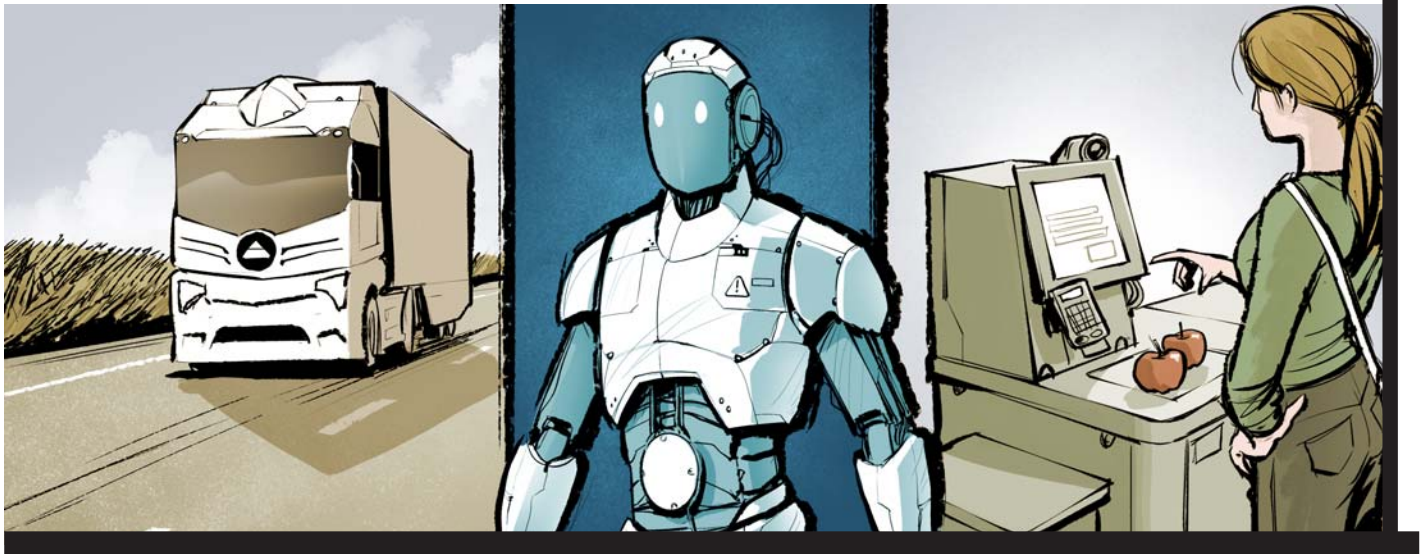# WILL ROBOTS TAKE OVER OUR JOBS?

Two hundred years ago, lamp lighters provided a key service for people in London, England. They went out each evening to light the lamps on dark streets. Of course, that job disappeared when electricity was invented.

Technological change is a part of life. Inventions have always re-shaped society. The wheel, the printing press, the steam engine and the Internet have all had an impact. They have also altered the kinds of skills required for work.

Consider the Industrial Revolution of the late 1700s and early 1800s. It caused huge changes in the labour force. Factories started using new mechanical tools. That reduced the need for manual labour on farms and at home. The upside? The standard of living improved for some. The downside? Many others lost their jobs or suffered from grim working and living conditions.

Now we're on the brink of another revolution. Advances in artificial intelligence are affecting almost every kind of job. Today, robots perform many tasks more **efficiently** than people.

What does this mean for the jobs of the future? Where will they be? What skills will be needed?

"It's something Canadians are going to have to get their heads around," says Sean Mullin. He runs the Brookfield Institute for Innovation and Entrepreneurship in Toronto. The Institute recently issued a job report. It painted a dramatic picture of possible job losses due to automation.

Jobs at risk

The report addresses the next ten to 20 years. It states nearly 42 percent of Canada's labour force may lose jobs to automation. That's about 12 million workers over two decades.

"Even just a portion of that would be a huge disruption to Canada's work force," says Mr. Mullin.

How could robots affect jobs? Just take a look at what's already happening around you.

Companies are experimenting with self-driving vehicles. Lyon, France, for example, has a new driverless minibus service. Many stores have self-serve checkouts. Several fast-food restaurants

DEFINITIONS

efficiently: acting or producing effectively with a minimum of waste, expense, or unnecessary effort

WILL ROBOTS TAKE OVER OUR JOBS?

are using drone delivery. And today, at more than half of all McDonald's restaurants, patrons use touch screens to place orders.

If you need information, your digital device is ready to look up answers. It also offers driving directions and keeps track of appointments. There are even robo-advisors to help people decide where to invest money.

Analysts say the jobs most at risk are those in transportation and customer service. That includes truck drivers, cashiers, sales clerks, food-counter attendants and kitchen helpers. Administrative assistants are also on the list. The reason? Computers are taking over office tasks such as scheduling and basic accounting.

Jobs not at risk

So students should be urgently asking themselves how to 'future proof' their careers. They should consider jobs where people do better than machines. We have an advantage where human **empathy** and social skills are needed, for example. Computers are just not good when it comes to connecting with humans.

Jobs that highlight people skills include nursing, teaching, and counseling. For leadership positions, problem-solving and good judgment are also critical.

Expect job growth in science, technology, engineering and math. Those are the so-called STEM subjects. People with logic and critical thinking skills will likely be in demand. We will need creative people. We will need global citizens who understand cultures and how to **collaborate**. Writing skills are becoming even more important. So is the ability to ask the right questions.

Of course, computer skills will be essential, says forecaster Saadia Zahidi. Digital know-how along with strong social skills will be critical, she adds.

Managing the Change

While some jobs will be lost, automation might actually create new opportunities, too. Still, the Brookfield report says we must prepare for the change. For example, we might need government safety nets to help those whose jobs have been automated. We might need to launch retraining programs, too.

"We don't want a situation where ... 42 percent of the workforce is out of a job," says Mr. Mullin.

UNIVERSAL BASIC INCOME

How can we support people who may lose their jobs due to technological advances? Some people suggest bringing in a universal basic income. The idea? The government would provide everyone, working or not, with enough money for a decent standard of living. Those with paid jobs would earn more, but those displaced by technology would not be driven to poverty.

Some countries are already trying this. Ontario plans to roll out a pilot program next year.

We'll also need to invest more in education and skills training. People with post-secondary degrees have an advantage. They are three times less likely to lose their jobs due to automation. The jobs most at risk are low-skill positions usually held by youth. Delivering pizza or retail sales are two examples.

Whatever you train for, don't expect to do the same thing for life. Instead, embrace lifelong learning to keep your skills sharp throughout your career.

Just think about children starting school today. About 65 percent of them will work in jobs that don't yet exist. ★

WILL ROBOTS TAKE OVER OUR JOBS?

EXAMINE THE DETAILS

1. Using the information in the article and your own thinking, list in the organizer below examples of jobs at risk and jobs not at risk, and skills common to each group.

Jobs at risk:	Jobs not at risk:
Skills common to jobs at risk:	**Skills common to jobs not at risk:**

2. After completing the organizer, answer the following: *What advice would you give to a friend trying to decide what to do after graduation? Support your advice with reasons.*

_____

_____

_____

_____

_____

SCIENCE, TECHNOLOGY AND THE ENVIRONMENT
WILL ROBOTS TAKE OVER OUR JOBS?

BETWEEN THE LINES

An **inference** is a conclusion drawn from evidence. *A plausible inference is supported by evidence in the article and is consistent with known facts outside of the article.*

What inference(s) can you draw from the fact that people working in occupations that are at low risk of automation are three times as likely to have a post-secondary degree as people working in jobs that are at high risk of automation?

_____

_____

_____

_____

_____

JUST TALK ABOUT IT

1. What other jobs can you suggest that might one day be vulnerable to replacement by automation?

2. As you see it, what are the benefits of automation? What are some drawbacks? In your mind, do the benefits of automation outweigh the drawbacks, or do the drawbacks outweigh the benefits? Explain.

ONLINE

Note: The links below are listed at **www.lesplan.com/en/links** for easy access.

1. Read a CBC article about Ontario's guaranteed-income program at
http://www.cbc.ca/news/politics/minimum-income-hugh-segal-ontario-budget-1.3740373

2. Critically consider a short YouTube video called "How To Make A Living When Robots Take Our Jobs" at **https://www.youtube.com/watch?v=UfUrgFmUvt8**

3. Meet Watson, one of the smartest computers in the world, by watching the YouTube video "Understand IBM Watson October 2016 Fareed Zakaria" at
https://www.youtube.com/watch?v=3Gs3NQaoClg

4. Watch a brand new TED Talk about machine intelligence at **http://www.ted.com/talks/zeynep_ tufekci_we_can_t_control_what_our_intelligent_machines_are_learning?utm_source=newsletter_ daily&utm_campaign=daily&utm_medium=email&utm_content=button__2016-10-19** ★