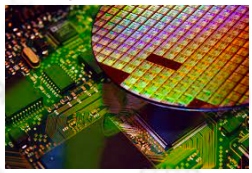
SEMIconductors

EAE Learning objectives for this lesson



Practice talking about science and technology. Learn how to use the present tense to talk about the future. Learn some new vocabulary thanks to prefixes. Comprehension activities.

Activity One - Ask and answer with a partner or teacher.

1. How many different electronic items do you use in a day? Can you name them all and list them?
2. Do you ever think about the components and materials which make up the electronics which you use?
3. Did you know that hundreds of billions of micro chips are sold every year?
4. What's the smallest electronic item you use?
5. Did you know that some of the features of a micro chip can be thousands of times smaller than a grain of sand?

Activity Two - Prefixes.

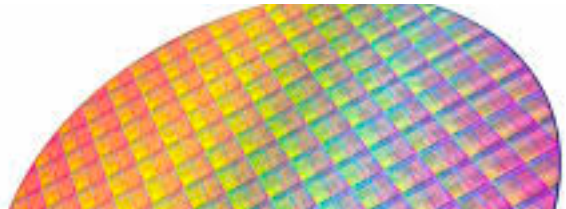
Pre-fixes are a grouping of letters added to the beginning of a word that makes a new word with a different or more nuanced meaning. For example they can create a word meaning the opposite of the base word, like conscious - unconscious, or behave - misbehave.
Match the words below to the common prefixes in the table with a partner or your teacher. See if you can find another example of a word for each prefix!

Load - Connect - See - Circle - Place - Port - Operate - Write - Night

Prefix & Meaning	Word	Example
Semi = half		
Re = again		
Over = too much		
Mis = wrongly		
Mid = middle		
Fore = before		
Trans = across		
Co = with		
Dis = opposite of		

Activity Three: Read the text and identify the prefixes: **S**emiconductors can be considered as one of the most important inventions of all time. They are foundational to our ability to connect and coordinate with each other; to collect, store and process information; and to implement intelligent automation. Also referred to as microchips ("chips" for short) or integrated circuits (ICs), semiconductors have transformed entire industries such as entertainment, retail, medicine, and agriculture. Now we find it almost impossible to disconnect in fact! Unconsciously, slowly but surely, your phone has become part of you!

Think of all the electronic devices you use every day: mobile phones and headphones, fitness wearables, home appliances, laptops, and even automobiles or mass transit – all built around tiny pieces of technology. And new applications are appearing everywhere.



Activity Four - Reading Comprehension

Read the article with a partner or your teacher, then answer the questions that follow.

Global silicon chip shortage hits supply of phones, TVs, cars and Australia's NBN

Covid shutdowns and Texas storms behind dearth of chips needed for semiconductors to make array of products

A temporary shutdown in the production of silicon computer chips at the start of the coronavirus pandemic, as well as severe storms in Texas causing more recent delays, has caused worldwide chip shortages, with a knock-on effect for the production of phones, laptops and even automobiles.

Samsung, which is the largest manufacturer of computer chips in the world, as well as one of the biggest users, has said the chip shortage comes amid rising demand for consumer electronics during the pandemic.

"There's a serious imbalance in supply and demand of chips in the IT sector globally," the company's co-chief executive, Koh Dong-jin, said.

Samsung has indicated it could delay the release of the next Galaxy Note smartphone until 2022 as a result of the shortage.

Apple, the world's biggest buyer of chips, was one of the worst affected companies, delaying the launch of the iPhone 12 last year as a result.

A winter storm in Texas in February forcing several chip factories to temporarily halt production amid power outages did not help with the ongoing crisis.

Manufacturers are slowly increasing capacity to meet demand but there are still growing shortages in products that need semiconductors to function, from televisions and phones to the new Xbox and PlayStation video game consoles.

"Covid-19 has had two major impacts on the availability of computers through the initial closure of factories and then the global surge, including in Australia, for new computers and IT equipment," the Australian Information Industry Association's general manager of policy and advocacy, Simon Bush, said.

The association estimates delays in large IT orders for business and government of at least six to eight weeks.

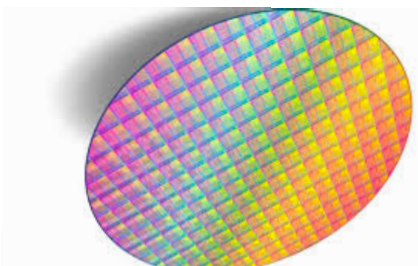
The demand for chips is now starting to have a flow-on impact on a range of industries. The government-owned company rolling out Australia's $57bn National Broadband Network (NBN) had to stop connecting new customers via its cable technology in February because it had a fast-dwindling supply of modems it had been unable to replace.

This week the company announced it would resume orders for new connections to the cable service from May 24 – nearly four months after the pause. In that time, NBN Co has connected 230 medically-vulnerable customers to the NBN as a priority using the remaining supply.

More modems began being received in early March, but the company now needs to work on a backlog of 31,000 orders before new orders can be taken.

"We are confident that we will receive regular deliveries of new HFC modems in the weeks and months ahead to enable the resumption of new HFC connections from 24 May 2021," NBN's chief customer officer, Brad Whitcomb, said.

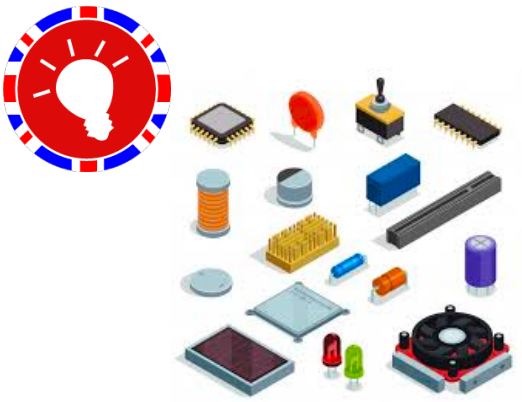
Read more at: https://www.theguardian.com/technology/2021/apr/04/global-silicon-chip-shortage-hits-supply-of-phones-tvs-cars-and-australias-nbn



Comprehension Questions:

1. How have Samsung and Apple been affected by the shortage of semiconductors?
2. How did the winter storm in Texas affect the situation?
3. What has Covid-19's impact been?
4. What has Australia's National Broadband Network had to do?
5. What cannot happen before May 24th?
6. What does this phrase mean? : 'the company now needs to work on a backlog of 31,000 orders before new orders can be taken.'
7. How big of a problem do you think this is?
8. Find all the words with prefixes in the article. What do the prefixes you found mean? *(Your teacher can help you!)*

Activity Five - Grammar: Present continuous



subj + am/is/are + ing

We use the present continuous to talk about something happening right now, something which is in progress:

- *Manufacturers are increasing capacity*
- *The demand for chips is starting to have an impact*

We can ALSO use the present continuous to talk about arrangements in the future, usually things in your diary.

Here's a diary for Stephen, the CEO of NBN the semi conductor manufacturer:

	MAY						
	M	T	W	T	F	S	S
morning	21 Interview with Newspaper	22 Visit factory	23 Discuss customer needs	24 Resume orders	25 Meet Simon Bush	26 Family beach day	27 Lunch with grandma
afternoon	Hire new employees to deal with backlog	Check modem supply	Shareholder's lunch	Respond to emails	Play golf		

Using the present continuous, we can describe what the CEO **is doing** during the week.

- On Monday afternoon, he is hiring new employees. On Sunday, he is going to the beach with his family.
- What is he doing on Tuesday morning?
- Describe his week using the present continuous!

Practise - Here's a blank diary. Fill in some activities you may be planning in a typical week which are all going to take place using something with a semiconductor in it! On Monday I am working etc …. What. Technology are you planning to use?

	MAY						
	M	T	W	T	F	S	S
morning	21	22	23	24	25	26	27
afternoon							

Activity Six - Video: Comprehension activity.



Inside The Worlds Largest Semiconductor Factory - BBC Click

Watch the video.
Note down the words which the presenter emphasises. What do you notice about her intonation and stress?

With a partner or on your own, resume what you learned about semi conductors about watching the video. What did you learn about the processes used for example? What did you learn about the technology used and made?

Activity Seven: Industrial Espionage! Role Play.

With your partner or teacher act out the following role play:

You were in fact pretending to be a journalist when you visited the factory in Taiwan. In fact you are spying for your country in order to steel ideas. On your way out you steel a very small piece of revolutionary new technology. The security guard surprises you by searching your bag. He finds it and you try to make excuses to explain!

Activity Eight: Fascinating Facts

Find out five fascinating facts about Semi-conductors with a partner or on your own by looking at this great presentation:
https://www.bbc.com/future/bespoke/made-on-earth/how-the-chip-changed-everything/

