survival swimming teaches you to float, move, and breathe while suspended in water for an indefinite period of time. It is a series of techniques taught to prevent water-related accidents and deaths. There are several techniques that can be employed during swimming emergencies.

The "Leaf Survival Float" is a Korean invented survival method which teaches students to calmly stretch their arms and legs when under water; this causes the body to float to the surface. A Korean coach has developed this method to survive drowning; it reduces the body's energy output as much as possible and maintains the body's core temperature while the victim waits to be rescued.

When you reach the surface, breathe in through your mouth to make your body more buoyant, then lie in the supine position and spread your arms and legs wide, leaving your face and toes protruding from the surface. If movement is necessary, you can gently flutter your arms and legs.

Drowning is a very common occurrence. The Centers for Disease Control and Prevention report that there are an average 3,536 drowning every year, or about 10 deaths per day, in the United States. This figure does not include boat-related deaths. Further adding to the tragedy, 1 in 5 drowning deaths are children under the age of 14.

Even those who survive near-drowning will suffer severe consequences. Over 50 percent of victims suffer from brain damage, leading to memory loss, learning disabilities, or even permanent loss of all brain function.

In order to ensure you are practicing adequate water safety, you should take the following actions:

1. learn to swim. Lessons are usually available at your local swimming pool, school, or workout center
2. always swim with a partner, such as a friend or family member
3. use a life jacket
4. always have access to a phone, in case of emergency
5. do not drink alcohol if you are planning to swim
6. take CPR and AR lessons
7. watch the weather -- do not swim in thunderstorms or on extremely windy days

## Unit 15. Dodgeball

Dodgeball is a game in which two teams throw large, rubber balls at each other. They attempt to hit opponent players with the balls, while avoiding the ball when it comes their way. Players must hit their opponents below the shoulders. The game is played with two or more large, soft rubber balls. The number of balls can vary depending on the game; the World Dodgeball Association uses 5 balls, whereas international dodgeball is generally played with 6 balls. As the ball moves at a quick pace, it consumes a considerable amount of energy. On average, the ball is thrown around 50 miles per hour.

The game was originally played in Africa, over 200 years ago. It started as a very serious and intense ritual between tribes, where competing tribes would attempt to injure their opponents by throwing rocks or other hard matter. A missionary, Dr. James H. Carlisle, saw this happening, and upon returning home, later turned the vicious ritual into a sports game.

There are five rules of dodgeball, also known as 'the 5 D's:' dodge, duck, dip, dive, and dodge.

According to National Dodgeball League (NDL) rules, regulation dodgeball courts are 60 feet long by 30 feet wide, the same size as a volleyball court. The court is divided into two 30-foot by 30-foot squares, or "sides." Teams must stay on their own side, within their rectangular court which is indicated by straight white lines. If a player crosses over to the other side, they will be called "out" and removed from the game.

Teams usually consist of six players with four substitute players waiting on the sidelines. "Retrievers" are the people who go and get the balls when they travel off the court. Retrievers may be team players who are waiting on the sidelines, or they may be a separate person who is not on the team. Retrievers must not go onto the court at any time. In the NDL, retrievers must wear uniforms which are different from their teams' and they are only allowed to retrieve the balls from their own teams' side of the court.

There are three different types of dodgeball games:

1. Elimination: The game is over when all opponents from one side have been eliminated.
2. Timed: The game is played until the time is up; players remaining on the court are counted; whichever team has the most players is declared the winner.
3. Scored: Played in combination with elimination or timed style; at the end of each game, points are awarded for the number of players remaining on the court. The team with the most points wins.

## Unit 16. Golden Time that Saves Lives

“The Golden Time” refers to a period following an emergency where someone has been badly hurt. It refers to a time frame that can be between 4 minutes and several hours, depending on the victim’s injury. What is important about The Golden Time is that it is the time in which you can respond to help save the victim’s life. If The Golden Time has passed, and the victim has not received proper care, it is much less likely they will recover.

Police officers and other first responders, such as ambulance drivers and firefighters, are often the first people to arrive at an emergency and to treat the victim. They save many lives with CPR (Cardiopulmonary Resuscitation). Performing CPR on a patient who has suffered a cardiac arrest within the first four minutes following the event can mean the difference between life and death.

The heart acts as a pump for our body, providing the oxygen necessary for our organs to function. A heart attack is a condition in which the pump is shut down. Heart attacks can disrupt blood circulation, causing death or serious brain, or other organ damage, if left untreated. Organs can suffer permanent damage even if the blood supply is cut for only four to five minutes.

CPR, is an emergency treatment that artificially circulates the blood when heart attacks occur. Even when the heart is paralyzed, CPR circulates blood, delays brain damage, and helps the heart recover from its paralysis.

Effective resuscitation method is as follows:

1. If the patient is unconscious, place them on a flat surface quickly.
2. Tap their shoulder to check for any response.
3. Call, or have someone call, 119.
4. Lace your fingers together, with one hand cupping the other, then stretch both arms out, and center your bottom palm on the chest of the patient.
5. Push hard using the palms of your hands and press the chest firmly.
6. Press 100 to 120 times a minute while counting, pressing down a depth of about 5 cm.
7. Pressure the chest 30 times then breathe into the mouth twice. Bend their head clear the airway. Hold the chin down by hand to prevent it from falling, then open their mouth wide and push air in for one second.
8. Check the major artery at the side of the neck for a pulse, using the index and middle fingers. If there is no pulse, continue pressing the chest 30 times, and then repeat artificial respiration.
9. Continue until professional help arrives.