



Pearson
Edexcel

Transferable skills

A guide
for schools

The global transferable skills gap

In recent years, universities and employers have highlighted the need for students and graduates to develop a range of transferable skills, often referred to as 'soft skills', to enable them to better meet the demands of undergraduate study and the world of work.

In fact, universities and employers consider transferable skills to be the largest skills gap overall.



1 in 6

employers have difficulty finding candidates with the skills they require¹



54%

of companies say that skills shortages impact their ability to serve their customers²



1 in 3

skills in a job posting is a "soft skill"¹



87%

of university professors do not think students have the research skills needed for degree-level study³

The transferable skills gap demonstrates that students require more than just 'knowledge' to be successful.

It's about skills as well as knowledge to be successful at further study, higher education and in the workplace.

¹ Employability - Personal & Social Capability Framework report from Pearson, 2016.

² Employability report from PSB for Pearson, 2016.

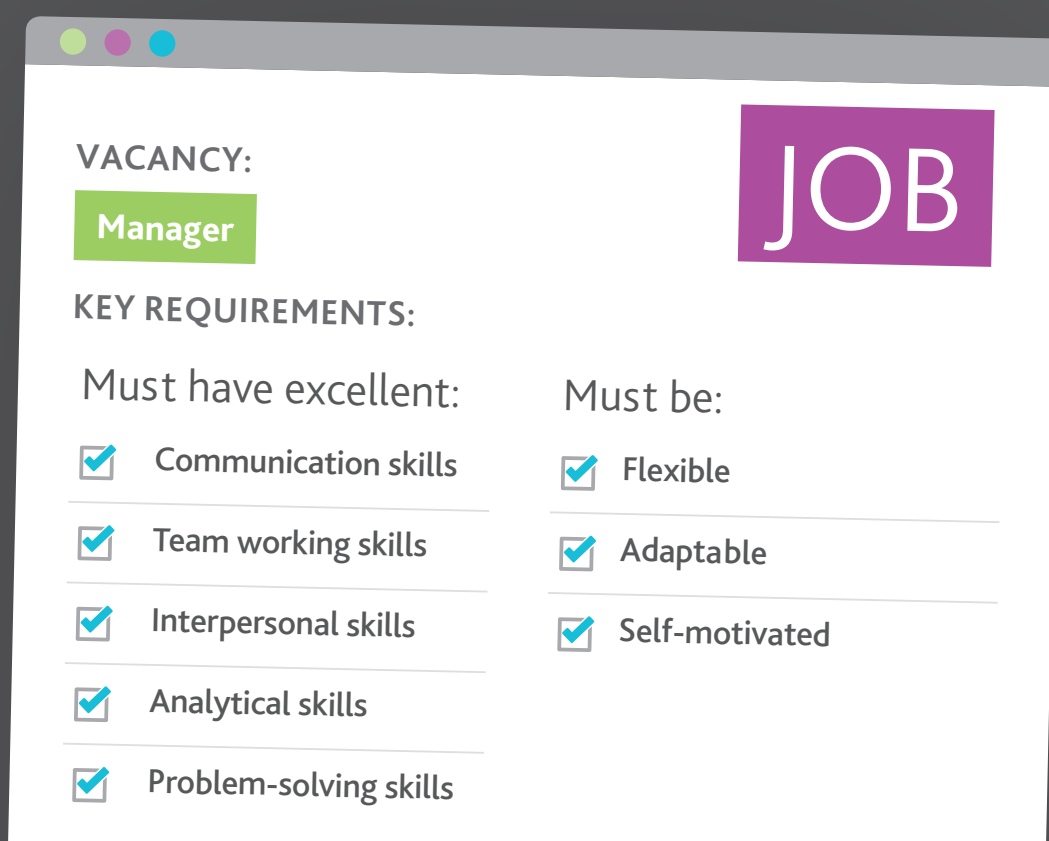
³ Bridging the Gap: Understanding the Differing Research Expectations of First-Year Students and Professors, Meg Raven, Mount Saint Vincent University, 2016.

The global transferable skills gap



It's really the more **fundamental skills** like **teamwork** and **communication** that seem to matter the most, that **employers demand the most**"

Guy Berger, the chief economist at LinkedIn.



Research we have conducted recently highlights that teachers, parents and students are aware of the global transferable skills gap and as a result, seek a truly comprehensive curriculum that develops not only subject knowledge, but the transferable skills in demand by university and employers.

This is why we have ensured that transferable skills are embedded in the new Pearson Edexcel International GCSEs (9–1) and Pearson Edexcel International Advanced Levels, as well as the new iPrimary and iLowerSecondary for 5-14 year-olds.

What are transferable skills?

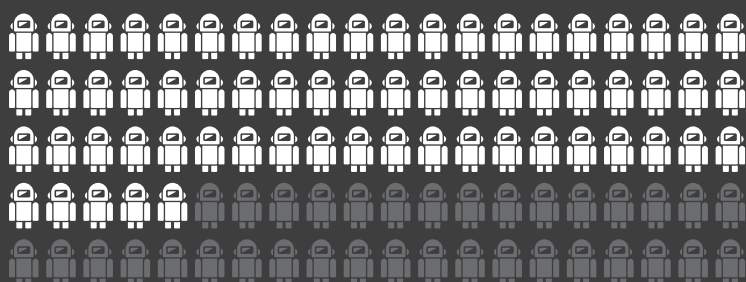
The Organisation for Economic Co-operation and Development (OECD) defines transferable skills as ‘the bundle of knowledge, attributes and capacities that can be learned and that enable individuals to successfully and consistently perform an activity or task and can be built upon and extended through learning’.

Education systems around the world also refer to transferable skills as:

Core competencies	Generic skills	Critical skills	Higher order thinking skills
21st century skills	Creativity and innovation	Conceptual learning	Problem solving

Pearson’s research team reviewed a number of skills frameworks for our Edexcel qualifications, and selected the US National Research Council’s (NRC) framework as being the most suitable. This is because:

- The NRC is the most evidence-based and robust of its type.
- The framework includes cognitive, intrapersonal and interpersonal skills.
- During the development process of our International GCSEs and International Advanced Level qualifications and resources, we have ensured that there are opportunities for the transferable skills contained in the NRC framework to be developed and assessed, where a transferable skill naturally occurs within a subject (not all skills will be relevant for every subject).
- The breadth of transferable skills, listed in the NRC framework diagram below are covered by the full range of subjects in the Pearson Edexcel International GCSE (9–1) curriculum and Pearson Edexcel International Advanced Levels.



65%
of children aged 12
in 2015 will do jobs
that don't exist yet!¹

NRC transferable skills framework



Cognitive Skills

“Core skills your brain uses to think, learn and reason – used to carry out any task”

Cognitive Processes and Strategies

Critical Thinking
 Problem Solving
 Analysis
 Reasoning / Argumentation

Creativity

Creativity
 Innovation



Intrapersonal skills

“This is emotional intelligence, the ability to know, understand and manage your own emotions and learning”

Intellectual Openness

Adaptability
 Personal and Social Responsibility
 Continuous Learning
 Intellectual Interest and Curiosity
 Interpretation
 Decision Making
 Adaptive Learning
 Executive Function

Work Ethic / Conscientiousness

Initiative
 Self-Direction
 Responsibility
 Perseverance
 Productivity
 Self-regulation (metacognition, forethought, reflection)
 Ethics
 Integrity

Positive Core Self Evaluation

Self-monitoring
 Self-evaluation
 Self-reinforcement



Interpersonal Skills

“The life skills we use everyday to communicate and interact with other people, both individually and in groups”

Teamwork and Collaboration

Communication
 Collaboration
 Teamwork
 Co-operation
 Interpersonal Skills
 Empathy / Perspective Taking
 Negotiation
 Leadership
 Responsibility
 Assertive Communication
 Self-Presentation



FOR
AGES
5-14

Pearson Edexcel **i**Primary and **i**LowerSecondary overview

Pearson Edexcel iPrimary and iLowerSecondary are one-stop international programmes for children aged 5–14. It's not just a curriculum – it's a complete toolkit for schools.



Keep your skills sharp with free face-to-face teacher training and online Professional Development support.



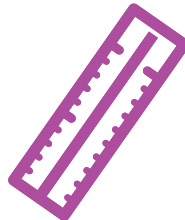
Cut your planning time with our lesson and unit plan examples.



Guide your students through the curriculum with our ready-made schemes of work.



Easily work out exactly what to teach and when with our detailed teacher's guides.



Measure your students' learning with built-in Progress and Achievement Tests.



Steer students towards success at International GCSE with a curriculum that builds on their learning at every stage.



Draw your students in with an internationally focused curriculum, written with additional language learners in mind.



Make sure knowledge sticks with accessible and culturally-relevant examples and resources.

How are transferable skills covered in Pearson Edexcel **i**Primary and **i**LowerSecondary

Principles for progress are a collection of the 10 principles (identified by our pedagogical experts) that will give your students the best opportunity to make progress in their learning. Each principle is accompanied by guidance relating to specific teaching approaches, tips and issues to watch out for, all written in clear, practical steps that you can use in the classroom. Formative assessment underpins and runs through all of these principles. Knowing the students' starting point, understanding their learning and reflecting on their development helps to ensure progress for all.

Principle

Summary

- | | |
|---|---|
| 1 Engaging everyone | Here you will find techniques for ensuring that all students are involved in the lesson and participate in discussion, including whole class question and answer sessions. |
| 2 Differentiation | This section provides techniques for adapting your teaching to ensure that all students can access the learning according to their level and achieve good outcomes. These techniques also convey the importance of having high expectations of all students. |
| 3 Enabling independent learning | This section outlines suggestions for supporting your students to 'have a go' and not to be put off by challenging ideas or tasks. It also has techniques for helping all students take more responsibility for their own progress. |
| 4 Effective questioning | This section offers practical tips for asking questions that make students think. It outlines question types (for example, closed, open, factual, conceptual, probing, discussion) and provides examples of each. |
| 5 Teacher talk | Teacher talk is important and this section outlines how to make it as effective as possible with ways of engaging your students as you introduce new content and explain activities. |
| 6 Collaborative activities | In this section you will find lots of practical ideas for grouping students and ensuring that group work is really focused and productive. It also outlines ways of developing student ownership of their learning and the ways in which group work can build confidence too. |
| 7 Teacher demonstration | This section is focused on how to conduct effective teacher demonstrations and how you can model important learning behaviours too. |
| 8 Developing thinking skills | In this section you will find good ideas for developing your students' abilities to think critically, to problem-solve and to carry out their own mini inquiries. |
| 9 Reflecting on learning | Here, you will find ideas to encourage students to think constructively about their own learning and to take control over how to make better progress. |
| 10 Feedback (in both directions) | This section offers practical ideas for conducting good two-way feedback between you and your students in order to improve learning and achievement. |



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14-16

An overview of the new Pearson Edexcel International GCSEs (9–1)

Our new suite of International GCSE (9–1) qualifications are designed to:



Be more relevant for international students

With more international content, including the addition of further international content topics and the use of local contexts where possible.



Reward outstanding academic achievement

By introducing a new 9–1 grading scale, with the new grade 9 representing a new level of attainment, you can differentiate your top performing students. There's also greater differentiation in the middle of the scale, with grades 6,5, and 4 being equivalent to the old grades B and C



Contain embedded transferable skills

Such as problem-solving and verbal reasoning, skills needed to seamlessly progress to higher-level study and that are valued by employers.



Provide detailed exam analysis with ResultsPlus

ResultsPlus is a service unique to Pearson that provides free online in-depth mock and actual exam performance analysis, supporting teachers to plan improvements in teaching and learning, driving attainment.



Offer a wider range of teaching and learning materials, resources and training

This support includes schemes of work, Getting Started guides, exemplar materials, ExamWizard, comprehensive textbooks and interactive resources, digital services and tailored teacher training.



Support progression to further study

Developed with the help of teachers and higher-education representatives, they provide seamless progression to further study, including A levels and beyond.



How are transferable skills embedded in Edexcel International GCSEs (9–1)?

If you're following Pearson Edexcel International GCSE (9–1) specifications or your students are using our textbooks, you've already started integrating transferable skills into your teaching.

That's because they are embedded and signposted in the qualifications and Student Books.

Textbooks example

In the Edexcel International GCSE (9–1) English Literature Student Book, the transferable skill 'critical thinking' is specifically developed through a suggested activity.

Textbooks example



280 PAPER 2 LITERARY HERITAGE TEXTS

ACTIVITY 5 A01 SKILLS ANALYSIS, REASONING, EXECUTIVE FUNCTION

▼ UNDERSTANDING THE TEXT

Find three examples in the play where the language form changes from verse to prose or from prose to verse. This could happen during a scene or from one scene to the next. For each example, write a short paragraph describing:

- 1 what happens on stage when this change of form takes place
- 2 the effect that the change of form has on the audience.

EXAM-STYLE QUESTIONS

A01 A02 A04

SKILLS CRITICAL THINKING, ANALYSIS, REASONING, INTERPRETATION, ADAPTIVE LEARNING

HINT

In the exam, you will have 45 minutes in which to write your essay. There will be a choice of two questions on the paper. Use these exam-style questions to practise exam technique and timing. Remember to consider language, form and structure and refer to the context of the play in your response.

- 1 A01: This opening sentence shows consideration of the text as a whole.
- 2 A04: This comment shows good contextual understanding.
- 3 A04: These sentences show how you can expand a contextual point. These ideas are relevant to the question, as they explain why this form of discrimination was particularly unjust.
- 4 A01: This comment on the quotation makes clear how seriously Shylock takes the idea of justice. Consider what happens next – what could you say about the judge's decision to pardon Antonio and his wife?

- 1 Show how attitudes towards people of other races and faiths are presented in *The Merchant of Venice*. You must consider language, form and structure and refer to the context of the play in your answer. (30 marks)
- 2 In what ways is setting important in *The Merchant of Venice*? You must consider language, form and structure and refer to the context of the play in your answer. (30 marks)
- 3 Explore the relationship between Portia and Nerissa. You must consider language, form and structure and refer to the context of the play in your answer. (30 marks)
- 4 Explore the significance of money and trade within *The Merchant of Venice*. You must consider language, form and structure and refer to the context of the play in your answer. (30 marks)
- 5 What is the significance of justice and mercy in *The Merchant of Venice*? You must consider language, form and structure and refer to the context of the play in your answer. (30 marks)

5 The theme of justice and mercy is integral to the plot of *The Merchant of Venice*.¹ Shylock holds a great sense of injustice in the way he has always been discriminated against as a Jew.² Lending money was seen as immoral at this time, and although Christians disapproved, it was the only possible way that Jews were allowed to make money. Christians like Antonio and Bassanio benefit from money-lending, so it shows the hypocrisy in Venetian society.³ Shylock's bitterness is evident in all his dealings with Antonio. He refuses to give up on receiving his pound of flesh from Antonio, even when Portia reasons with him to be merciful. Shylock's declares in court that if the judge denies his rights, he will 'let the danger light / Upon your charter and your city's freedom'. 'Charter' means law, so he is threatening the law and order of the whole of Venice.⁴

Qualifications example - Specifications and Schemes of Work

In the specifications and Schemes of Work (SoW) for each subject, transferable skills gained through teaching, delivery and assessment are signposted. This is shown in the English Literature specification and English Language A SoW examples below.

English Language A SoW example



Paper 1: Non-fiction and transactional Writing

Lesson	Paper and section	Learning outcomes	Content	Content	Which transferable skills are explicitly assessed through examination?	Which transferable skills could also be acquired through teaching and delivery?
	Paper 1: Non-fiction (Section A)	Students will be able to: Understand the main ideas a writer is	Students should be given an extract from Part 1 of the Anthology. Introduce different	Selected extracts from Part 1 of the Anthology. Alternatively, use materials that are	Problem solving Creativity	Problem solving Executive function Creativity

English Literature Specification example



Cognitive skills	Cognitive Processes and Strategies:	<ul style="list-style-type: none"> Critical thinking Problem solving Analysis Reasoning Interpretation Decision Making Adaptive learning Executive function
	Creativity:	<ul style="list-style-type: none"> Creativity Innovation
Intrapersonal Skills	Intellectual openness:	<ul style="list-style-type: none"> Adaptability Personal and social responsibility Continuous learning Intellectual interest and curiosity
	Work ethic/ conscientiousness:	<ul style="list-style-type: none"> Initiative Self-direction Responsibility Perseverance Productivity Self-regulation (metacognition, forethought, reflection) Ethics Integrity Positive Core Self Evaluation Self-monitoring/

Problem solving
for English Language writing about text to solve a problem, for example in response to a specific context.

Initiative
for English Language responding in a discussion or writing task. Drawing on unusual or tangential material, helping to reach a solution.

Full subject specific skills interpretations are available for each subject.

Further support for developing skills for learning and work

All our Pearson Edexcel International GCSEs (9–1) specifications have accompanying skills mapping and transferable skills definitions for every subject.

Transferable skills definitions

Transferable skills subject interpretation for the Pearson Edexcel International GCSE in Biology (9–1)

Transferable skills will help students cope with the different demands of degree study and provide a solid skills base that enables them to adapt and thrive in different environments across educational stages; and ultimately into employment.

A good international education should enable students to start developing transferable skills as early as possible. Developing these transferable skills where they naturally occur as part of the International GCSE curriculum can help build learner confidence and embed the importance of this well-rounded development. This builds the foundations to ensure students are ready for A-level and higher education.

Our approach to enhancing transferable skills in our International GCSEs ensures that it is not only the academic and cognitive skills that are developed, but those broader elements that universities highlight as being essential for success. Skills such as self-directed study, independent research, self-awareness of own strengths and weaknesses and time-management are skills that students cannot learn from a textbook but have to be developed through the teaching and learning experience that can be provided through an international curriculum.

To support the design of our qualifications, the Pearson Research Team selected and evaluated seven global 21st-century skills frameworks. Following on from this process, we identified the National Research Council's (NRC) framework as the most evidence-based and robust skills framework.

In the tables below, we have taken the NRC framework skills and provided an explicit definition of how each skill can be interpreted for this subject. This will enable teachers and learners to understand examples of how they can develop each skill through this International GCSE.

Intrapersonal skills		Interpersonal skills		Cognitive skills	
Intellectual Openness		Teamwork and collaboration		Cognitive Processes and Strategies	
Adaptability	Ability to select and apply knowledge and understanding of scientific processes, which is not prompted or provided to biology problems.	Communication	Able to communicate ideas to peers and teachers and to discuss the logic of algorithms and code (verbally or written).	Critical thinking	Using many different pieces of information from biology and synthesise this information to make judgements.
Personal and social responsibility	Appreciate ethical issues in biology.	Collaboration	Working with peers on shared tasks; giving feedback on peers on problem solving and other tasks.	Problem solving	Apply unifying patterns and themes in biology and use them in new and changing situations.
Continuous learning	Planning and reflecting on own learning; setting goals and meeting them regularly.	Teamwork	Working with peers to solve problems and create programs.	Analysis	Analyse and interpret data and experimental methods, drawing conclusions, which are consistent with evidence from experimental activities.
Intellectual interest and curiosity	Identifying a problem under own initiative, planning a solution and carrying this out.	Co-operation	Share ideas with peers and supports peers who are finding tasks difficult.	Reasoning	Evaluate information related to biology

Transferable skills mapping are available for all subjects

Transferable Skills International GCSE Subject Mapping: Biology

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In the tables below, we have taken a framework of skills and provided mapping to suggest where each skill can be assessed, and where each skill could be developed for this subject. This will enable teachers and learners to understand where they are developing each skill, and examples of how they can develop each skill through this International GCSE.

NRC framework skill	Skill interpretation in this subject	Where the skill is covered in content	Where the skill is explicitly assessed in examination	Opportunity for the skill to be developed through teaching and learning approach
Cognitive skills				
Cognitive Processes and Strategies				
Critical thinking	Using many different pieces of information from biology and synthesise this information to make judgements.	Examples in several parts of the specification including: 2.15 - 2.16 Movement of substances into and out of cells 2.40 – 2.45 Understand and explain the different aspects of gas exchange in living organisms 4.12 Understand the biological consequences of pollution of air by sulfur dioxide and by carbon monoxide J. Co-ordination and response Understand how organisms are able to respond to changes in their environment.	e.g. SAM Paper 1 Qu 6(c) SAM Paper 1 Qu 7(c) SAM Paper 1 Qu 11 SAM paper 2 Qu 3	Yes
Problem solving	Apply unifying patterns and themes in biology and use them in new and changing situations.	Examples in several parts of the specification including: 3.2 Understand that fertilisation involves the fusion of a male and female gamete to produce a zygote that undergoes cell division and develops into an embryo. 3.16B Describe a DNA molecule as two strands coiled to form a double helix, the strands being linked by a series of paired bases: adenine (A) with thymine (T), and cytosine (C) with guanine (G) 3.24 Understand how to interpret family pedigrees 3.35B Understand how a change in DNA can affect the phenotype by altering the sequence of amino acids in a protein	e.g. SAM Paper 1 Qu 9 SAM Paper 2 Qu 5	Yes
Analysis	Analyse and interpret data and experimental methods, drawing conclusions, which are consistent with evidence	Examples in several parts of the specification including: 2.34 Understand how the process of respiration produces ATP in living organisms	e.g. SAM Paper 1 Qu 3	Yes



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16-19

An overview of Pearson Edexcel International Advanced Levels (IAL)

Our International Advanced Level qualifications have been developed in consultation with the international school community, including a large number of teachers and university lecturers, to be engaging for international learners and to give them the necessary skills to support progression to higher and further study.

Now available in 21 subjects, with the following subjects updated for first teaching in September 2018: Mathematics, Further Mathematics, Pure Mathematics, Biology, Chemistry, Physics, Business, Economics and IT (NEW for 2018).



International

Designed for international students.



Modular

Provides the opportunity for unit resits to improve exam performance and final grade.



Flexible

January, June and October assessment opportunities for most subjects.



Rigorous

Are fully comparable to UK reformed GCE A levels, as certified by UK NARIC.



University recognition

Recognised by universities worldwide.



ResultsPlus

ResultsPlus provides exam performance insight that can be used to help improve future exam results.



World-class

Designed to Pearson's world-class qualification principles and benchmarked against other leading international curriculums.



Outstanding support

Including lesson plans, schemes of work, past papers, mark schemes, examiner reports, Ask the Expert, Subject Advisor experts, tailored teacher training and more.

How Pearson Edexcel International Advanced Level (IAL) supports the development of transferable skills

Transferable skills are embedded in our International Advanced Level qualifications and textbooks in the same way they are in our International GCSEs (9–1).

Transferable Skills in the Student Books

Skills are developed as part of the activities in the Student Books. They are clearly signposted so you and learners can easily identify the skills they are learning as part of their learning.

Example from Pearson Edexcel International A Level Economics Student Book

3 PRODUCTION POSSIBILITY FRONTIERS

OPPORTUNITY COST

The production possibility frontier illustrates clearly the principle of opportunity cost. Assume that the economy is producing at point C in Figure 1 and that the aim is to move to the point D. This means that the output of manufactured goods will increase from 30 to 35 units. However, the opportunity cost of that (i.e. what has to be given up because of that choice) is the lost output of non-manufactured goods, falling from 30 to 20 units. The opportunity cost at C of increasing manufacturing production by five units is 10 units of non-manufactured goods.

Another way of expressing this is to use the concept of the **margin**. In economics, the margin is a point of possible change. At the point C in Figure 1, the economy could produce more manufactured goods, but at the cost of giving up non-manufactured goods. For example, the marginal cost of five more units of manufactured goods would be 10 fewer units of non-manufactured goods. This is shown by the movement from C to D along the boundary.

ECONOMIC GROWTH OR DECLINE

An economy cannot produce at any point outside its existing PPF. This is because the PPF shows the maximum potential output of an economy. In Figure 1, for example, the economy cannot produce at the point G. However, the economy might be able to move to the right of its PPF in the future if there is economic growth. An increase in the productive potential of an economy is shown by a shift outwards of the PPF. In Figure 2 economic growth pushes the PPF from PP to QQ, allowing the economy to increase its maximum level of production, say, from A to B.

ACTIVITY 1

SKILLS PROBLEM-SOLVING, REASONING

CASE STUDY: THE PRODUCTION POSSIBILITY FRONTIER

The production possibility frontier of an economy is as shown in Figure 1.

- (i) If the economy produces 15 units of manufactured goods, what is the maximum number of non-manufactured goods it can produce? (ii) How many manufactured goods could it produce if production of non-manufactured goods was 50 units?
- The economy is currently operating at point C. What is the opportunity cost of increasing production of non-manufactured goods?

1.3.1 INTRODUCTORY CONCEPTS

15

Growth in the economy can happen if:

- the quantity of resources available for production increases; for instance there might be an increase in the number of workers in the economy, or new factories and offices might be built
- there is an increase in the quality of resources; education will make workers more productive and technical progress will allow machines and production processes to produce more with the same amount of resources.

The PPF can shift inwards as well as outwards. The productive potential of an economy can fall. For example, war can destroy economic infrastructure. A rapid fall in the number of workers in a population can reduce potential output. Some environmentalists predict that global warming will damage world agriculture and this will then affect all production. Global warming could therefore lead to a shift inwards of the world's PPF.

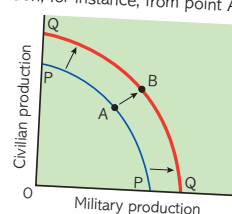
Many economies experience high levels of unemployment of workers. Factories and machines may not be used when this occurs.

Production then occurs **within** the boundary and **not on** the boundary such as at the point F in Figure 1. If resources became fully used, the economy could move from inside the boundary to a point on the boundary. In Figure 1, this would mean a move from the point F to, say, D or E.

FIGURE 2

Economic growth

An increase in the quantity or quality of the inputs to the production process means that an economy has increased its productive potential. This is shown by a shift to the right of the production possibility frontier from PP to QQ. It would enable the economy to move production, for instance, from point A to point B.



EXAM-STYLE QUESTIONS

HARLEY-DAVIDSON

SKILLS ANALYSIS
INTERPRETATION

Harley-Davidson is a high profile US motorcycle manufacturer. It was established in 1903 and developed a good reputation for its advanced technology and classic design. For many years the company enjoyed a number of advantages over its competitors. For example, the brand was steeped in US history. Also, Harley-Davidson motorcycles were used by the US army in both world wars. The brand had a distinctive image. It was associated with a powerful, brave and rebellious man and an adventurous lifestyle that was attractive to a significant number of males aged between 25 and 35.

However, eventually strong competition emerged in the market, particularly from Japan, and Harley-Davidson nearly went bankrupt on more than one occasion. The company faced a number of problems.

- Competitors' motorcycles were often more reliable than Harley-Davidsons.
- A number of quality Japanese brands entered the market.
- The Harley-Davidson brand became associated with biker gangs, such as the Hells Angels.
- Harley-Davidsons were eventually perceived as old-fashioned.

To resolve these problems the company attempted to reposition the Harley-Davidson. The motorcycles failed to meet the quality standards that the customers demanded. The products were also not appealing to the younger market segments. Harley-Davidson decided to channel resources from marketing into improving the quality and reliability of their products.

love to buy and ride premium motorcycle and innovative design has helped Harley-Davidson into new and emerging markets across the world.

Harley-Davidson is now enjoying success by differentiating its products clearly from the competition. It has developed a competitive advantage by offering customers a wide range of different products and a level of customisation from the handlebars to the overall looks. This also includes the design of accessories riders can wear. The company has developed a specific culture for Harley-Davidson through its Harley Owners Group. This organisation holds regular meetings where Harley owners from different regions can get together and enjoy the lifestyle of passionate bikers.



▲ A Harley-Davidson motorcycle

⑥

(a) (i) Define market positioning.

Example
from Pearson
Edexcel
International
A Level
Business
Student
Book

THINKING BIGGER

THE BATTLE OF AGRA

SKILLS

CRITICAL THINKING, PROBLEM SOLVING,
ANALYSIS, INTERPRETATION

Agra Fort was first built in the 11th century. The present structure was built in 1573. In this activity, you need to imagine attacking the fort using a cannon that fires a cannonball as a projectile.

STUDENT ESSAY

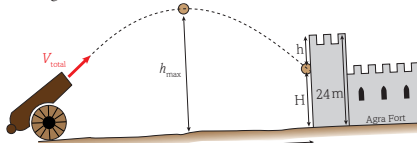


fig A Agra Castle is now a UNESCO World Heritage Site

In this section, I will use some basic mechanics to answer a question: could the Mughal Empire Artillery really have attacked Agra Fort in the manner described previously? The nineteenth-century source material suggests that the fort was under siege by the Mughals for three months and 'battered by artillery'. However, the current walls that are part of the original construction do not have many obvious battle scars.

Looking at fig B, the question that needs to be answered here is:

'How high up the front wall of the fort will the cannonball hit?' This height is marked on fig B as 'H'.



about the initial velocity of the cannonball. The cannon explosion could act for 0.05 s to accelerate the cannonball (mass = 12 kg) with a force of 9300 N. It causes the cannonball to leave the cannon at an angle of 45° to the horizontal.

Steps to the answer

We can work out what calculations are required to solve this problem, by working back from the answer we want to find. The fundamental idea is that the parabola trajectory would be symmetrical if the flight was not interrupted by crashing into the fortress wall.

- 1 To find the height up the wall from the ground, we will need to work out how far down from the cannonball's maximum height it falls:

$$H = h_{\max} - h$$

- 2 To find h , we need to know the time of flight, t_{total} . We can divide this into a time to reach h_{\max} , and time to fall from h_{\max} to h . We will use vertical gravitational acceleration to calculate the vertical drop in that remaining time:

$$t_{\text{total}} = \frac{s}{v_{\text{horizontal}}}$$

From fig B, we can see that $s = 150$ m.

- 3 $v_{\text{horizontal}}$ can be found by resolving the velocity to give the horizontal component:

$$v_{\text{horizontal}} = v_{\text{total}} \times \cos 45^\circ$$

- 4 The overall velocity will come from the cannon's acceleration of the cannonball:

$$v = u + at$$

- 5 Newton's second law of motion gives us the acceleration caused by the sling

$$a = \frac{F}{m}$$

Calculate the answer by reversing these steps:

Example
from Pearson
Edexcel
International
A Level
Physics
Student
Book

Transferable skills in the specifications

In the Pearson Edexcel International Advanced Level (IAL) specifications, for each subject, transferable skills gained through teaching, delivery and assessment are signposted. This is shown in the Economics example below.

Cognitive skills	Cognitive processes and strategies	<ul style="list-style-type: none"> • Critical thinking • Problem solving • Analysis • Reasoning/argumentation • Interpretation • Decision making • Adaptive learning • Executive function 	Thinking critically about economics ideas and issues. Using various economic concepts and economic data to synthesise the information to make judgements.
	Creativity	<ul style="list-style-type: none"> • Creativity • Innovation 	
Intrapersonal skills	Intellectual openness	<ul style="list-style-type: none"> • Adaptability • Personal and social responsibility • Continuous learning • Intellectual interest and curiosity 	The notion that businesses and individuals need to act for the benefit of society at large. Appreciate ethical issues relating to economic issues
	Work ethic/ conscientiousness	<ul style="list-style-type: none"> • Initiative • Self-direction • Responsibility • Perseverance • Productivity • Self-regulation (metacognition, forethought, reflection) • Ethics • Integrity 	
	Positive core self-evaluation	<ul style="list-style-type: none"> • Self-monitoring/self-evaluation/self-reinforcement 	
Interpersonal skills	Teamwork and collaboration	<ul style="list-style-type: none"> • Communication • Collaboration • Teamwork • Cooperation • Empathy/perspective taking • Negotiation 	The imparting or exchanging of information by speaking or writing. Able to communicate an Economic concept to others verbally or in written forms. Answer questions on the issue.
	Leadership	<ul style="list-style-type: none"> • Leadership • Responsibility • Assertive communication • Self-presentation 	

Our International Advanced Level specifications also have accompanying skills mapping and transferable skills definitions for every subject, in the same way that our International GCSEs do.

Transferable skills mapping

NRC framework skills
Sources: Cognitive/Intrapersonal and Interpersonal skills adapted and taken from the NRC framework
IAL: Psychology

NRC framework skill	Skill interpretation in this subject for IAL <i>Agreed with subject team, should capture broad definition so not restrictive (or limited to single part of spec)</i>	Examples of where this skill is covered in specification content	Examples of where this skill is explicitly assessed in examination, include AO ref and SAM q refs	Opportunity for the skill to be covered in teaching and learning approaches (with examples).
Cognitive skills Cognitive Processes and Strategies				
Critical thinking	Developing a critical perspective on psychology by analysing the way psychological theory and research can be critically evaluated.	Throughout the specification students may be required to respond to stimulus material using psychological concepts, theories and research from across topic areas (p.5). Topic E Developmental Psychology Students must show an understanding that developmental psychology is about the development of the individual from before birth to adolescence and beyond, in that what we experience as children affects us including our later development. Topic I Psychological Skills students will be asked to draw on other areas of the qualification in order to understand conceptual and methodological issues and issues and debate from across all topic areas (except optional topics).	WPS01 3 Extended written essay with levels based assessment WPS02 11 synoptic extended written essay with levels based assessment WPS03 5 synoptic issues extended written essay with levels based assessment WPS04 1(a)(i)(ii) implications of psychological theory WPS04 7 Key question for society extended essay with levels based assessment WPS04 8 Issues and debates extended essay with levels based assessment	Students can use core evaluative concepts, such as issues of validity, reliability, credibility, ethics, generalisability, objectivity, subjectivity to analyse material within lessons and debate the outcomes of their decisions; for example, application of evaluations to key studies such as Burger (2009). Students can present research evidence that they have investigated that supports or goes against a theory and determine the strengths and weaknesses of the theory as an explanation; for example, finding evidence for or against Atkinson and Shiffrin's (1968) multi-store model as an explanation of memory.
Problem solving	Utilise problem solving skills to explore how psychological theory and research can be developed and applied to contexts. Mathematical skills and calculations.	Throughout the specification students may be required to respond to stimulus material using psychological concepts, theories and research from across topic areas (p.5). Topic I Psychological Skills students will be asked to draw on other areas of the qualification in order to understand conceptual and methodological issues and issues and debate from across all topic areas (except optional topics).	WPS01 1(e), 4(b)(c)(d) mathematical skills WPS02 5(b) application of skills to real-life context WPS02 6 concepts applied to novel situations WPS03 5 synoptic issues extended written essay with levels based assessment WPS03 3 (a)(b) mathematical interpretation	Students can create unseen case studies and scenarios to share with each other in lessons for their peers to apply theoretical concepts; for example, a case of an aggressive teenager to be explained using material from Topic C and D. Students could develop mathematical quiz activities to develop

Transferable skills definitions

International Advanced Level
Subject: Psychology
The need for Transferable Skills
Sources: Cognitive/Intrapersonal and Interpersonal skills adapted and taken from the NRC framework


In recent years, higher education institutions and employers have consistently highlighted the need for students to develop a range of transferable skills to enable them to respond with confidence to the demands of undergraduate study and the world of work. The Organisation for Economic Co-operation and Development (OECD) defines skills, or competencies, as 'the bundle of knowledge, attributes and capacities that can be learned and that enable individuals to successfully and consistently perform an activity or task and can be built upon and extended through learning'.

To support the design of our qualifications, the Pearson Research Team selected and evaluated seven global 21st-century skills frameworks. Following on from this process, the team identified the National Research Council's (NRC) framework as the most evidence-based and robust skills framework, and have used this as a basis for our adapted skills framework.

The framework includes cognitive, intrapersonal skills and interpersonal skills. These skills have been interpreted to ensure they are appropriate for this subject. All of the skills listed are evident or accessible in the teaching, learning and/or assessment of the qualification.

Identifying and highlighting these skills in International Advanced Level qualifications ensures that it is not only the academic and cognitive skills that are developed, but those broader elements that cannot learn from a textbook but have to be developed through the teaching and learning experience that can be provided through an international curriculum.

In the tables below, we have taken the NRC framework skills and provided definitions of how each skill can be interpreted for this subject. This will enable teachers and learners to understand examples of how they can develop each skill through an International Advanced Level qualification.



Intrapersonal skills		Interpersonal skills		Cognitive skills	
Intellectual Openness		Teamwork and collaboration		Cognitive Processes and Strategies	
Adaptability	Apply knowledge and understanding in different circumstances and situations in order to analyse questions based on unseen scenarios and new materials.	Communication	Enable students to utilise a number of different opportunities to exhibit communication skills in variety of ways including written and verbal, through written discussions and debates surrounding psychological core concepts and arguments.	Critical thinking	Developing a critical perspective on psychology by analysing the way psychological theory and research can be critically evaluated.
Personal and social responsibility	Challenge students to reflect on and develop an understanding of the implications of psychological research in society and for social issues.	Collaboration	Working with others to develop knowledge and understanding of psychological theory and evidence, working together to address the core features of psychological debate.	Problem solving	Utilise problem solving skills to explore how psychological theory and research can be developed and applied to contexts. Mathematical skills and calculations.
Continuous Learning	Challenge students to reflect on and develop their skills and understanding of psychology to adapt to novel situations within and across society.	Teamwork	Working with others to develop knowledge and understanding of psychological theory and evidence, working together to address the core features of psychological debate.	Analysis	Analyse and evaluate aspects of psychological theory and research, and the issues and debates surrounding psychology as a discipline.
Intellectual interest and curiosity	Develop students' intellectual interest and curiosity through stimulus materials and research evidence to support and critique psychological understanding of human behaviour. Undertaking a research task which is self-directed.	Co-operation	Challenge themselves and others to reflect on and develop their evaluations and assessments of psychological content and methodology to support the development of understanding.	Reasoning/argumentation	Develop students' ability to construct well-argued, well-informed, balanced and structured written arguments, demonstrating their depth and breadth of understanding.

Defining and mapping transferable skills

Transferable skills definitions and mapping documents accompany our specifications and provide additional support.

Transferable skills glossary

Definitions below should be understood within the context of the subject.

	Transferable skill	Definition
A	Adaptability	To change (or be changed) to fit changed circumstances.
	Adaptive Learning	A type of learning that focuses on past successes and how to use these as a basis in developing future strategies and successes.
	Analysis	The detailed break-down of a theme, topic or situation in order to interpret or study the interrelationships between parts.
	Assertive Communication	Express one's self effectively and ability to stand up for a point of view, while also respecting the rights and beliefs of others.
C	Co-operation	The action or process of working together to the same end.
	Collaboration	The action of working with someone or a group as an equal partner to produce an outcome.
	Communication	The imparting or exchanging of information by speaking, writing, or using some other medium.
	Continuous Learning	To continually develop and improve one's skills and knowledge in order to perform effectively and adapt to changes in life.
	Creativity	The use of imagination or original ideas to create something; inventiveness.
	Critical Thinking	The strategies used to objectively analyse and evaluate a topic, problem or situation in order to form a judgement.
D	Decision Making	The action or process of making important decisions.
E	Empathy / Perspective Taking	The ability to understand and share the feelings and viewpoint of another.
	Ethics	One's own moral principles that govern behaviour or the conducting of an activity.
	Executive Function	The ability to successfully use a set of mental skills and strategies that help individuals to approach problem solving, get things done and make progress in their lives.
I	Initiative	The ability to assess and initiate things independently.
	Innovation	To make new changes in something established, especially by introducing new methods or ideas.

Transferable skill	Definition	
Integrity	The quality of being honest and having strong moral principles.	
Intellectual Interest and Curiosity	A desire to invest time and energy into learning more about a person, place, thing or concept.	
Interpersonal Skills	Life-skills we use every day to communicate and interact with other people, both individually and in groups.	
Interpretation	The action of explaining the meaning of a theme, topic or situation from one's own individual perspective.	
Leadership	The action of leading a group of people or an organization, or the ability to do this.	L
Negotiation	Discussion, including compromise where appropriate, aimed at reaching an agreement.	N
Perseverance	A persistence in doing something, despite difficulty or delay in achieving success.	P
Personal and Social Responsibility	To act for the benefit of your community and society at large.	
Problem Solving	The process of applying principles and concepts to find solutions to difficult or complex issues.	
Productivity	The effectiveness of productive effort, as measured in terms of the rate of output.	
Reasoning / Argumentation	The process of reaching conclusions through use of a logical process.	R
Responsibility	To take ownership for a situation or issue and accept the consequences of own actions.	
Self-Direction	Directed or guided by oneself, especially as an independent agent.	S
Self-monitoring / self-evaluation / self-reinforcement	Looking at own progress to determine what has improved and what areas still need improvement.	
Self-Presentation	How people attempt to present themselves, shape how others view them and create a certain impression.	
Self-regulation (metacognition, forethought, reflection)	Self-regulation is when a person or group uses cognitive skills and strategies to govern itself without outside assistance or influence.	
Teamwork	The combined action of a group, especially when effective and efficient.	T

The future of skills

Pearson have teamed up with researchers from Nesta and the Oxford Martin School to build a research project that moves the conversation about the future of work. Learn more at futureskills.pearson.com

Read our blog

Read our latest blogs

to find out more about how our qualifications develop skills needed for university and the workplace.



To find out more

about our new Edexcel International GCSEs (9-1), visit qualifications.pearson.com/edexcel-internationalgcse

about our updated International Advanced Level (IAL) visit qualifications.pearson.com/ial