VINTAGE

21 Lessons for the 21st Century

Yuval Noah Harari

Teacher Resource Pack
KS5 Careers Education and Guidance

Sapiens showed us where we came from.

Homo Deus looked to the future.

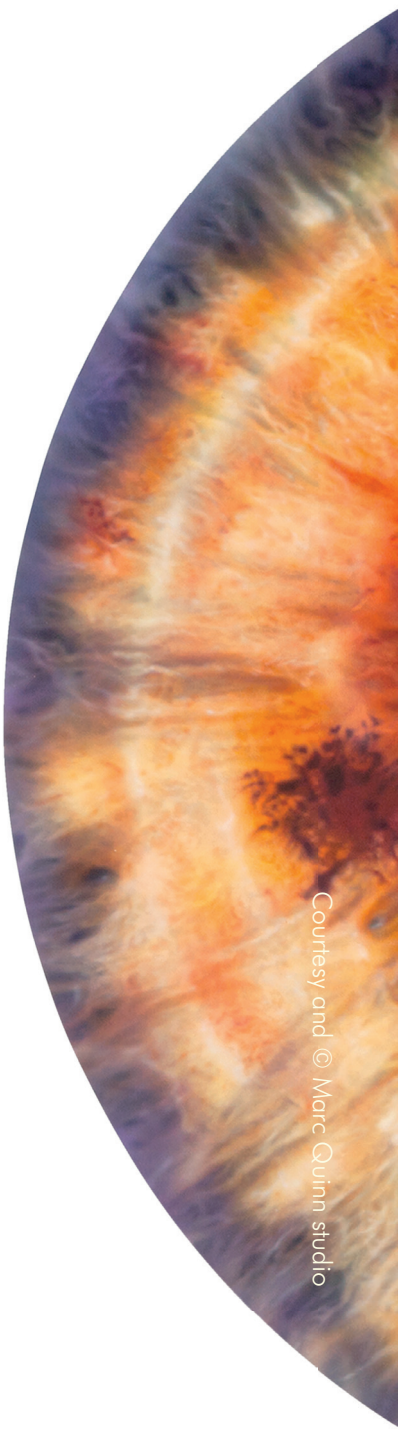
21 Lessons for the 21st Century explores the present.

HOW CAN WE PROTECT OURSELVES FROM NUCLEAR WAR, ECOLOGICAL CATACLYSMS AND TECHNOLOGICAL DISRUPTIONS?

WHAT CAN WE DO ABOUT THE EPIDEMIC OF FAKE NEWS OR THE THREAT OF TERRORISM?

WHAT SHOULD WE TEACH OUR CHILDREN?

Yuval Noah Harari takes us on a thrilling journey through today's most urgent issues. The golden thread running through his exhilarating new book is the challenge of maintaining our collective and individual focus in the face of constant and disorienting change as well as information overload. Are we still capable of understanding the world we have created?



Courtesy and © Marc Quinn studio

Prof. Yuval Noah Harari has a PhD in History from the University of Oxford and now lectures at the Hebrew University of Jerusalem, specialising in world history. His first two books, *Sapiens*: *A Brief History of Humankind* and *Homo Deus*: *A Brief History of Tomorrow*, have become global bestsellers, with more than 12 million copies sold, and translations in more than 45 languages.

Welcome to the KS5 teacher resource pack for 21 Lessons for the 21st Century by Yuval Noah Harari.

PURPOSE OF THE PACK

These activities are designed to help KS5 students consider the swiftly changing nature of the UK's job market, and to evaluate what skills and knowledge will best equip them for success in the future.

The activities can be run as individual short sessions or as a single 60-minute careers-focused lesson, depending on your lesson structure, and should complement your school or college's programme of integrated careers education and guidance.

LEARNING OUTCOMES

The learning outcomes for the activities in this pack have been identified based on the documents Careers guidance: Guidance for further education colleges and sixth form colleges (February 2018) and CDI Framework for careers, employability and enterprise education (March 2018)

AREA OF LEARNING	BE ABLE TO
Self-awareness	Assess how you are changing and be able to match your skills, interests and values to requirements and opportunities in learning and work.
Exploring careers and career development	Reflect on changing career processes and structures and their possible effects on your experience and management of your own career development.
Investigating work and working life	Discuss the personal, social, economic and environmental impacts of different kinds of work and working life in the context of your own thinking about career satisfaction.

Activity 1: Evergreen or out of date?

INTRODUCTION

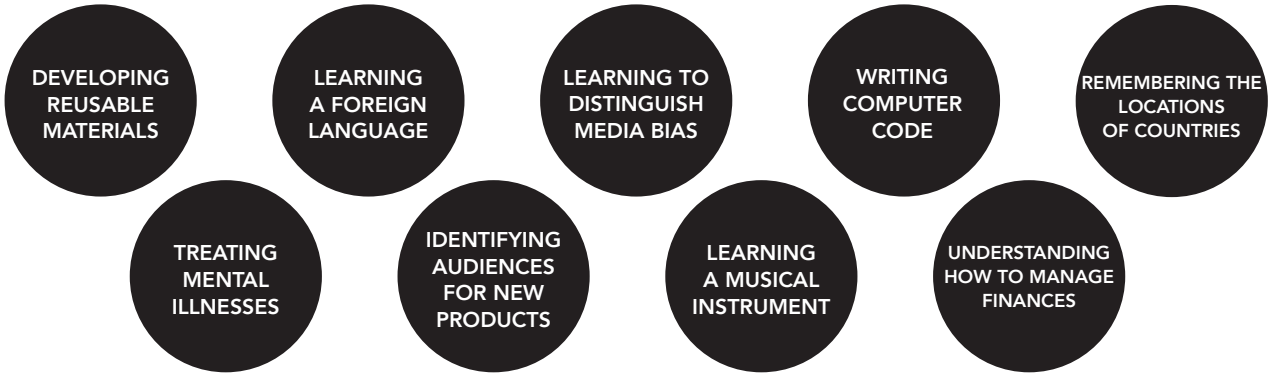
The only thing that we can be completely sure of when considering the 21st century is change. This means that, in education or training, we are learning and developing skills that we hope will be relevant in the future – but are we learning the right things?

THE ACTIVITY

Look at the skill below, and arrange them into a diamond with the most useful at the top and the least useful at the bottom. Be prepared to explain your reasoning, including what current and future careers they might support.

When deciding your order and reasoning, bear in mind:

- Is it something that could be done accurately by a computer or robot, without a human to oversee it?
- Is it linked to an industry or career in decline?
- Is it linked more to creative problem-solving, or a methodical step-by-step process?
- Could it be used in a range of jobs or situations?



SUMMING UP

What order did you decide on and why?

How do these skills compare to what most young people in the UK are learning at school or in college?

If you were to update our current curriculum what changes would you recommend in order to give today's teenagers the best opportunities in the 21st century?

Activity 2: Problems and solutions

INTRODUCTION

Recently, a section of Yuval Noah Harari's new book, *21 Lessons for the 21st Century*, was published in *Wired* magazine, reproduced in this pack. In the extract, divided into three sections –

1. Change is the only constant

2. The heat is on

3. And hacking humans

– Harari suggests that the best skill to teach young people is reinvention, and reveals what he believes 2050 has in store for humankind.

Credit: Britt Spencer

Activity 2: Problems and solutions

THE ACTIVITY

In a small group read through the section that you have been allocated.

Either as a large poster, or on a slide, prepare a short presentation to answer these questions about your section:

- What are Harari's key arguments? What potential problems does he identify, and what examples does he give to illustrate them?
- What solutions or advice does he suggest to address these problems?
- As a group, do you agree with the problems Harari picks out and the possible solutions that he presents? Why do you agree or disagree?
- What real-life examples from your experience can you give to support or disapprove Harari's argument? Are there any additional solutions that you would suggest?

When creating your presentation, make sure:

- It will not take longer than five minutes to present to the other groups
- Everyone in the group contributes in some way

SUMMING UP

Listen to each group's presentation in turn.
Which group do you feel presented the ideas from their section most clearly?
Are there any issues around skills, learning and the changing job market of which you are now more aware?
What questions do you still need to answer regarding your own skills and the UK job market?

Yuval Noah Harari on what the year 2050 has in store for humankind

PART ONE: CHANGE IS THE ONLY CONSTANT

Humankind is facing unprecedented revolutions, all our old stories are crumbling and no new story has so far emerged to replace them. How can we prepare ourselves and our children for a world of such unprecedented transformations and radical uncertainties? A baby born today will be thirty-something in 2050. If all goes well, that baby will still be around in 2100, and might even be an active citizen of the 22nd century. What should we teach that baby that will help him or her survive and flourish in the world of 2050 or of the 22nd century? What kind of skills will he or she need in order to get a job, understand what is happening around them and navigate the maze of life?

Unfortunately, since nobody knows how the world will look in 2050 – not to mention 2100 – we don't know the answer to these questions. Of course, humans have never been able to predict the future with accuracy. But today it is more difficult than ever before, because once technology enables us to engineer bodies, brains and minds, we can no longer be certain about anything – including things that previously seemed fixed and eternal.

A thousand years ago, in 1018, there were many things people didn't know about the future, but they were nevertheless convinced that the basic features of human society were not going to change. If you lived in China in 1018, you knew that by 1050 the Song Empire might collapse, the Khitans might invade from the north, and plagues might kill millions. However, it was clear to you that even in 1050 most people would still work as farmers and weavers, rulers would still rely on humans to staff their armies and bureaucracies, men would still dominate women, life expectancy would still be about 40, and the human body would be exactly the same. Hence in 1018, poor Chinese parents taught their children how to plant rice or weave silk, and wealthier parents taught their boys how to read the Confucian classics, write calligraphy or fight on horseback – and taught their girls to be modest and obedient housewives. It was obvious these skills would still be needed in 1050.

In contrast, today we have no idea how China or the rest of the world will look in 2050. We don't know what people will do for a living, we don't know how armies or bureaucracies will function, and we don't know what gender relations will be like. Some people will probably live much longer than today, and the human body itself might undergo an unprecedented revolution thanks to bioengineering and direct brain-computer interfaces. Much of what kids learn today will likely be irrelevant by 2050.

Credit: Britt Spencer

Yuval Noah Harari on what the year 2050 has in store for humankind

PART ONE: CHANGE IS THE ONLY CONSTANT

At present, too many schools focus on cramming information. In the past this made sense, because information was scarce, and even the slow trickle of existing information was repeatedly blocked by censorship. If you lived, say, in a small provincial town in Mexico in 1800, it was difficult for you to know much about the wider world. There was no radio, television, daily newspapers or public libraries. Even if you were literate and had access to a private library, there was not much to read other than novels and religious tracts. The Spanish Empire heavily censored all texts printed locally, and allowed only a dribble of vetted publications to be imported from outside. Much the same was true if you lived in some provincial town in Russia, India, Turkey or China. When modern schools came along, teaching every child to read and write and imparting the basic facts of geography, history and biology, they represented an immense improvement.

In contrast, in the 21st century we are flooded by enormous amounts of information, and even the censors don't try to block it. Instead, they are busy spreading misinformation or distracting us with irrelevancies. If you live in some provincial Mexican town and you have a smartphone, you can spend many lifetimes just reading Wikipedia, watching TED talks, and taking free online courses. No government can hope to conceal all the information it doesn't like. On the other hand, it is alarmingly easy to inundate the public with conflicting reports and red herrings. People all over the world are but a click away from the latest accounts of the bombardment of Aleppo or of melting ice caps in the Arctic, but there are so many contradictory accounts that it is hard to know what to believe. Besides, countless other things are just a click away, making it difficult to focus, and when politics or science look too complicated it is tempting to switch to funny cat videos, celebrity gossip or porn.

In such a world, the last thing a teacher needs to give her pupils is more information. They already have far too much of it. Instead, people need the ability to make sense of information, to tell the difference between what is important and what is unimportant, and above all to combine many bits of information into a broad picture of the world.

In truth, this has been the ideal of western liberal education for centuries, but up till now even many western schools have been rather slack in fulfilling it. Teachers allowed themselves to focus on shoving data while encouraging pupils 'to think for themselves'. Due to their fear of authoritarianism, liberal schools had a particular horror of grand narratives. They assumed that as long as we give students lots of data and a modicum of freedom, the students will create their own picture of the world, and even if this generation fails to synthesise all the data into a coherent and meaningful story of the world, there will be plenty of time to construct a good synthesis in the future. We have now run out of time. The decisions we will take in the next few decades will shape the future of life itself, and we can take these decisions based only on our present world view. If this generation lacks a comprehensive view of the cosmos, the future of life will be decided at random.

Yuval Noah Harari on what the year 2050 has in store for humankind

PART TWO: THE HEAT IS ON

Besides information, most schools also focus too much on providing pupils with a set of predetermined skills such as solving differential equations, writing computer code in C++, identifying chemicals in a test tube or conversing in Chinese. Yet since we have no idea how the world and the job market will look in 2050, we don't really know what particular skills people will need. We might invest a lot of effort teaching kids how to write in C++ or how to speak Chinese, only to discover that by 2050 AI can code software far better than humans, and a new Google Translate app enables you to conduct a conversation in almost flawless Mandarin, Cantonese or Hakka, even though you only know how to say 'Ni hao'.

So what should we be teaching? Many pedagogical experts argue that schools should switch to teaching 'the four Cs' – critical thinking, communication, collaboration and creativity. More broadly, schools should downplay technical skills and emphasise general-purpose life skills. Most important of all will be the ability to deal with change, to learn new things and to preserve your mental balance in unfamiliar situations. In order to keep up with the world of 2050, you will need not merely to invent new ideas and products – you will above all need to reinvent yourself again and again.

For as the pace of change increases, not just the economy, but the very meaning of 'being human' is likely to mutate. In 1848, the *Communist Manifesto* declared that 'all that is solid melts into air'. Marx and Engels, however, were thinking mainly about social and economic structures. By 2048, physical and cognitive structures will also melt into air, or into a cloud of data bits.

In 1848, millions of people were losing their jobs on village farms, and were going to the big cities to work in factories. But upon reaching the big city, they were unlikely to change their gender or to add a sixth sense. And if they found a job in some textile factory, they could expect to remain in that profession for the rest of their working lives.

By 2048, people might have to cope with migrations to cyberspace, with fluid gender identities, and with new sensory experiences generated by computer implants. If they find both work and meaning in designing up-to-the-minute fashions for a 3D virtual-reality game, within a decade not just this particular profession, but all jobs demanding this level of artistic creation might be taken over by AI. So at 25, you introduce yourself on a dating site as 'a twenty-five-year-old heterosexual woman who lives in London and works in a fashion shop.' At 35, you say you are 'a gender-non-specific person undergoing age-adjustment, whose neocortical activity takes place mainly in the NewCosmos virtual world, and whose life mission is to go where no fashion designer has gone before'. At 45, both dating and self-definitions are so passé. You just wait for an algorithm to find (or create) the perfect match for you. As for drawing meaning from the art of fashion design, you are so irrevocably outclassed by the algorithms, that looking at your crowning achievements from the previous decade fills you with embarrassment rather than pride. And at 45, you still have many decades of radical change ahead of you.

Please don't take this scenario literally. Nobody can really predict the specific changes we will witness. Any particular scenario is likely to be

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PART TWO: THE HEAT IS ON

far from the truth. If somebody describes to you the world of the mid-21st century and it sounds like science fiction, it is probably false. But then if somebody describes to you the world of the mid-21st century and it doesn't sound like science fiction – it is certainly false. We cannot be sure of the specifics, but change itself is the only certainty.

Credit: Britt Spencer

Such profound change may well transform the basic structure of life, making discontinuity its most salient feature. From time immemorial, life was divided into two complementary parts: a period of learning followed by a period of working. In the first part of life you accumulated information, developed skills, constructed a world view, and built a stable identity. Even if at 15 you spent most of your day working in the family's rice field (rather than in a formal school), the most important thing you were doing was learning: how to cultivate rice, how to conduct negotiations with the greedy rice merchants from the big city and how to resolve conflicts over land and water with the other villagers. In the second part of life you relied on your accumulated skills to navigate the world, earn a living, and contribute to society. Of course, even at 50 you continued to learn new things about rice, about merchants and about conflicts, but these were just small tweaks to well-honed abilities.

By the middle of the 21st century, accelerating change plus longer lifespans will make this traditional model obsolete. Life will come apart at the seams, and there will be less and less continuity between different periods of life. 'Who am I?' will be a more urgent and complicated question than ever before.

This is likely to involve immense levels of stress. For change is almost always stressful, and after a certain age most people just don't like to change. When you are 15, your entire life is change. Your body is growing, your mind is developing, your relationships are deepening. Everything is in flux, and everything is new. You are busy inventing yourself. Most teenagers find it frightening, but at the same time, also exciting. New vistas are opening before you, and you have an entire world to conquer. By the time you are 50, you don't want change, and most people have given up on conquering the world. Been there, done that, got the T-shirt. You much prefer stability. You have invested so much in your skills, your career, your identity and your world view that you don't

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PART TWO: THE HEAT IS ON

want to start all over again. The harder you've worked on building something, the more difficult it is to let go of it and make room for something new. You might still cherish new experiences and minor adjustments, but most people in their fifties aren't ready to overhaul the deep structures of their identity and personality.

There are neurological reasons for this. Though the adult brain is more flexible and volatile than was once thought, it is still less malleable than the teenage brain. Reconnecting neurons and rewiring synapses is damned hard work. But in the 21st century, you can hardly afford stability. If you try to hold on to some stable identity, job or world view, you risk being left behind as the world flies by you with a whoooooosh. Given that life expectancy is likely to increase, you might subsequently have to spend many decades as a clueless fossil. To stay relevant – not just economically, but above all socially – you will need the ability to constantly learn and to reinvent yourself, certainly at a young age like 50.

As strangeness becomes the new normal, your past experiences, as well as the past experiences of the whole of humanity, will become less reliable guides. Humans as individuals and humankind as a whole will increasingly have to deal with things nobody ever encountered before, such as super-intelligent machines, engineered bodies, algorithms that can manipulate your emotions with uncanny precision, rapid man-made climate cataclysms, and the need to change your profession every decade. What is the right thing to do when confronting a completely unprecedented situation? How should you act when you are flooded by enormous amounts of information and there is absolutely no way you can absorb and analyse it all? How to live in a world where profound uncertainty is not a bug, but a feature?

To survive and flourish in such a world, you will need a lot of mental flexibility and great reserves of emotional balance. You will have to repeatedly let go of some of what you know best, and feel at home with the unknown. Unfortunately, teaching kids to embrace the unknown and to keep their mental balance is far more difficult than teaching them an equation in physics or the causes of the First World War. You cannot learn resilience by reading a book or listening to a lecture. The teachers themselves usually lack the mental flexibility that the 21st century demands, for they themselves are the product of the old educational system.

The Industrial Revolution has bequeathed us the production-line theory of education. In the middle of town there is a large concrete building divided into many identical rooms, each room equipped with rows of desks and chairs. At the sound of a bell, you go to one of these rooms together with 30 other kids who were all born the same year as you. Every hour some grown-up walks in and starts talking. They are all paid to do so by the government. One of them tells you about the shape of the Earth, another tells you about the human past, and a third tells you about the human body. It is easy to laugh at this model, and almost everybody agrees that no matter its past achievements, it is now bankrupt. But so far we haven't created a viable alternative. Certainly not a scaleable alternative that can be implemented in rural Mexico rather than just in upmarket California suburbs.

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PART THREE: HACKING HUMANS

So the best advice I could give a 15-year-old stuck in an outdated school somewhere in Mexico, India or Alabama is: don't rely on the adults too much. Most of them mean well, but they just don't understand the world. In the past, it was a relatively safe bet to follow the adults, because they knew the world quite well, and the world changed slowly. But the 21st century is going to be different. Due to the growing pace of change, you can never be certain whether what the adults are telling you is timeless wisdom or outdated bias.

So on what can you rely instead? Technology? That's an even riskier gamble. Technology can help you a lot, but if technology gains too much power over your life, you might become a hostage to its agenda. Thousands of years ago, humans invented agriculture, but this technology enriched just a tiny elite, while enslaving the majority of humans. Most people found themselves working from sunrise till sunset plucking weeds, carrying water buckets and harvesting corn under a blazing sun. It can happen to you too.

Technology isn't bad. If you know what you want in life, technology can help you get it. But if you don't know what you want in life, it will be all too easy for technology to shape your aims for you and take control of your life. Especially as technology gets better at understanding humans, you might increasingly find yourself serving it, instead of it serving you. Have you seen those zombies who roam the streets with their faces glued to their smartphones? Do you think they control the technology, or does the technology control them? Should you rely on yourself, then? That sounds great on *Sesame Street* or in an old-fashioned Disney film, but in real life it doesn't work so well. Even Disney is coming to realise it. Just like *Inside Out*'s Riley Andersen, most people hardly know themselves, and when they try to 'listen to themselves' they easily become prey to external manipulations. The voice we hear inside our heads was never trustworthy, because it always reflected state propaganda, ideological brainwashing and commercial advertisement, not to mention biochemical bugs.

Credit: Britt Spencer

As biotechnology and machine learning improve, it will become easier to manipulate people's deepest emotions and desires, and it will become more dangerous than ever to just follow your heart. When Coca-Cola, Amazon, Baidu or the government knows how to pull the strings of your heart and press the buttons of your brain, could you still tell the difference between your self and their marketing experts?

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PART THREE: HACKING HUMANS

To succeed in such a daunting task, you will need to work very hard on getting to know your operating system better. To know what you are, and what you want from life. This is, of course, the oldest advice in the book: know thyself. For thousands of years, philosophers and prophets have urged people to know themselves. But this advice was never more urgent than in the 21st century, because unlike in the days of Laozi or Socrates, now you have serious competition. Coca-Cola, Amazon, Baidu and the government are all racing to hack you. Not your smartphone, not your computer, and not your bank account – they are in a race to hack you, and your organic operating system. You might have heard that we are living in the era of hacking computers, but that's hardly half the truth. In fact, we are living in the era of hacking humans.

The algorithms are watching you right now. They are watching where you go, what you buy, who you meet. Soon they will monitor all your steps, all your breaths, all your heartbeats. They are relying on Big Data and machine learning to get to know you better and better. And once these algorithms know you better than you know yourself, they could control and manipulate you, and you won't be able to do much about it. You will live in the matrix, or in *The Truman Show*. In the end, it's a simple empirical matter: if the algorithms indeed understand what's happening within you better than you understand it, authority will shift to them.

Of course, you might be perfectly happy ceding all authority to the algorithms and trusting them to decide things for you and for the rest of the world. If so, just relax and enjoy the ride. You don't need to do anything about it. The algorithms will take care of everything. If, however, you want to retain some control of your personal existence and of the future of life, you have to run faster than the algorithms, faster than Amazon and the government, and get to know yourself before they do. To run fast, don't take much luggage with you. Leave all your illusions behind. They are very heavy.

Activity 3: Your career in the 21st century

INTRODUCTION

The UK job market has changed rapidly over the last 10 – 15 years.

Some major changes include:

- Growth of the 'gig economy' – multiple people working for a large company as self-employed freelancers rather than as employees (e.g. Uber, Deliveroo)
- Decrease in 'careers for life' – more people switch between industries rather than working for a single company/organisation
- Fewer people attracted to public sector jobs e.g. nursing, teaching, due to concerns about pay and conditions
- Increase in jobs based in media, digital, entertainment and finance
- Rise of the idea of the 'side-hustle', an additional income stream over evenings or weekends, alongside a main full-time job
- Some high-profile companies are removing the requirement for degree -level qualifications, in favour of focus on relevant skills and experience
- An increasing number of manual low-skill and manufacturing jobs are becoming automated and are now carried out by robots

Activity 3: Your career in the 21st century

THE ACTIVITY

Based on what you've learned about the changing job market in the UK, and the increasing importance of transferable skills, create a new version of your CV, with the following categories:

- Name, contact details
- Relevant skills and experience: List these with the most recent experience first, including work experience, internships and any part time jobs, as well as any extracurricular activities e.g. volunteering with a charity, running a blog or YouTube channel. Include 2–3 sentences to explain what skills or pieces of relevant knowledge you gained
- Interests: Include three interests outside college or work experience, including 1–2 sentences to explain what skills or relevant knowledge you gained from them
- Qualifications: Include any exam results so far, plus any vocational qualifications or qualifications gained through your extracurricular activities or interests

You CV should take up no more than two A4 sides, font size 12, so make sure that anything you include is relevant, concise and demonstrates a range of skills that you can offer.

SUMMING UP

Pair up and swap your CVs. Colour-code your partner's CV to show:

- Areas which made them appear skilled or knowledgeable about a particular field
- Areas which could be improved

Be ready to give specific feedback about what impressed you most and why, and how improvements could be made e.g. clarity of wording, specific examples, more detail.

Extension tasks

INTRODUCTION

You have considered the challenges of rapid technological change and automation, and their effects on the UK job market, but these changes are also happening worldwide, including in developing countries. For some people, these changes could result in a much better quality of life, but for others they may mean the disappearance of jobs and income. How would the changing job market look to someone in India, or Brazil?

THE ACTIVITY

In a small group, discuss the following questions:

- Do you think some groups in British society will benefit more or less from the automation revolution?
- Do you think different countries and/or areas of the world will benefit more of less?

Note down your answers, including your reasoning, and be ready to share. When identifying the groups you think may benefit, you should consider:

- What types of employment are likely to be positively or negatively affected by these changes
- Where abouts – in Britain or around the world – these industries tend to be situated
- What demographics tend to work in the affected industries
- Examples of industries that have been affected by rapid change in the past, and the results for the people employed in them

SUMMING UP

Feed back to the class, and consider the picture that is emerging. Are there any industries, or groups of people, that you think will benefit greatly from increasingly rapid automation? Are there any people who might be greatly disadvantaged? If so, what skills might they have which could be useful in other jobs or industries?

Extension tasks

THE ACTIVITY

Hold a mock job application and interview process:

- Choose a selection of real job advertisements in a range of sectors.
- Ask students to draft a letter of application, which should demonstrate why they believe they are a suitable candidate. Letters should include the student's transferable skills, and how they are applicable to the job in question.
- Ask senior members of staff, governors or local community leaders to call each student for a 30-minute interview, and ask them to give feedback to each student, emphasising that demonstrating appropriate skills and knowledge of the job is as important as the qualifications they have.
- Each student should then redraft their CV and letter of application, taking account of the feedback they have received.