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Module 6

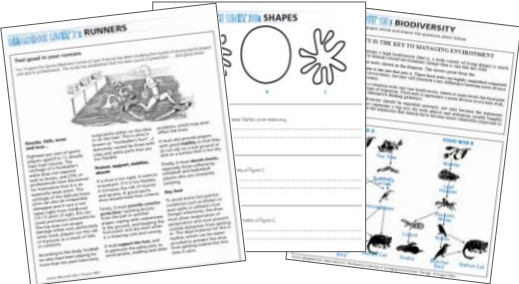
Deconstructing PISA-style sample questions

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Learning objectives

- Review typical PISA questions in reading, science and maths.
- Analyse the intention(s) behind a PISA question.
- Recognise the core skills needed to successfully answer a PISA question.

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PISA and PISA-style assessments

OECD, 2009

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Task 1:

Deconstructing
reading questions

Reviewing a PISA reading question

- Read the PISA question paper **Runners** and answer the questions.
- In pairs, discuss and reflect on the skills that you used to answer each of the questions and note them down.



OECD, 2009

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Core reading skills identified by PISA

- Reflecting on the content of a text.
- Retrieving information.
- Forming a broad understanding.
- Reflecting on the form of a text.
- Developing an interpretation.

OECD, 2012

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Deconstructing Runners Q1

- The correct answer for Q1 is D:
That it is very important for young sports players to wear good sports shoes.
- PISA identify the core skill being tested here as:
Forming a broad understanding.

OECD, 2006a

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Deconstructing Runners Q1

- The correct answer for Q1 is D:
That it is very important for young sports players to wear good sports shoes.
- PISA identify the core skill being tested here as:
Forming a broad understanding.

OECD, 2006a

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Deconstructing Runners Q2

- The correct answer for Q2 should refer to:
Restriction of movement, e.g. “They restrict movement” or “They prevent you from running easily”.
- PISA identify the core skill being tested here as:
Retrieving information (selecting explicitly stated information).

OECD, 2006a

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Deconstructing Runners Q3

- No marks are given for “To avoid injuries”, “They can’t support the foot” or “Because you need to support the foot and ankle” as these show inaccurate comprehension of the material or gives an implausible or irrelevant answer.
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OECD, 2006a

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Deconstructing Runners Q3

- The correct answer for Q3 is D:
Gives the solution to the problem described in the first part.
- PISA identify the core skill being tested here as:
Developing an interpretation (recognising the relationship between two sentences, with explicit markings – connectors).

OECD, 2006a

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Deconstructing Runners Q3

- NO MARKS ARE GIVEN FOR OTHER RESPONSES.
- The correct answer for Q3 is D:
Gives the solution to the problem described in the first part.
 - PISA identify the core skill being tested here as:
Developing an interpretation (recognising the relationship between two sentences, with explicit markings – connectors).

OECD, 2006a

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Task 2:

Deconstructing
maths questions

Reviewing a PISA maths question

- Read the PISA question paper **Shapes** and answer Questions 1 and 2.
- In pairs, discuss and reflect on the skills that you used to answer each of the questions and note them down.



OECD, 2009

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Core mathematics skills identified
by PISA

- Ability to apply a given formula.
- Understanding and use of complicated information to do calculations.
- Applying understanding of area to solving a value for money comparison.
- Comparing areas of irregular shape.
- Assessing learners' strategies for measuring perimeters of irregular shapes.
- Ability to read information from a diagram.

OECD, 2012

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Deconstructing Shapes Q1

- The correct answer for Q1 is shape B. This answer needs to be supported by plausible reasoning, e.g. 'it's the largest area because the others will fit inside it'.
- Credit would also be given for shape B without reasoning.
- PISA identify the core skill being tested here as: **Comparison of areas of irregular shapes.**

OECD, 2006b

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Deconstructing Shapes Q1

- The correct answer for Q1 is shape B. This answer needs to be supported by plausible reasoning, e.g. 'it's the largest area because the others will fit inside it'.
- Credit would also be given for shape B without reasoning.
- PISA identify the core skill being tested here as: **Comparison of areas of irregular shapes.**

OECD, 2006b

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Deconstructing Shapes Q2

- Draw a grid of squares over the shape and count the squares that are more than half filled by the shape.
- Cut off the arms of the shape and rearrange the pieces so that they fill a square then measure the sides of the square.
- Partial credit give for add up the area of each individual arm of the shape or half the area of shape B.

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Deconstructing Shapes Q3

- The correct answer for Q3 should refer to reasonable methods such as:
Laying a piece of string over the outline of the shape then measuring the length of string used.
Cutting the shape up into short, nearly straight pieces and joining them together in a line, then measuring the length of the line.
Measuring the length of some of the arms to find an average arm length then multiplying by 8 (number of arms) x 2.
- PISA identify the core skill being tested here as:
To assess learners' strategies for measuring perimeters of irregular shapes.

OECD, 2006b

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Deconstructing Shapes Q3

- **Wool or string!!!**
Here, although the answer is brief, the learner did offer a **method** for measuring the perimeter.
- **Cut the side of the shape into sections. Measure each then add them together.**
Here, the student did not explicitly say that each section needs to be approximately straight, but we will give the benefit of the doubt, that is, by offering the METHOD of cutting the shape into pieces, each piece is assumed to be easily measurable.
- PISA identify the core skill being tested here as:
To assess learners' strategies for measuring perimeters of irregular shapes.

OECD, 2006b

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Task 3:

Deconstructing
science questions

Reviewing a science question

- Read the PISA question paper **Biodiversity** and answer Questions 1 and 2.
- In pairs, discuss and reflect on the skills that you used to answer each of the questions and note them down.



OECD, 2009

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Core scientific skills identified by PISA

- Demonstrating knowledge and understanding.
- Communicating.
- Identifying evidence.
- Recognising questions.
- Drawing/evaluating conclusions.

OECD, 2012

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Deconstructing **Biodiversity** Q1

- The correct answer for Q1 is A: **Native Cat and Parasitic Wasp.**
- PISA identify the core skill being tested here as: **Demonstrating knowledge and understanding.**

OECD, 2006c

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Deconstructing Biodiversity Q1

- The correct answer for Q1 is D: Native species are more likely to be affected by the loss of a food source than non-native species.
- PISA identify the core skill being tested here as: Drawing/evaluating conclusions.

OECD, 2006c

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NO MARKS ARE GIVEN FOR OTHER RESPONSES.

Deconstructing Biodiversity Q2

- The correct answer for Q2 is C: The effect would be greater in food web B because the Parasitic Wasp has only one food source in web B.
- PISA identify the core skill being tested here as: Drawing/evaluating conclusions.

OECD, 2006c

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Deconstructing Biodiversity Q2

- The correct answer for Q2 is C: The effect would be greater in food web B because the Parasitic Wasp has only one food source in web B.
- PISA identify the core skill being tested here as: Drawing/evaluating conclusions.

OECD, 2006c

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NO MARKS ARE GIVEN FOR OTHER RESPONSES.

- Summarise types of skills pupils need to answer PISA questions?

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Maybe you mentioned . . .

High degree of literacy required to access the question – some questions require a great deal of reading.

Some questions require high degree of numeracy.

Require **high** degree of problem solving skills.

An image – picture, diagram, table or graph – as a stimulus for understanding context.

Require evaluation, interpretation and inference.

Rich contexts from real life and cross-curricular themes.

Some questions are challenging learners to think.

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- <https://www.oecd.org/pisa/pisaproducts/pisa-test-questions.htm>
- Computerised questions

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References

- OECD (2006a), *PISA Released Items – Reading*. [Online]. www.oecd.org/pisa/38709396.pdf
- OECD (2006b), *PISA Released Items – Mathematics*. [Online]. www.oecd.org/pisa/38709418.pdf
- OECD, (2006c), *PISA Released Items – Science*. [Online]. www.oecd.org/pisa/38709385.pdf
- OECD (2009), *Take the test sample questions from OECD's PISA Assessments*. [Online]. www.oecd.org/pisa/pisaproducts/pisa2006/41943106.pdf (Accessed 15 February, 2013)
- OECD (2012), *A Guide To Using PISA as a Learning Context*. [Online]. <http://dera.ioe.ac.uk/13915/1/120229pisabookleten.pdf> (Accessed 15 February, 2013).

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Further reading

- Bradshaw, J., Ager, R., Burge, B. & Wheeler, R. *PISA (2009) Achievement of 15 year olds in Wales*. Slough: NFER
- Welsh Government (2013). *National Literacy and Numeracy Framework*. [On-line]. <http://learning.wales.gov.uk/docs/learningwales/publications/130123nlnfinformationdocumenten.pdf>

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Securing quality & equity in education: Lessons from PISA

- When do students learn best?
- What are the similarities between schools that perform best?
- What are the issues regarding poorly performing students and schools?
- Which 3 of the 10 steps to improving equity do you think are most important and why?

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- <http://www.oecd.org/edu/school/programme-forinternationalstudentassessmentpisa/strongperformersandsuccessfulreformersineducation.htm>
- <https://www.youtube.com/watch?v=OJhzdIBUPs0#t=50> Korea
- <https://www.youtube.com/watch?v=Q5Kva-Ta-6E> Poland

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- <https://www.youtube.com/watch?v=ZwD1v73O4VI#t=50> Finland

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Reading for next week

- Inside the Black Box: raising standards through classroom assessment. (1998)
- Phi Delta Kappan Oct 98 Vol 80, issue 2

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