The use and abuse of international assessment studies – lessons learned from PISA and PIRLS

The NALDIC conference London November 14th 2015

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International tests influence learning based upon three processes

1) what counts as valuable learning

2) how national assessment systems are developed around the world

3) how students approach learning since there is evidence that students adopt their learning approaches according to the tests given

(Baird et al 2013)

International and national assessment systems

1) Norway : Introduced national tests in 2004. The reading tests are based upon the PISA reading framework (Frones et al 2012).
2) Denmark: Introduced national tests after low performing in PISA (Egelund, 2008).
3) Japan: changed item format on their national tests to more open-responses like those in PISA (Schleicher, 2009).
4) Korea: PISA like tasks on their University Entrance Exam (Schleicher 2009).
5) Germany: introduction of national educational standards and more focus upon external assessment (Ertl, 2006)

What is PISA?

- Programme for International Student Assessment
- PISA was launched by the *Organisation for Economic Co-Operation and Development* (OECD) in 1999 with the aim to assess 'aspects of preparedness for adult life' by with particular focus upon reading, mathematics and science literacy (OECD 2000:3).
- Tests 15-year olds by the end of their schooling

Programme for International Student Assessment (PISA)

About PISA

The Programme for International Student Assessment (PISA) is a triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. To date, students representing more than 70 economies have participated in the assessment.

The most recently published results are from the assessment in 2012.

Around 510,000 students in 65 economies took part in the PISA 2012 assessment of reading, mathematics and science representing about 28 million 15-year-olds globally. Of those economies, 44 took part in an assessment of creative problem solving and 18 in an assessment of financial literacy.

Consult all PISA 2012 results here.

More than 70 economies have signed up to take part in the assessment in 2015 which will focus on science.

Download the PISA trifold brochure.

What makes PISA different

What the assessment involves

"The motivation for PISA was a perceived need to fill a gap in the extensive set of indicator-based information on education systems that the OECD provides in its annual *Education at a Glance* reports (for example, OECD, 2014a)".

Baird et al (forthcoming) *On the supranational spell of PISA in policy*

"One predominant reason for the rise in popularity of PISA and other international attainment surveys is the belief in the economic imperative – **that countries increasingly need to be able to compete in the knowledge economy to assure the economic wellbeing of their citizens** (e.g. see Schleicher, 2006)".

(Baird et al forthcoming)

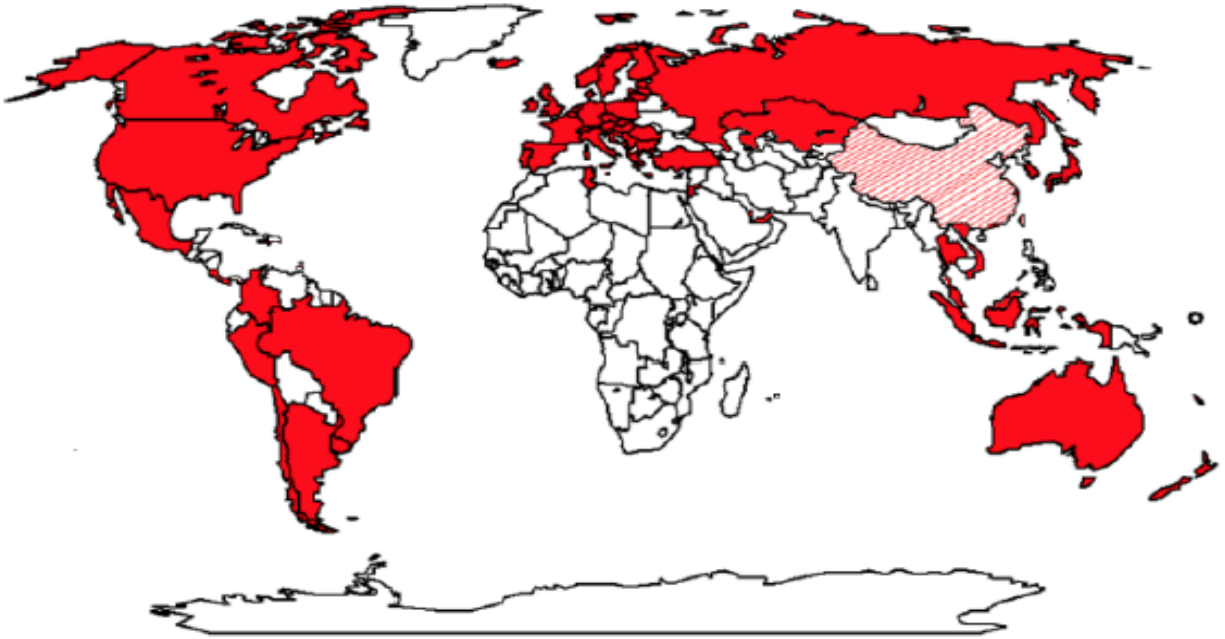
"Meanwhile, there is growing recognition of the power that such surveys **have to affect educational and assessment policy** (see, for example, Rinne, 2008; Grek, 2009, 2010; Lawn and Grek, 2012); the credibility that governments afford organisations like the OECD when responding to their own countries' PISA scores (Grek, 2009; Lingard and Rawolle, 2011); and the use of PISA scores as political tools to initiate educational reform and policy borrowing (Bulle, 2011)". (Baird et al forthcoming)

PISA in the world

2000: 32 countries

2012: 65 countries

2015: 71 countries



OECD countries

Australia
Austria
Belgium
Canada
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea
Luxembourg
Mexico
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States

Partner countries and economies in PISA 2012

Albania
Argentina
Brazil
Bulgaria
Colombia
Costa Rica
Croatia
Cyprus[1,2]
Hong Kong-China
Indonesia
Jordan
Kazakhstan
Latvia
Liechtenstein
Lithuania
Macao-China
Malaysia
Montenegro
Peru
Qatar
Romania
Russian Federation
Serbia
Shanghai-China
Singapore
Chinese Taipei
Thailand
Tunisia
United Arab Emirates
Uruguay
Vietnam

PISA

- 3 year cycle
- Reading, Mathematic, Science literacy
- Problem solving
- Global competencies (first in 2018)
- Student background questionnaire;
  - Motivation, reading strategies, interests
  - parents education, occupation, **language spoken at home**, socio-economic status

PISA 2012

- Paper-based tests, assessment lasting two hours, and additional 40 minutes computer based.
- Test items mix of multiple choice and open responses
- Students responding to different items
- Student also responding to a background questionnaire (30 minutes) on their school system, **language spoken at home,** approaches to learning, interests, motivation and home environment

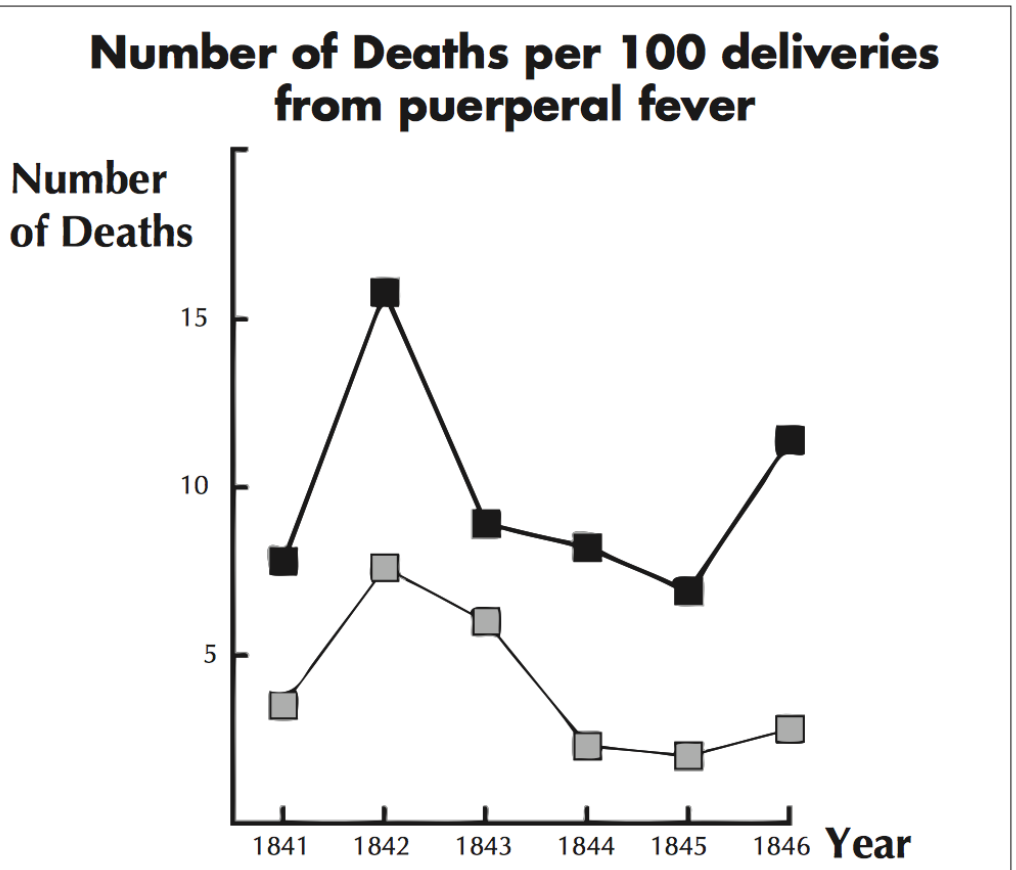
Timeline: major/minor literacy emphasis

	2000	2003	2006	2009	2012	2015
Reading literacy	***Major***	Minor	Minor	***Major***	Minor	Minor
Mathematical Literacy	Minor	***Major***	Minor	Minor	***Major***	Minor
Scientific literacy	Minor	Minor	***Major***	Minor	Minor	***Major***

Semmelweis' Diary Text 1

'July 1846. Next week I will take up a position as "Herr Doktor" at the First Ward of the maternity clinic of the Vienna General Hospital. I was frightened when I heard about the percentage of patients who die in this clinic. This month not less than 36 of the 208 mothers died there, all from puerperal fever. Giving birth to a child is as dangerous as first-degree pneumonia.'

These lines from the diary of Ignaz Semmelweis (1818-1865) illustrate the devastating effects of puerperal fever, a contagious disease that killed many women after childbirth. Semmelweis collected data about the number of deaths from puerperal fever in both the First and the Second Wards (see diagram).



Diagram

Physicians, among them Semmelweis, were completely in the dark about the cause of puerperal fever. Semmelweis' diary again:

'December 1846. Why do so many women die from this fever after giving birth without any problems? For centuries science has told us that it is an invisible epidemic that kills mothers. Causes may be changes in the air or some extraterrestrial influence or a movement of the earth itself, an earthquake.'

Nowadays not many people would consider extraterrestrial influence or an earthquake as possible causes of fever. We now know it has to do with hygienic conditions. But in the time Semmelweis lived, many people, even scientists, did! However, Semmelweis knew that it was unlikely that fever could be caused by extraterrestrial influence or an earthquake. He pointed at the data he collected (see diagram) and used this to try to persuade his colleagues.

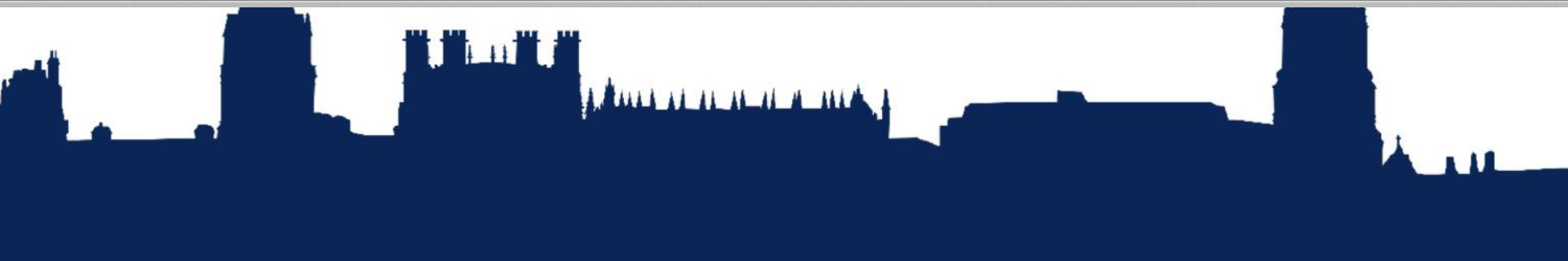
QUESTION 1.1

Suppose you were Semmelweis. Give a reason (based on the data Semmelweis collected) why puerperal fever is unlikely to be caused by earthquakes.

.....

.....

.....



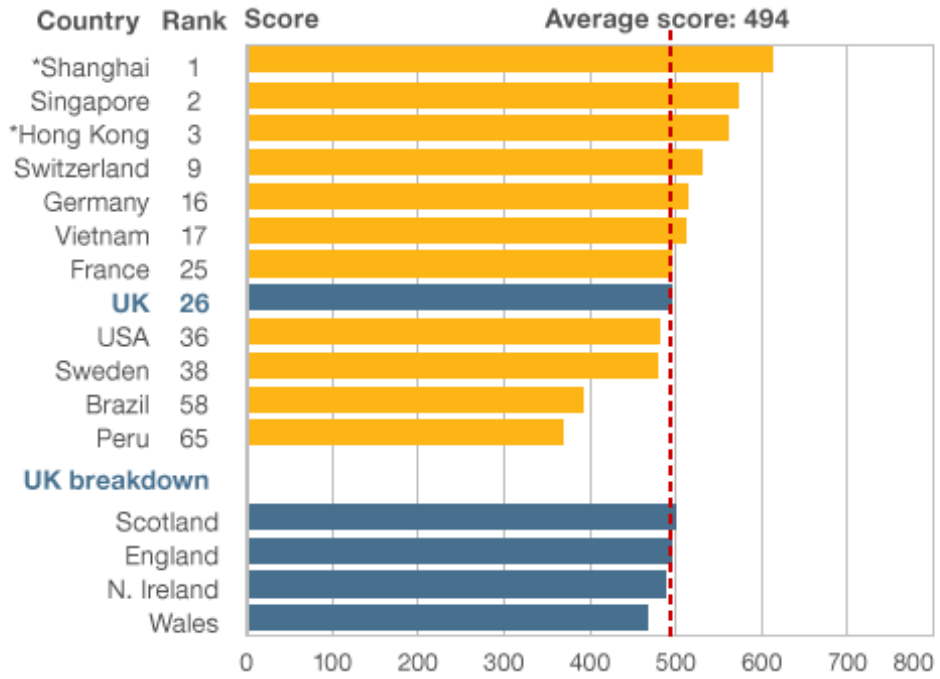
3 December 2013 Last updated at 14:21

Pisa tests: UK stagnates as Shanghai tops league table

COMMENTS (1743)

By Sean Coughlan
BBC News education correspondent

Pisa maths scores for selected education systems



Source: OECD

*China does not participate as a country, but is represented by cities such as Shanghai and Hong Kong

The UK is falling behind global rivals in international tests taken by 15-year-olds, failing to make the top 20 in maths, reading and science.

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Pisa results support case for reform, says Gove

3 December 2013 Last updated at 14:03

Figures showing that the UK is falling behind global rivals in international education league tables underlines the need for further reform of the country's education system, Education Secretary Michael Gove has argued.

For the first time that the UK has not been in the top 20 for any of the subjects **measured by the international Pisa tests.**

"Unless we can provide [children] with a school system that is one of the best in the world, we will not give them the opportunities they need to flourish and succeed.

"That is why it is it is so important today that we have a unified national commitment to excellence in all our schools for all our pupils," he said in a statement on 3 December 2013.

Mr Gove said the coalition's reforms are improving standards in schools, by drawing on what happens in the best-performing best school systems identified by the OECD.

The Pisa tests, administered by the OECD think-tank and run every three years, measure attainment in literacy, maths and science by 15 year-olds in 65 countries.

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Results from International assessments such as Programme for International Student Assessment (PISA) are used by politicians around the world in the policy discussion around education and assessment.

Our children's future

- ... what's become increasingly clear is that **our children's education has been suffering** in relation to their peers over the last decade. The PISA rankings, for example, which I'm sure have already been debated today, show us falling from fourth to sixteenth in science, from seventh to 25th in literacy, and from eighth to 28th in maths.

Nick Gibb, Minister for Schools in England, Speech to the 100 Group
10 February 2011 [emphasis added]

What the press does not tell you about PISA results in England

- Only 4 % of headteacher reported that truancy was a serious problem to learning in England, compared to 32% of headteachers across OECD.
- Teacher morale is reported to be very high across the OECD, with headteachers in England reporting it to be even higher than the average.
- Pupils in England are generally very positive about their relationships with their teachers, and more positive than the OECD average.

PISA in United Kingdom 2012 results

OECD: 12% either first or second-generation immigrants, scored 34 points lower in mathematics than non-immigrant students

In United Kingdom, 13% of students had immigrant background, BUT scored only 9 points lower, on average, than non-immigrant students. After taking socio economic status into account, the difference is even smaller (6points).

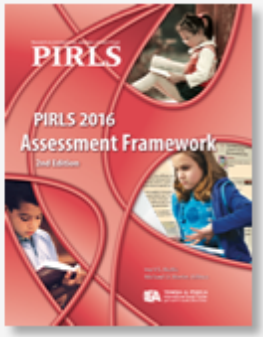
Source: http://www.oecd.org/unitedkingdom/PISA-2012-results-UK.pdf

TIMSS & PIRLS

TIMSS & PIRL
International Study Cente
Lynch School of Education, Boston Colle

PIRLS 2016 ASSESSMENT FRAMEWORK, 2ND EDITION

Mullis, I.V.S. & Martin, M.O. (Eds.). (2015). Chestnut Hill, MA: TIMSS & PIRLS International Study Center, Boston College.

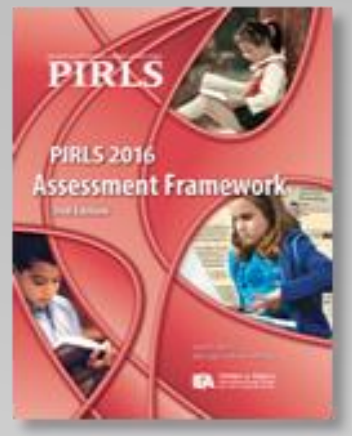


The *PIRLS 2016 Assessment Framework, 2nd Edition* provides the foundation for the three international assessments planned as part of IEA's PIRLS 2016: PIRLS, PIRLS Literacy, and ePIRLS. PIRLS represents the international standard for reading comprehension at the fourth grade. PIRLS Literacy, a less difficult version of PIRLS, is designed to assess foundational reading skills that are prerequisites for success on PIRLS. New in 2016, ePIRLS is an innovative assessment of online reading that makes it possible for countries to understand how successful the are in preparing fourth grade students to read, comprehend, and interpret online information.

Chapter 1 presents the *PIRLS 2016 Reading Framework*, and describes in some detail the major purposes of reading and processes of comprehension to be tested at the fourth grade. PIRLS assesses two purposes of reading that fourth grade students typically engage in: reading for literary experience, as well as to acquire and use information. PIRLS also assesses four broad processes of comprehension predominantly used by fourth grade readers: focus on and retrieve explicitly stated information, make straightforward inferences, interpret and integrate ideas and information, and evaluate and critique content and textual elements. Chapter 2 contains the *PIRLS 2016 Contextual Framework* describing the types of schooling situations and factors associated with students' development in reading literacy that will be investigated via the *PIRLS 2016 Encyclopedia* in addition to the questionnaires completed by students, their teachers, and schools. Finally, Chapter 3 provides an overview of the PIRLS and PIRLS Literacy test booklet and ePIRLS task designs, including general parameters for item development.

Publications are available in Portable Document Format (PDF). You may need to download a copy of Adobe Reader, to enable you to read and print the report.

PIRLS



- Progress for International Reading Literacy Study
- Conducted by the IEA (International Association for the Evaluation of Educational Achievement)
- 5 years cycles (2001, 2006, 2011, 2016), over 50 education systems participated in 2011
- 129 primary schools in England and 3927 pupils (2011)
- Year 5, average age 10.3 years.
- Assessment of reading, but also information about home and school environments through questionnaires and **how often pupils speak English at home.**

Table 1.1 Distribution of reading achievement

Country	Average scale score	Reading achievement distribution
3 Hong Kong SAR	571 (2.3)	
Russian Federation	568 (2.7)	
Finland	568 (1.9)	
2 Singapore	567 (3.3)	
† Northern Ireland	558 (2.4)	
2 United States	556 (1.5)	
2 Denmark	554 (1.7)	
2 Croatia	553 (1.9)	
Chinese Taipei	553 (1.9)	
Ireland, Rep. of	552 (2.3)	
† England	**552 (2.6)**	
2 Canada	548 (1.6)	
† Netherlands	546 (1.9)	
Czech Republic	545 (2.2)	
Sweden	542 (2.1)	
Italy	541 (2.2)	
Germany	541 (2.2)	
3 Israel	541 (2.7)	
Portugal	541 (2.6)	
Hungary	539 (2.9)	
Slovak Republic	535 (2.8)	
Bulgaria	532 (4.1)	
New Zealand	531 (1.9)	
Slovenia	530 (2.0)	
Austria	529 (2.0)	
1 2 Lithuania	528 (2.0)	
Australia	527 (2.2)	
Poland	526 (2.1)	
France	520 (2.6)	
Spain	513 (2.3)	
‡ Norway	507 (1.9)	
2 † Belgium (French)	506 (2.9)	
Romania	502 (4.3)	
PIRLS scale centre point	500	
1 Georgia	488 (3.1)	
Malta	477 (1.4)	
Trinidad and Tobago	471 (3.8)	
2 Azerbaijan	462 (3.3)	
Iran, Islamic Rep. of	457 (2.8)	
Colombia	448 (4.1)	
United Arab Emirates	439 (2.2)	
Saudi Arabia	430 (4.4)	
Indonesia	428 (4.2)	
2 Qatar	425 (3.5)	
Ψ Oman	391 (2.8)	
Morocco	310 (3.9)	

Key findings 1

- Wide distribution of scores in England. The highest attaining pupils were among the best readers in the survey, but the lower attaining readers did less well than the weakest readers in some other countries.
- This wide range of achievement was characteristic of England's performance in PIRLS 2001 and 2006.

Twist, Sizmur, Bartlett & Lynn: (2012) PIRLS 2011: reading achievement in England, Slough, NFER

Key findings 2

- England had one of the largest proportions of pupils reaching the Advanced International Benchmark (18 per cent). There were significantly higher proportions at each benchmark in England compared to 2006.
- The proportion of pupils failing to meet the Low International Benchmark is similar to the proportion that do not achieve level 3 or above in National Curriculum tests of reading in England at the end of primary school.

Twist, Sizmur, Bartlett & Lynn: (2012) PIRLS 2011: reading achievement in England, Slough, NFER

Pupils' reports of frequency of speaking English at home

Year	Always		Sometimes		Never	
	Pupils %	Average scores	Pupils %	Average scores	Pupils %	Average scores
2001	88	559	11	510	1	-
2006	76	546	23	532	1	-
2011	79	556	20	540	1	-

In all three surveys there is an association between language use and attainment in that pupils who use solely English at home have higher mean achievement than those who use English 'Sometimes'.

In England, a fifth of pupils are in schools where headteachers estimate that at least half of the pupils have **English as an additional language.**

Twist, Sizmur, Bartlett & Lynn: (2012) PIRLS 2011: reading achievement in England, Slough, NFER

LIVE BBC NEWS CHANNEL

Last Updated: Wednesday, 28 November 2007, 17:21 GMT

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England falls in reading league

The reading performance of children in England has fallen from third to 19th in the world in a major assessment.

Children in England read for pleasure less than their peers

The Progress in International Reading Literacy Study (Pirls), undertaken every five years, involved children aged about 10 in 40 countries.

Scotland also fell, from 14th to 26th. Russia, which matched it last time, was top of the overall achievement table.

Analysis of the England results said children were spending more time on computers and reading less for fun.

Pirls is designed to investigate children's "reading literacy" and associated factors after, in most countries, four years of formal schooling - five in some, including England and Scotland.

'READING LITERACY'

- Defined as the ability to understand and use those written language forms required by society and/or valued by the individual

Overall rankings

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PIRLS for Teachers project (May 2015 – Oct 2016)

- **Rationale & Objectives**

1. Evaluate how other countries engage practitioners
2. Engage teachers in understanding PIRLS findings
3. Identify what is useful knowledge for teachers
4. Develop practitioner materials to support teaching together with practitioners
5. Visualization & online engagement

- ESCR Impact Acceleration Award → Knowledge exchange

Project background

- Information not much used by the media
- Little information available to practitioners
- Knowledge gap

→ Raises questions about the use of data (Sebba, 2004)

- **Positive**: research is effective at disseminating its findings in research community (Lenkeit, J., Chan, J., Hopfenbeck, T.N., & J.A. Baird, 2015)
- **Negative**: insufficient understanding of how to engage users of research

→ Consequently: impact of research on practice is still minimal

← Reason: excluding practitioners from research activities

- As researchers, often don't know what is useful knowledge for teachers

Knowledge gap

- Current and recent research projects
- PIRLS 2016 National Centre
- PIRLS for Teachers project
- PIRLS for Teachers project: Team
- PIRLS for Teachers project: Milestones
- Assessment and Learning: State of the field review
- Investigation into the Predictability of the Irish Leaving Certificate Examinations
- Research Evidence Relating to Proposals for Reform of the GCSE

PIRLS for Teachers project: Milestones

Workshop 1

On 1 July 2015, the first workshop of the PIRLS for Teachers project took place. Eight teachers from different schools in the south of England visited the Department of Education to work with the OUCEA team on how we can make PIRLS and its findings more accessible and useful for practitioners.

IEA: PIRLS 2016

Research team

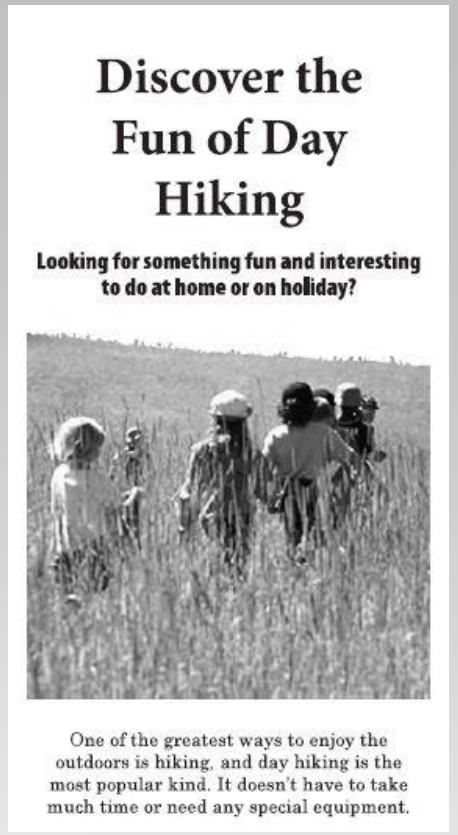
- **Reading purposes:**

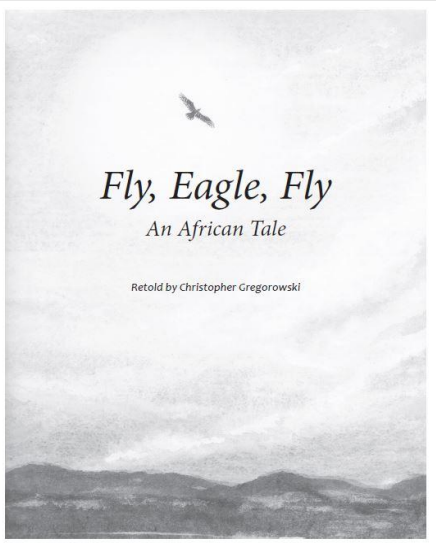
  - Reading for literary experience 50%
  - Reading to acquire and use information 50%

- **Reading comprehension processes**

  - Questions are based on texts presented to pupils
  - Each questions deals with one of the processes

  - Interpret and integrate ideas and information 30%
  - Focus on and retrieve explicitly stated information 20%
  - Evaluate and critique content and textual elements 20%
  - Make straightforward inferences 30%





Enemy Pie

by Derek Munson
illustrated by Tara Calahan King

It was a perfect summer until Jeremy Ross moved in right next door to my best friend Stanley. I did not like Jeremy. He had a party and I wasn't even invited. But my best friend Stanley was.

I never had an enemy until Jeremy moved into the neighborhood. Dad told me that when he was my age, he had enemies, too. But he knew of a way to get rid of them.

Dad pulled a worn-out scrap of paper from a recipe book.

"Enemy Pie," he said, satisfied.

You may be wondering what exactly is in Enemy Pie. Dad said the recipe was so secret, he couldn't even tell me. I begged him to tell me something—anything.

"I will tell you this, Tom," he said to me. "Enemy Pie is the fastest known way to get rid of enemies."

Tasks: Reading for literary experience

1. Who is telling the story?

   (A) Jeremy

   (B) Dad

   (C) Stanley

   (D) Tom

2. At the beginning of the story, why did Tom think Jeremy was his enemy?

_____

_____

Questions Enemy Pie

1. Who is telling the story?

Ⓐ Jeremy

Ⓑ Dad

Ⓒ Stanley

Ⓓ Tom

Enemy Pie		R31P01M	
		%	SE
Girls	correct	87.21	(2.1)
Boys	correct	81.58	(2.6)
Always English	correct	84.56	(1.8)
Sometimes English	correct	84.29	(3.4)

2. At the beginning of the story, why did Tom think Jeremy was his enemy?

_____

_____

Enemy Pie, Item 5

5. How did Tom feel when he first smelled Enemy Pie? Explain why he felt this way.

Purpose: Literary
Process: Make Straightforward Inferences

2 – Complete Comprehension

The response shows understanding that Tom was confused because he thought Enemy Pie was supposed to smell bad, or that Tom was surprised because the pie his dad made (actually) smelled good.

NOTE TO SCORERS: Students may express Tom's confused or surprised feelings in a variety of ways.

Examples:

confused because he thought it was made with disgusting things

He didn't understand. It should taste horrible.

He felt unsure. Enemy Pie should smell bad.

surprised because it smelled really good

1 – Partial Comprehension

The response shows understanding that Tom was confused or surprised when he smelled Enemy Pie for the first time, but does not explain why.

Examples:

confused

He wondered what was going on.

OR, the response explains that Enemy Pie didn't smell the way he thought it would without providing the feeling.

Examples:

Enemy Pie shouldn't smell this good.

He thought the pie would smell bad.

He thought it would smell awful, but it didn't.

Enemy Pie, Item 14

14. Use what you have read to explain why Tom's dad really made Enemy Pie.

Purpose: Literary
Process: Interpret and Integrate Ideas and Information

1– Acceptable Response

The response demonstrates understanding that Tom's dad's plan for Enemy Pie was for Tom and Jeremy to become friends.

NOTE TO SCORERS: The response does not need to explicitly state that Tom's dad made them spend time together to be awarded credit.

Examples:

to make them be friends and not enemies

He wanted them to be friends.

to get them to play together and to make them friends

He wanted them to be friends so he got them to play with each other.

to play a trick for Tom to see that Jeremy was nice after all *(Please note that this is an acceptable paraphrase of the boys becoming friends.)*

0 – Unacceptable Response

The response does not provide an appropriate explanation for why Tom's dad really made Enemy Pie. The response may indicate that Tom's dad wanted the boys to spend time together without specific reference to the intended outcome, or it may refer generally to Tom having no enemies without reference to Tom and Jeremy's relationship.

Examples:

He made Tom play with Jeremy.

So they would get to know each other.

He thought it would work and make Jeremy leave.

He made the pie for them all to share.

Enemy Pie, Item 2

2. At the beginning of the story, why did Tom think Jeremy was his enemy?

Purpose: Literary
Process: Make Straightforward Inferences

1 – Acceptable Response

The response shows understanding that Tom considered Jeremy his enemy, either because Jeremy did not invite him to his party, or because Jeremy invited Tom's best friend Stanley and not him.

Examples:

Tom was not invited to Jeremy's party.
Jeremy invited his friend to his party, but did not invite Tom.

OR, the response shows understanding that Tom was afraid that Jeremy would take his place as Stanley's best friend.

Examples:

Tom was jealous of him moving in next to Stanley.

Jeremy took his best friend.

0 – Unacceptable Response

The response does not show understanding of why Tom considered Jeremy his enemy. The response may repeat words from the question, or may provide a vague response that acknowledges that Jeremy moved in next door to Stanley or invited him to his party without showing understanding of the consequence.

Examples:

Jeremy was his enemy.

Jeremy moved in right next door to Tom's best friend.

Jeremy invited Stanley to his party.

Jeremy was new in the neighborhood.

Jeremy was his friend.

Conclusion

- Assessment literacy
- Vocabulary development in minority language learners (Murphy 2014)
- Reading comprehension
- Learning to read – reading to learn
- PIRLS 2016 - ?

Thank you.

Questions or comments?

Please feel free to contact us at OUCEA

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Acknowledgements:

Members of the PIRLS for Teachers project, ESRC

http://oucea.education.ox.ac.uk/research/recent-research-projects/pirls-for-teachers/

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