But is it fair?

Fair and equal participation for vision impaired students in selective testing

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Qualifying entry exams and visually impaired students

- Fair and equal participation for vision impaired students in selective testing

Project jointly funded by the Royal National Institute for the Blind (RNIB) and GL Assessments.

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- Standard Achievement Tests at age

  7 – 11 and 13

- Cognitive Ability Tests at age 11

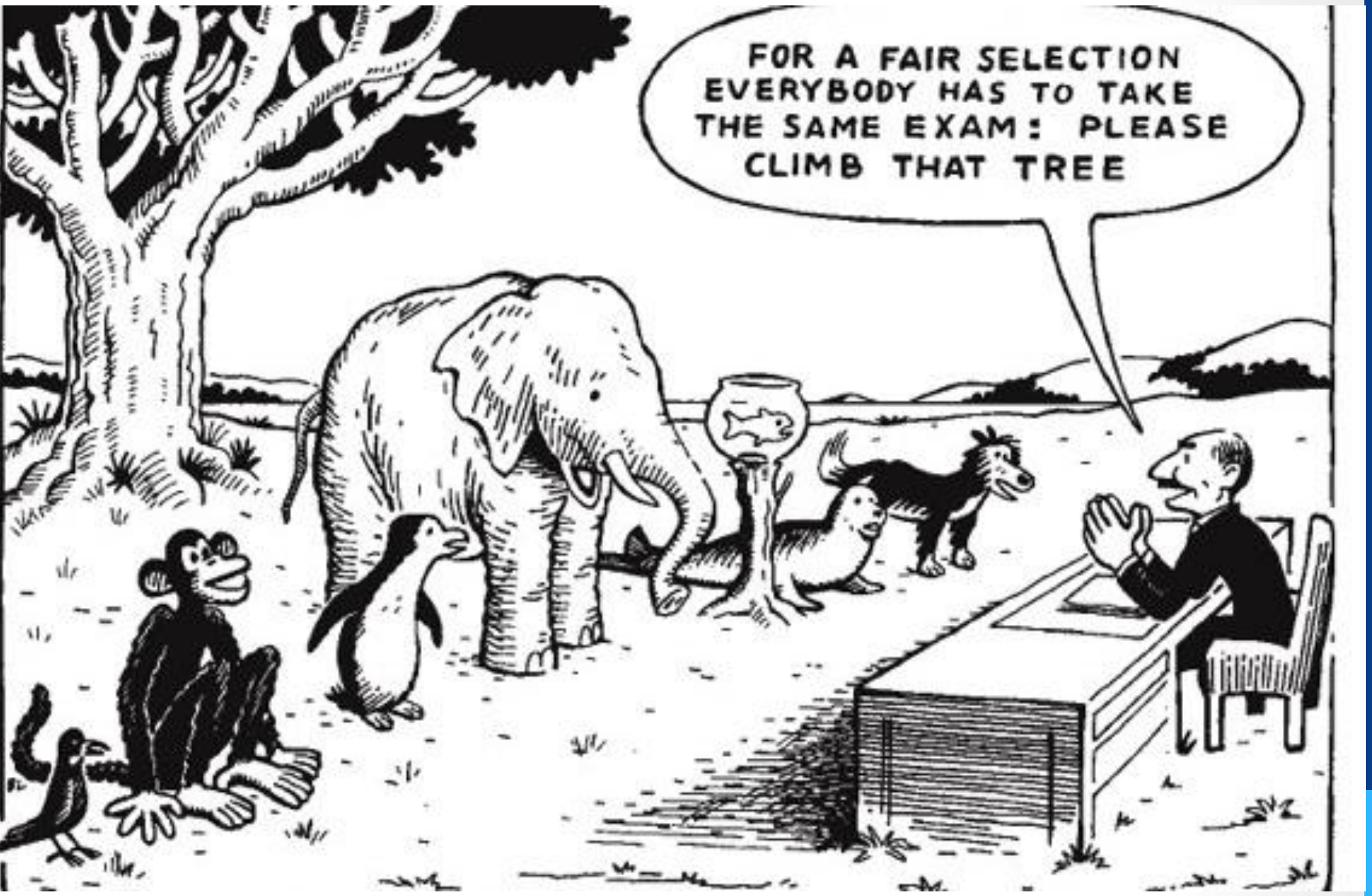
- 11+ Entry and selection test

  At age 11

The issue

- Schools have a system in place to select students, to
  - Ensure students are suited to study, and will complete the course
    (the standard of outcomes, school league tables)
  - Select students amongst a vast oversubscription

- Tests provide a standardised measure, which gives necessary normative results.
  - All students sit the exam, and it is their performance on the day that matters.

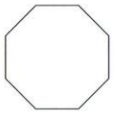

FOR A FAIR SELECTION EVERYBODY HAS TO TAKE THE SAME EXAM: PLEASE CLIMB THAT TREE

Schools

- ‘Sensory impairment not a particular disadvantage’
- Centrally administered tests
- Low incident disability (often no personal experience)
- Adapt materials:
  - Enlarge papers
  - Print on different colour paper
  - Print answers directly on the paper
  - Additional time

QUESTION 39

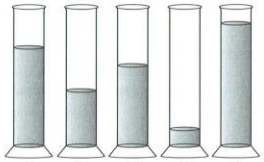
Jackie draws two lines in this regular octagon to divide it into four quadrilaterals that are all the same size and shape.



What kind of quadrilateral are they?

kites
rectangles
parallelograms
squares
trapeziums

QUESTION 40

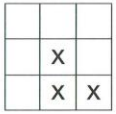


A container can hold 1 litre of liquid.

Kieran has put 75 ml of water in it.

Which diagram best shows the correct water level?

QUESTION 41



One more cross is placed at random in one of the empty squares on the grid.

What is the probability that it will complete a line of three crosses?

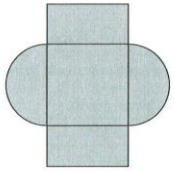
A $\frac{1}{6}$
B $\frac{1}{3}$
C $\frac{1}{2}$
D $\frac{2}{9}$
E $\frac{1}{9}$

QUESTION 42

Lucy has some square tiles with area s and some circular tiles with area c.

She cuts some of her tiles in half.

She puts some tiles together to make a shape.



What is the area of Lucy's shape?

$s + 4c$
$2s + c$
$2s + 2c$
$3s + c$
$3s + 2c$

MATHS FAMILIARISATION TEST 7

Pupil's Name

School Name

Date of Test

DATE OF BIRTH

Day	Month	Year
	January	1997
	February	1998
	March	1999
	April	2000
	May	2001
	June	2002
	July	2003
	August	2004
	September	2005
	October	2006
	November	2007
	December	2008

PUPIL NUMBER

SCHOOL NUMBER

Please mark like this ⟼ .

1 A B C D E	2 A B C D E	3 A B C D E	4 5832 10,206 23,328 32,463 40,824	5 A B C D E	6 1.15 litres 11.5 litres 16.5 litres 18.25 litres 18.75 litres	7 1 hr 10 mins 1 hr 50 mins 50 mins 1 hr 30 mins 1 hr 20 mins	8 £1.40 £1.75 £2.10 £2.50 £2.75
9 2°C 6°C 9°C 13°C 15°C	10 0.87 14.27 25.3 3.69 4.48	11 A B C D E	12 A B C D E	13 3 5 11 12 15	14 8 cm 15 cm 11 cm 13 cm 7.5 cm	15 4°C 8°C 2°C 6°C 10°C	16 2 3 4 5 6	17 A B C D E
18 30 34.0 34.95 34.96 35.0	19 40° 90° 120° 150° 220°	20 28 32 35 50 53	21 A B C D E	22 400 grams 500 grams 600 grams 700 grams 800 grams	23 A B C D E	24 5 4 6 3 7	25 5 10 20 80 100	26 1 −1 0 2 −2
27 1 2 3 4 5	28 4 8 12 16 20	29 8 9 9.5 10 12	30 A B C D E	31 A B C D E	32 A B C D E	33 35 mins 40 mins 45 mins 50 mins 55 mins	34 40p £3.40 85p £1.25 £1.10	
35 triangular prism square-based pyramid cuboid triangular pyramid none of these	36 100 ml 50 ml 120 ml 30 ml 180 ml	37 30 24 48 16 36	38 1 2 3 4 5	39 kites rectangles parallelograms squares trapeziums	40 A B C D E	41 A B C D E	42 $s + 4c$ $2s + c$ $2s + 2c$ $3s + c$ $3s + 2c$	
43 (−2 , 1) and (2 , 1) (−4 , −1) and (4 , 3) (−1 , 4) and (3 , −4) (1 , 2) and (1 , −1) (4 , −1) and (−4 , 3)	44 A B C D E	45 n $n + 3$ $n + 4$ $n + 5$ $n + 12$	46 $-1 + 2n$ $-1 - 2n$ $2 + n$ $1 + n$ $1 + 2n$	47 3 tins 4 tins 5 tins 6 tins 7 tins	48 3 m 15 m 30 m 150 m 300 m	49 135° 180° 150° 165° 120°	50 $20x$ $50x$ $20x + 30$ $30x + 20$ $30x$	

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VI Services

- ‘11+ really difficult - particularly the non-verbal part, is impossible’.
- ‘We tried transcribing it into Braille – that didn’t really work. It left students disadvantaged’.
- ‘CAT tests are awful. They are not usually enlarged’. Over pt24 really difficult.
- Question is, what is actually being tested – VI children use their short term memory to answer questions.
- ‘Had to work really hard with the secondary school to accept EP assessment as a replacement to 11+’

Test issues

- Schools administer the verbal part
  - Non-verbal part usually omitted
  - Picking one part of test – fair scoring?
- Using the test with people who need 24+pt becomes difficult to manage
- Tests validity: are similar skills in use for sighted and VI students?
- Braille versions very difficult
- Sighted peers more primed through SATS and school based practice
- Need for making VI students compete more equally

Test issues

- Tests have been designed upon this, to provide a *normative* result.
  - Normative results are widely used by the system, to group people
  - (intuitively) understandable, using comparison
- Cognitive tests *assume a homogeneity* which cannot be taken for granted
- Not diagnostic

RNIB / GL-A project

- Task:
  - to produce guidelines for production of verbal and non-verbal 11+ test papers for VI pupils and guidelines for test administration, including alternative assessment procedures where appropriate
- Approach:
  - Project coordinated by two RNIB staff with expertise in testing and two EPs with experience of VI
  - Advisory group consulted in one-day workshop
    - QTVIs
    - EPs
    - GL-A staff
    - RNIB staff

RNIB / GL-A project

- Guidelines drafted by EPs for:
  - Producers of tests
  - Potential users of tests
  - Educational Psychologists
- Based on:
  - review of existing literature on testing of VI pupils
  - Existing guidance on access to print materials
  - Views of professionals in one-day workshop

Looking back to move forwards

- Key questions for potential tests…
  - Can text based (i.e. verbal) tests measure the full range of skills and competences that are relevant for future academic progress?
  - Do the tests accurately measure core cognitive competencies (cf. an artefact) at all ages and across levels and types of sight loss?
  - Do the tests, when used with vision impaired children, actually predict subsequent academic achievement?

Use of verbal scales of existing tests

- Common practice
  - Miller & Skillman (2003)
    - Interviewed staff at state schools in USA
    - Of all instances of test administration:
      - 45% were verbal scales of WISC
      - 9% were performance scales of WISC
      - 14% were specifically designed tests for blind/VI

Use of verbal scales of existing tests

- Tillman (1967)
  - Sighted children performed better than VI on Comprehension and Similarities
  - Differences seemed to be accounted for by some items whose content is visually biased
  - VI superior to sighted on Digit Span task

- Wyver & Markham (1999)
  - Specific items on verbal scales account for differences between VI and sighted
  - Visually-based items in Comprehension task are significantly more difficult for VI children than for sighted

Adapted verbal scales

- Perkins Binet (1980)
  - Items from verbal scales of Stanford Binet selected as being appropriate in content for blind/VI population
- Williams Intelligence Test for Children with Defective Vision (1956)
  - Based on (mainly) verbal items of previous existing tests for sighted children
- Both better than use of unmodified verbal scales, but nevertheless depend on use of verbal scales as a proxy for performance, which is lacks empirically and theoretically validity

Performance Scales

- Single function tests
  - Ohwaki Kohs Tactile Block Design
    - Complex block design using fabric-covered blocks
  - Tactile Progressive Matrices

- Blind Learning Aptitude Test (BLAT)
  - Tactile non-verbal reasoning items:
    - Odd one out
    - Match to sample
    - Series completion
    - Matrices

Performance Scales

- ITVIC
  - Includes some non-verbal items
    - Exclusion
    - Perception of figures (match to sample)
    - Figural analogies
    - Block design
    - Rectangle puzzles
    - Map and floor plan questions

Performance Scales

- Blind and SVI children tend to have difficulty accessing tasks with spatial/figural content (even in tactile form)
  - Generally less experience of pictures etc. than sighted, and less experience of using them.
  - Difficulty organising and processing spatial information (integrating info in a framework; forming gestalts etc.) (Ungar et al., 1995)
  - Difficulty acquiring strategies for exploring and extracting information from tactile displays (e.g. Ungar et al. 1997, Ungar, 2000)
  - Poor performance on such tasks may be due to difficulties accessing and organising the information, rather than with reasoning *per se*.

  - Rich & Anderson (1965) Tactile Progressive Matrices
    - Only older children (>9yrs) of average or greater (verbal) IQ could approach the task in an appropriate way
- Time
  - Blind/VI tend to need more time to complete tests
  - May result in fatigue affecting performance

Comparing blind/VI with sighted peers

"… it is virtually impossible to administer a common test to the two groups to provide information that is equally meaningful for both"

Warren, 1984

Predicting achievement

"It is often the goal of the examiner to assess the ability of the blind child to function in the environment of the sighted. While this point is well taken, it should not be used as support for the notion that the blind child should have his IQ score interpreted with respect to norms for sighted children. The use of sighted norms will not allow adequate prediction of the blind child's success if that child's IQ is not a valid estimate of his potential."

Warren, 1984

Predicting achievement

"A test should not be used for prediction in situations where it has not been demonstrated to have good predictive validity. Further, the fact that predictive validity for a particular IQ test for sighted children's success in a situation such as a schoolwork has been established, is not sufficient grounds on which to base use of the test for the prediction of blind children's success in that situation."

Warren, 1984

Predicting achievement

- Issues in prediction of achievement:
  - Blind/VI tend to develop differently from sighted, even if they may reach the same end point
    - Use of Tactile Test of Basic Concepts shows progressive lag relative to sighted peers from kindergarten through early school years
    - Evidence that gaps in intellectual development tend to close in adolescence (more reliance on abstract, verbal concepts)
  - SO: predictive validity must be established separately from sighted norms.
- Predictive validity of ITVIC
  - Correlation with literacy achievement for ‘Reasoning’ and ‘Verbal’ items, but not for spatial items.

Use of verbal scales of existing tests

- Highly questionable approach
  - Rationale is that verbal scores tend to correlate with general IQ scores, in sighted population
    - verbal and non-verbal scales are specifically designed to test different things and have differential cognitive and neurological basis - broad areas of cognitive functioning would be missed.
    - Verbal scales are not standardised for blind/VI population
    - No empirical link between test scores and subsequent attainment for blind/VI (lack of predictive validity)
    - Some items may rely on visual experience more than others (i.e. bias against blind/VI)
    - ‘Verbalisms’ might mask poor conceptual understanding.

Summary

- Current practice is relatively ad-hoc
  - Informal enlargement (e.g. photocopying onto A3)
  - Decisions about inclusion/exclusion not based on evidence
  - Decisions based on parts of test (e.g. verbal scores only)

  - Some good practice

Summary

- Project brought together:
  - Existing research
  - Professional experience and expertise
  - Perspective of commercial producer
- Guidelines written on production of key standard versions of test papers
- Guidelines written on best practice for potential test users
- Guidelines for Educational Psychologists in compiling alternative assessment

Key outcomes

- Production guidelines
  - Standard version of all tests to be produced in accordance with existing Clear Print guidelines
  - Standard version on A4 paper in 12 point
  - Enlarged version of all tests to be produced as standard in B4 paper size in 14 point
  - Modified version of verbal paper in 20 point on A4 paper
  - Enlarged modified version of verbal paper in 22 point on B4 paper

  - Nonverbal paper unsuitable for any pupils who
    - Typically reads text at greater than 14 point
    - Cannot easily perceive detail in non-verbal items in 14 point version of paper

Key outcomes

- User guidelines
  - Standard versions of papers available from GL-Assessment
  - All VI pupils should be assessed by QTVI to determine accessibility of available versions of papers
  - For pupils who cannot access nonverbal paper, verbal paper may be taken (if accessible) but scores should not form sole basis for selection
  - For all pupils who cannot access nonverbal paper, alternative selection procedures should be used
    - EP assessment
    - Portfolio of work
    - Scores from verbal paper

Case study: Kent

- Selection panel makes judgements about all pupils who cannot access 11+
  - QTVI makes application for special consideration
  - Panel makes initial decision whether or not to give pupil special consideration
  - Information gathered by QTVI, school and other professionals forms portfolio of evidence of pupils potential to learn
  - Panel makes selection decisions

Key outcomes

- EP guidelines
  - Practical guide for professionals with little or no experience in VI
  - Completing the profile comparable to 11+
  - Using what is out there
  - Guidelines for decision making
    - Deciding on suitability of tests and items
    - Contacting other professionals

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11+ for children with vision impairment

As part on an ongoing project involving educational psychologists and qualified teachers of pupils with vision impairment, RNIB and GL Assessment have developed guidelines on the production and administration of 11+ tests for children with vision impairment.

The User Guidelines outline ways in which the 11+ tests should be modified and presented in different formats and how to decide which format to use with individual pupils.

Modified 11+ papers are not always appropriate for children with vision impairment, depending on the subject of the paper and the severity of the impairment. In the Guidelines for Educational Psychologists, RNIB have put forward suggestions about alternative methods for testing these pupils.

Finally, RNIB, in collaboration with GL Assessment, has commissioned a case study from Kent County Council that demonstrates how a fair and inclusive assessment system for children with vision impairment operates alongside the mainstream assessment process. The Kent County Council Case Study also includes a series of case studies showing how the Special Access arrangements have been applied to individual pupils, along with the supporting documentation used by Kent to support the process (Appendices 2A,2B and 2C).

11+ for children with vision impairment: http://www.gl-assessment.co.uk/research-papers/11-children-vision-impairment

What's Next

- Guidelines are a solid step towards solving a long standing issue
- Scientific/research issues about assuming homogeneity of skills and processes
- Technical issues of designing reliable and valid tests to assess
- Standardisation of test results on a very heterogeneous VI population

- Schools have a system in place to select students, to
  - Ensure students are suited to study, and will complete the course (the standard of outcomes, school league tables)
  - Select students amongst a vast oversubscription

- Tests provide a standardised measure, which gives necessary normative results.
  - All students sit the exam, and it is their performance on the day that matters.