YOUNG LIVES SCHOOL SURVEY

THE DESIGN AND DEVELOPMENT OF ACHIEVEMENT TESTS IN THE VIETNAM SCHOOL SURVEY ROUND 1

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Introduction

The Vietnam school survey design comprised two waves of data collection. The first wave, conducted at the start of the school year (from October 2011), collected school, class, teacher and child level data including assessments of cognitive and psycho-social competencies. The second wave, conducted at the end of the school year (from April 2012), focussed on 'retesting' children in the same cognitive and psycho-social domains.

The school survey tested children in the domains of mathematics and Vietnamese language. In so doing it assessed progress on the same domains as the nationally-representative Grade 5 Learning Assessment, such that analysis in the five Young Lives' regions can be situated in national context.

The second wave of testing, conducted at the end of the school year, poses a number of analytic advantages. Firstly, it provides a second measure of children's achievement in the tested subjects, improving reliability and robustness of measurement. Secondly, through linking the two tests, it provides a measure of progress over the course of an academic year (Grade 5) in relation to curriculum expectations. As such, the design provides opportunities for analysis of the school data beyond the cross-sectional capabilities of the Vietnam Grade 5 Learning Assessment, as well as adding an additional round of data to the existing longitudinal cohort dataset to enable the measurement of learning over time and a consideration of the role of school in facilitating learning.

This note elaborates on the process of design and development of the cognitive assessments.

Wave 1 Test Development

In Spring 2011, a Technical Working Group was convened in Hanoi, to guide the development of the tests. This comprised members of the Young Lives' team from Oxford University and the Vietnamese Centre for Analysis and Forecasting (CAF) at the Vietnamese Academy of Social Sciences (VASS), as well as expert consultants with experience of curriculum and test design from the Vietnamese Institute of Education Research, VNIES and PEDC[1].

This group drew on the maths and Vietnamese tests used in the 2010 round of the Vietnam Grade 5 Learning Assessment (G5LA), together with textbooks and international assessments (e.g. TIMMS) to generate grade-appropriate items in each competency. Passages for the Vietnamese test were sourced from VNIES. Items were developed in relation to the competency levels defined in technical documentation analysing data from the Grade 5 Learning Assessment, as seen in Tables 1 and 2 below.

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[1] The group comprised Vu Son (Institute of Education Research), T.S. Pham Thanh Tam (VNIES), Chi Tran Thi Kim (PEDC), Le Thi Kim Dung as well as colleagues from CAF and Oxford University.

Table 1: Mathematics skill levels in Grade 5

Level 1	- Reads, writes and compares natural numbers, fractions and decimals - Uses single operations of +, -, x and : on simple whole numbers - Works with simple measures such as time - Recognises simple 3D shapes
Level 2	- Converts fractions with denominator of 10 to decimals - Calculates with whole numbers using one operation (x, + or :) in a one-step word problem - Recognises 2D and 3D shapes
Level 3	- Identifies place value - Determines the value of simple number sentence - Understands equivalent fractions - Adds and subtracts simple fractions - Carries out multiple operations in correct order - Converts and estimates common and familiar measurement units in solving problems
Level 4	- Reads, writes and compares large numbers - Solves problems involving calendars and currency, area and volume - Uses charts and tables for estimation - Solves inequalities - Transformations with 3D figures - Knowledge of angles in regular figures - Understands simple transformations with 2D and 3D shapes
Level 5	- Calculates with multiple and varied operations - Recognises rules and patterns in number sequences - Calculates the perimeter and area of irregular shapes - Measurement of irregular objects - Recognised transformed figures after reflection - Solves problems with multiple operations involving measurement units, percentage and averages
Level 6	- Problem solving with periods of time, length, area and volume - Embedded and dependent number patterns - Develops formulae - Recognises 3D figures after rotation and reflection and embedded figures and right angles in irregular shapes - Uses data from graphs

Source: 'Viet Nam High Quality Education for All by 2020' (2011)

Table 2: Vietnamese skill levels in Grade 5

Level 1	- Matches text at word or sentences level aided by pictures - Restricted to a limited range of vocabulary linked to pictures
Level 2	- Locates text expressed in short repetitive sentences and can deal with text unaided by pictures - Type of text is limited to short sentences and phrases with repetitive patterns
Level 3	- Reads and understands longer passages. Can search backwards or forwards through text for information - Understands paraphrasing - Expanding vocabulary enables understanding of sentences with some complex structure
Level 4	- Links information from different parts of the text - Selects and connects text to derive and infer different possible meanings
Level 5	- Links inferences and identifies an author's intention from information stated in different ways, in different text types and in documents where the message is not explicit
Level 6	- Combines text with outside knowledge to infer various meanings, including hidden meanings. Identifies an author's purposes, attitudes, values, beliefs, motives, unstated assumptions and arguments.

Source: 'Viet Nam High Quality Education for All by 2020' (2011)

A test item-bank was first developed, containing items appropriate for children at the start of grade 5 which related predominantly to competencies at curriculum grade 4 or below. In maths, questions considered topics such as fractions, algebra and geometry, and in Vietnamese, questions focussed on reading comprehension. 35 items in each domain were selected for piloting.

Wave 1 Piloting & Test Finalisation
Following a pre-pilot in Bac Giang province, the full pilot was conducted in September 2011 and aimed to assess the appropriateness of both tests, in terms of relevance and difficulty-level. Two pilot sites were selected – one in Phu Yen and one in Lao Cai - to ensure the tests were piloted in diverse contexts. In each site two schools were selected (which were not part of the final survey sample), and two grade 5 classes tested in each. Data were then entered and analysed and item function analysed before refinement and finalisation. The final tests were then administered as part of the main school survey conducted between October – Dec 2011.

Wave 2 Test Development
The development of the second wave of testing was, in many ways, more complex. This related to the multi-purpose nature of the end-of-year test and a need to balance different priorities. At least 10 'anchor' items needed to be included in each test. These 'anchor' items were direct replications of questions from the first test, selected because they had initially functioned well in item analysis and would hopefully enable the linking of test scores across waves. In each case, item functioning was considered in light of the following considerations:

- The item difficulty (i.e. the percentage of children who got each item correct and each item's rank in terms of difficulty).
- The 'fit' of the item as measured through IRT analysis

Items at a range of difficulty levels across the key sub-domains were selected for replication, with the expectation that the range of difficulty would decline slightly upon the second round. The replicated items were placed at the same location in the second test to replicate the conditions of the first test as far as possible.

In addition to these 'anchor' items, the rest of the test comprised new items developed in conjunction with members of the original Technical Working Group. In the case of the maths test, new items related to competencies which children would be expected to have developed over the course of the grade 5 academic year. These items were therefore grade 5-specific, introducing either entirely new concepts, or extending grade 4 techniques through more difficult/ complex questions. In Vietnamese, where the first wave of testing had comprised 5 reading passages and accompanying comprehension questions, the approach was slightly different since 3 entire passages needed to be replicated. Anchor items were still selected, but new more difficult items were written to correspond to replicated passages, and then some new passages and questions were additionally included.

Wave 2 Piloting & Test Finalisation

Piloting was conducted in March 2012 in the same Phu Yen and Lao Cai sites and classes as the Wave 1 pilot. For both the maths and Vietnamese tests, 35 questions were piloted (including the replicated 'anchor' items). This enabled us to drop items after piloting and to draw on a reserve bank of items where items had not worked and needed replacing.

Maths

A total of fifteen items were replicated directly from the first test. These comprised ten curricular items and five non-curricular items. These items were selected for replication because they functioned well during Wave 1. The 10 curricular items covered geometry, basic arithmetic, algebra (both simple and applied), fractions, and general number manipulation. These items corresponded to grade 3 and 4 of the Vietnamese mathematics curriculum and related directly to questions found in the core textbook. Replicating them in the end-of-year test enables the measurement of progress on these competencies during grade 5. All items were piloted again prior to Wave 2, and their item functioning examined.

The five non-curricular items had performed at a high level of difficulty in the first wave of testing. In all cases they required students to apply knowledge of fractions, number patterns, and shapes to unfamiliar question formats. These questions therefore constitute more general (or a separate dimension of) assessments of children's aptitude. Since these items were also replicated, they enable measurement of progress on these competencies during grade 5. All items were piloted again prior to Wave 2, and their item functioning examined.

An additional 25 grade 5-specific 'new' items were developed, of which 20 were selected for piloting (in rotated forms). These items related directly to competencies taught only in grade 5, which included decimals, volume, statistics, speed and weight calculations and complex algebra. Following piloting each item was examined in detail and considered for inclusion in the final test. The following characteristics were considered:

- The item difficulty (i.e. the percentage of children who got each item correct and each item's rank in terms of difficulty). The intention was to include items at a range of difficulty levels, balanced within the curricular domains to be covered.
- The sub-domain being measured by the item, and its relationship to the curriculum. Overall we aimed to achieve a balance between key curriculum sub-domains.

The 'fit' of the item as measured through IRT analysis conditional on other criteria Fourteen of these new grade 5 items were selected for inclusion in the final test, and a further one item was redeveloped to assess a grade 4 level competency in geometry, since this seemed to be an under-represented competency in the test.

Vietnamese

The first wave of the Vietnamese test assessed reading comprehension. It comprised five passages, each with six corresponding questions at varying levels of competency. These questions were much more challenging to make difficult, such that this test provides less variation between children and is at an overall lower level of difficulty than the maths test. The result of this is that there were fewer items from the first test that were obvious candidates for replication in the second test, as many items were too easy to consider replicating a second time. As a result, three passages from the first test were replicated in piloting, each with four replicated questions attached, a total of 12 'anchor' items. Two new items per replicated passage were then developed and piloted, which aimed to test higher order competencies such as interpretation (totalling six newly developed items that relate to replicated passages).

For piloting, three new passages were then added to the test, with between five and six corresponding new questions. Once again, these aimed to present children with more difficult items which involved higher order capacities of understanding and interpretation.

Following piloting each item was examined in detail and considered for inclusion in the final test. The following characteristics were considered:

- The item difficulty (i.e. the percentage of children who got each item correct and each item's rank in terms of difficulty). The intention was to include items at a range of difficulty levels, balanced within the curricular domains to be covered.
- The sub-domain being measured by the item, and its relationship to the curriculum. Overall we aimed to achieve a balance between key curriculum sub-domains.

The three piloted replicated passages were all included in the final test. Eleven of the piloted 12 replicated question items which corresponded to these passages were included in the final test and one question item was adapted. Three out of the six new piloted items that corresponded to replicated passages were adapted to increase their level of difficulty and were included in the final test. One of the three new passages was dropped, along with the six corresponding questions. Of the entirely new passages and items that were piloted and kept in the final test, three questions were adapted and one totally new item was added, to increase the level of difficulty. As such, the final Vietnamese test includes seven question

items that were not fully piloted and 11 replicated 'anchor' items from the first wave of testing.

Appendix tables 1 and 2 detail the items administered in Wave 1 and Wave 2 of the test, and clearly indicate which items were replicated. Appendix tables 3 and 4 then report the difficulty parameters of each test item using IRT analysis, linking all test items across the two waves.

Table 1: Maths items in wave 1 and wave 2

	WAVE 1							WAVE 2				
Wave 1 item no.	Wave 1 item	Source	Skill level	Grade level	% correct	Replicated in Wave2?	Wave 2 item no.	Wave 2 item	Source	Skill level	Grade level	% correct
1	4823+569+33=…… a) 4315; b)5425; c)5415; d)5325	Textbook adapted		4	94.0	N	1	Which figure has double the volume of figure (H)? A)A; b) B; c) C; d) D	G5LA adapted		5	86.55
2	The value of 5 in the number 58643 is: a) 5; b) 500; c) 5000; d) 50000	G5LA adapted		4	88.9	N	2	Find x: x-5,2 = 6,98+7,55 a) 9,33; b) 19,63; c) 19,73; d) 9,73			5	81.62
3	(70850 - 50270) x 3 = …. A) 61740; b)62040; c)80056; d)162280	Textbook adapted		4	93.4	N	3	The cube has a volume of 1cm3. H is: a)7cm3; b)9cm3; c) 6cm3; d) 10cm3	G5LA adapted		5	67.36
4	75683+1507-93=… a) 81000; b)76087; c)77097; d) 77107	G5LA adapted		4	84.0	N	4	Son's father bought 3 watermelons of weights 1,6kg, 1,8kg and 2,6kg. What's the average weight of each watermelon? A) 2.0kg; b) 1,8kg; c) 6.0kg; d) 3,0kg	G5LA adapted		5	69.42
5	Find the value of x: x:3 = 1532 a) 4596; b) 510; c) 1529; d)3596	Textbook adapted		4	90.7	N	5	The decimal number with 6 hundred, 4 units, 2 tenths, and 5 thousandths is: a) 64,25; b) 604, 25; c) 604, 205; d) 64,205	G5LA adapted		5	66.4
6	Fraction showing highlighted part in figure is: a)3/6; b)1/3; c) 6/3; d) 3/1	G5LA adapted		4	39.2	Y	6					56.6
7	Fill in the correct number: 859_67 < 859167 a) 9; b) 0; c) 1; d) 2	Textbook adapted		4	91.2	N	7	A lorry can carry a maximum of 100 bags of rice, each weighing 20kg. If each bag of rice instead weighed 5kg, how many bags could the lorry carry?				70.89

									A) 100; b) 200; c) 300; d) 400				
8	Calculate the perimeter if the rectangle: a) 18cm; b) 72cm; c)36cm; d)24cm	G5LA adapted			4	68.3	Y	8						82.56
9	Fill in the appropriate number: 1, 3 __, 27 a) 9; b) 4; c) 5; d) 15					61.3	Y	9						69.64
10	According to the clock how much time is left until 12:30? a) 1 hour 40 mins; b) 1 hour 20 mins; c) 2 hours 20 mins; d) 2 hours 40 mins	G5LA adapted			3	62.6	Y	10						72.04
11	The number "seven million thirty six thousand two hundred and five" is written as: a) 7036205; b) 73625; c) 7360205; d) 736205	G5LA adapted			5	39.9	Y	11						52.39
12	Fill in the correct number: 9.000.000m2 = ….km2 a) 900; b) 90; c) 9; d) 9000	G5LA adapted			5	79.7	Y	12						85.18
13	Which rule applies to calculate the second number from the first? (3,6); (6,15); (8,21) a) Cong 3; b) Tru 3; c) Nhan 2, cong 3; d) Nhan 3, tru 3	TIMMS G8 Item M012029 adapted				44.7	Y	13						58.88
14	There are 25 circles in groups as follows. Which is the calculation to find circles in each group? A) 25+5; b)25-5; c)25:5; d) 25x5	G5LA adapted			3	76.1	Y	14						84.68
15	The number of right angles in the following figure is: a)2; b)3; c) 6; d)7	G5LA adapted			3	77.7	Y	15						86.46
16	Calculate x in the following equation: x+4/5= 3/2 a) 1/10; b)6/5; c) 7/7; d)7/10	Textbook adapted			4	81.4	N	16	What is the perimeter and area of the shape below? A) 27cm and 31cm2; b) 22cm and 31cm2; c) 27cm and 19cm2; d) 22cm and 19cm2					27.89

#	Question	Source			%	Y/N	#	Question				%
17	Fill in the appropriate numbers to create a set of numbers to be divided by 9: 31__; __35; 2__5 a) 5, 1, 2; b) 2, 3, 4; c) 5, 1, 3; d) 4, 2, 2				72.1	N	17	Find 8/15:2/11+7/15:2/11=… a)18 7/10; b) 5 1/2; c) 2/11; d) 15/11				45.44
18	3/5 - 1/3 = … a) 2/5; b) 2/2; c) 2/15; d) 4/15	G5LA adapted		4	84.5	N	18	Find 2 1/4 x 3 3/5 a) 6 1/10; b 3/5; c) 6 13/20; d) 7 13/20				41.47
19	4/3x5/4x7/8x8/10x9/14=… a) 3/4; b) 33/39; c) 10080/13444; d) 4/3	Textbook adapted		4	38.6	N	19	The side of the small cube is 0.5cm. The side of the big cube is 5.5cm. How many small cubes can we fit inside the big cube? A) 1; b) 11; c) 121; d) 1331				20.94
20	The division (1154:62) has the rest of: a) 0; b) 61; c) 35; d) 38	Textbook adapted		4	71.5	N	20	Class 5A has 45 pupils, 27 of whom are female. Male pupils are in charge of sweeping the leaves off the school yard. It takes them 1 hour to finish the task. If the whole class did it together, how long would it take to finish the task? Assume that male and female pupils are equally fast. a) 24 minutes; b) 27 minutes c) 45 minutes; d) 60 minutes				33.92
21	How many squares are there in the following figure: a) 2; b) 10; c) 9; d) 8	G5LA adapted		1 or 2	33.0	Y	21					38.22
22	Huy pays 16000 dong to buy 4 balls. How much does Huy have to pay to buy 7 balls? A) 64000BND; b) 28000VND; c)112000VND; d) 32000VND	G5LA adapted		4	56.5	Y	22					64.18
23	Calculate 20+20 : 4x 5 = … a) 45; b) 50; c) 125; d) 21	G5LA adapted		3 or 4	36.3	Y	23					51.73

24	The pineapple weighs: a) 1kg; b) 1800g; c) 800g; d) 1300g	G5LA adapted			3	61.4	N	24	Thang Long School has 400 pupils, 40% of whom are female. Trung Vuong School has 500 pupils, 58% of whom are females. What is the percentage of female pupils when you combine the two schools? A) 45%; b) 49.5%; c) 50%; d) 54%				37.04
25	If k=4, m=6 and n=24 which is correct? A) k=n/m; b)k=m/n; c) k=mxn; d)k=n-m					36.2	N	25	What's the area of glass used to make an aquarium with 1m length, 0,5m width and 0,5m height? (the aquarium does not have a lid) a) 2m2; b) 0,5m2 c) 1,5m2; d) 2,5m2	G5LA adapted			39.66
26	The area of the shaded area is: a)65m2; b)49m2; c) 59m2 d) 16m2	G5LA adapted			4	36.6	N	26	The distance from A to B is 270km. A car travels from A to B at a speed of 60km per hour. On the way, it stops to take a break at C at 3pm. C is 90km distance away from B. What time did the car start from A?				26.49
27	The fraction showing the highlighted parts in the following figure is: a) 4/3; b) 5/8; c) 3/4; d) 10/13					20.6	Y	27					41.44
28	Which set of numbers has a sum closest to the sum of 691:208 a) 600+200; b) 700: 200; c) 700+300; d) 900+200					46.0	Y	28					58.63
29	If a+2b=5 and c=3, calculate: a+2(b+c)=… a) 14; b) 8; c) 12; d) 11					27.0	N	29	The pie chart shows the proportions of books in the library. Of these books, 31% are maths books, 25% are Vietnamese books. There are 132 books in the library that are neither math nor Vietnamese books. How many math books are there in the library? A) 31; b) 44; c) 93; d) 132				30.61

30	Nhung sold 60 newspapers and Huong sold 80 newspapers, at the same price. The total amount of money they get from selling newspapers is 700000VND. How much money did Huong get from selling the newspapers? A)300000VND; b)420000VND; c) 525000VND; d)400000VND				52.2	Y	30					51.61

Table 2: Vietnamese items in wave 1 and wave 2 (N.B. the translation is indicative only)													
		WAVE 1							**WAVE 2**				
Wave 1 passage no.	Wave 1 item no.	Wave 1 item	Competency	Difficulty level	% correct	Replicated in Wave2?	Wave 2 passage no.	Wave 2 item no.	Wave 2 item	Competency	Difficulty level	% correct	
	1	Who is the primary character in the story?	Link information from different parts of the text.	4	65.7	N		1	What enabled Harry to lecture on relativity?	Search through text, compare close possibilities and combine with outside knowledge	5	77.22	
	2	What did Harry usually do while Einstein was lecturing?	Locate text expressed in the passage without aided picture	2	86.0	N		2	How did the questions full of mathematics formulas actually sound/ appear to Harry?	Combine text with outside knowledge to infer/derive real meaning of the text which is opposite to the stated words	6	33.35	
	3	Where did Harry lecture on Theory of Relativity in the place of Einstein?	Locate text expressed in the passage without aided picture	2	69.8	Y		3				78.07	
	4	What did Einstein do while Harry was lecturing on Theory of Relativity?	Locate text expressed in the passage without aided picture	2	79.4	Y		4				83.53	
1	5	What is the passage about?	Link inferences and identify author's intention where message is not explicit	5	52.3	Y	1	5				64.71	

Appendix

	No	Question	Skill	Level	%	Y/N		No	Question	Skill	Level	%
	6	What did you learnt from the way Harry answered the audience's questions?	Combine text with outside knowledge to infer/derive new meaning of the text	6	62.2	Y		6				73.73
	7	Does Hoang like fish?	Locate text expressed in the passage without aided picture	2	89.7	N		7	What is the first paragraph about?	Link information from different parts of the text, Link inferences and identify author's hidden message and values from connected details.	5	71.39
	8	What did Nam and Hoang's mother believe about eating fish?	Have to search backward and forward through the text for information	3	62.0	N		8	What does the sentence 'a bad mark makes the whole house feel sad' mean?	Link inferences and identify the author's hidden message and intention that was stated in an imagery way	5	72.89
	9	What kind of nutrients does fish contain?	Locate text expressed in the passage without aided picture	2	85.9	N		9	What is the meaning of the following sentences? 'That is why the (mark) ten yesterday was like three tens… we got'	Link inferences and identify the author's hidden message and intention that was stated in an imagery way	5	75.41
	10	What is eating fish good for children	Have to search backward and forward to collect information from different parts of the text	3	83.8	N		10	What is the second paragraph about?	Link inferences from different parts of the text. Link inferences and identify the author's hidden message and values from connected details	5	69.02
	11	What advice about eating fish did you find in the passage?	Link details/information from different parts of the text. Link inferences and identify author's intention from information stated in deferent way.	4 or 5	86.1	N		11	The poem was named 'all my family go to school' because?	Combine text with outside knowledge to infer hidden meaning of the passage. Identify author's motives and values.	6	36.63
2	12	What good does fish do for children?	Have to search backward and forward to collect details/information from different parts of the text	3	84.4	N	2	12	? UNPILOTTED ITEM	Identify intention of author, speculate implicit messages beyond written text.	6	63.59

	13	What was Tung Nam doing when his friend invited him to go playing foot ball?	Locate text expressed in the passage without aided picture	2	89.3	N		13	What happens in the homes after the cock crows?	Understand long and complex sentences. Identify the right sequences of activities without having indicators of time.	3	72.42
	14	Did Tung Nam want to go with his friend to play foot ball?	Link inferences and identify author's intention from information stated in deferent ways.	5	50.5	N		14	Which animals were mentioned in the passage?	Search the text forward and backward to identify relevant information. Identify information added from outside similar to information included in the text.	3	76.91
	15	Why didn't he go?	Have to search backward and forward to select information from different parts of the text	3	40.2	N		15	Which of the following sounds was not mentioned in the text?	Search the text forward and backward to identify relevant information. Identify information added from outside similar to information included in the text.	3	80.19
	16	What did you learnt from the passage?	Combine text with outside knowledge to infer hidden meaning, identify the author's purpose and values	6	78.7	N		16	What do the villagers do after breakfast?	Locate information in a long sentence without aided picture	?	88.71
	17	Was Tung Nam convinced when his friend said 'You can do your home work tomorrow'?	Link inferences and identify author's intention from information stated in a deferent way and message is not explicit.	5	54.6	N		17	What sound can't be heard in the village when people have gone to work?	Search the text forward and backward to identify relevant information. Connect different parts of the text.	3	64.46
3	18	What did Tung Nam suggest when he answered 'Shall we go all day from early morning tomorrow, but not today'?	Link inferences and identify author's intention from information stated in a deferent way.	5	44.1	N	3	18	What is the passage about?	Identify the author's intention from information stated in different ways. Generalize the topic of the passage from details.	5	51.95

	No.	Question	Skill		%	Y/N		No.	Question	Skill		%
	19	What appears with young green colour when spring comes on the field?	Locate text expressed in the passage without aided picture	2	77.5	Y		19				80.34
	20	What kind of trees are flowering on the hill beyond the field?	Expanding of vocabulary, understanding of sentences with complex structure.	3	72.5	Y		20				72.76
	21	What didn't the author mention in the passage?	Link information from different parts of the text, searching for available and identify missing information	4	65.4	Y		21				69.02
	22	What kind of grass that was described as 'lankily tall'?	Locate text expressed in the passage without aided picture	2	77.7	N		22	With which details was Ms Needle Flydragon described?	Search back ward and forward through the text for information, eliminate incorrect information	3	38.07
	23	Which insect was described with the action 'draw his sword in a dance'?	Locate text expressed in the passage without aided picture	2	80.7	N		23	Which of the following options provide correct names of the birds mentioned in the passage?	Search back ward and forward through the text for information, eliminate incorrect information	5	49.8
4	24	What image did the author want to picture in her description of the Spring Field?	Link inferences and identify author's intention from information stated in a deferent way.	5	77.3	N	4	24	Question response categories adjusted		3	38.69
	25	What colour are the flowers in the garden of Uncle Ho (the Uncle)?	Link information from different parts of the text, identify author's intention from information stated in different ways.	5	16.4	N		25	Which colours were mentioned in the poem?	Search for information through the passage, understand different shades of same words	3	47.43
5	26	When did the Uncle live in 'the house of those salad-days'?	Understand paraphrasing, expand vocabulary	3	38.6	N		26	Which of the following options reflects the author's feeling when visiting the Uncle's house?	Combine text with outside knowledge to infer hidden/underlined message, put oneself in the text to identify the author's motives,	6	32.17

Appendix

2 7	What didn't the author see when visiting the Uncle's house?	Link information from different parts of the text, searching for available and identify missing information	4	61.5	Y		27						62. 4
2 8	How was the Uncle's house described?	Search back ward and forward through the text for information, eliminate incorrect information	3	57.3	Y		28						59. 43
2 9	What is the poem about?	Combine text with outside knowledge to infer hidden/underlined meaning, identify the author's motives, attitudes and values	6	64.1	Y		29						66. 01
3 0	What does it mean by 'the golden-sky-light ripe guava'?	Understand paraphrasing, expand vocabulary	3	72.6	Y		30						72. 82

Table 3: Maths Item Parameters

Maths Wave 1					Maths Wave 2			
Item No	Discrimination	Difficulty	Guessing[2]	Replicated?	Item No	Discrimination	Difficulty	Guessing
1	0.572872	-3.0063	0.269322	N	1	0.734917	-1.04237	0.399171
2	0.979488	-1.90236	0.0373319	N	2	0.577	-1.30409	0.16671
3	0.828108	-2.49787	0.111635	N	3	0.573846	-0.443797	0.114875
4	0.808602	-1.72534	0.0495833	N	4	0.688264	-0.553312	0.0675703
5	0.697346	-2.02461	0.357714	N	5	0.797412	-0.409807	0.0251377
6	1.12471	0.302631	0.109706	Y	6			
7	0.819979	-2.1517	0.173424	N	7	0.794556	-0.564557	0.0614391
8	0.851163	-1.02009	0.019791	Y	8			
9	0.784386	-0.567691	0.036252	Y	9			
10	0.69171	-0.482145	0.153488	Y	10			
11	0.780031	0.247288	0.0346396	Y	11			
12	0.753258	-1.49334	0.0387604	Y	12			
13	0.689512	0.0742908	0.0609396	Y	13			
14	0.869679	-1.25836	0.0275941	Y	14			
15	0.73742	-1.47191	0.047328	Y	15			
16	1.11638	-1.34559	0.0315332	N	16	1.4444	1.56136	0.168603
17	1.14003	-0.899444	0.0451348	N	17	0.972515	0.876224	0.19458
18	1.21238	-1.46401	0.0375962	N	18	0.670169	0.966577	0.117587
19	1.18458	0.2965	0.0526321	N	19	1.17669	1.84163	0.114025
20	1.08954	-0.879918	0.0539888	N	20	0.820874	1.5824	0.181787
21	0.838348	0.831057	0.0822803	Y	21			
22	0.924505	-0.155846	0.123579	Y	22			
23	0.872413	0.499786	0.104576	Y	23			
24	0.498714	-0.332739	0.180598	N	24	1.09022	1.40917	0.223738
25	1.37284	0.666398	0.159428	N	25	1.10852	1.23196	0.221931
26	1.49207	0.502874	0.121367	N	26	1.11232	1.93053	0.181252
27	1.26044	0.924721	0.0942768	Y	27			
28	0.69732	0.214387	0.12549	Y	28			
29	0.398883	2.70696	0.140951	N	29	1.03329	1.83072	0.207979
30	0.655178	0.115256	0.0785311	Y	30			

Table 4: Vietnamese Item Parameters

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[2] This is on the whole low for both tests

Appendix

Vietnamese Wave 1					Vietnamese Wave 2			
Item No	Discrimination	Difficulty	Guessing	Replicated?	Item No	Discrimination	Difficulty	Guessing
1	0.742167	0.757444	0.497557	N	1	0.711137	-0.358788	0.423199
2	0.728591	-1.7084	0.171851	N	2	0.818722	1.06028	0.0897484
3	1.00421	-0.604177	0.208905	Y	3			
4	0.769721	-1.21338	0.184065	Y	4			
5	0.985653	0.341683	0.296367	Y	5			
6	0.928101	-0.32355	0.214148	Y	6			
7	0.79255	-1.97801	0.154022	N	7	0.3701	-1.09213	0.145786
8	0.300872	-0.666641	0.111714	N	8	0.670192	-0.776677	0.133469
9	0.9332	-1.6174	0.0522083	N	9	0.85532	-0.704607	0.182934
10	0.803208	-1.58086	0.0709835	N	10	0.597753	-0.363838	0.237713
11	1.05166	-1.55289	0.0430829	N	11	0.354767	2.25606	0.162278
12	0.895512	-1.56384	0.0415676	N	12	0.352292	-0.722873	0.0637401
13	1.06902	-1.78951	0.0340803	N	13	0.63266	-0.777646	0.134452
14	0.684862	0.788334	0.276411	N	14	0.726399	-1.04016	0.0833791
15	1.13218	3.67041	0.395807	N	15	1.06475	-0.997916	0.074621
16	1.03533	-1.09886	0.0768462	N	16	0.916411	-1.61421	0.113189
17	0.776646	0.0868434	0.154726	N	17	0.653856	-0.367666	0.1094
18	0.539559	0.530879	0.0892658	N	18	0.276727	0.606315	0.137348
19	0.953283	-1.02052	0.115869	Y	19			
20	0.460921	-1.27843	0.0583745	Y	20			
21	0.95844	-0.413802	0.14315	Y	21			
22	1.40075	-0.850509	0.151457	N	22	0.848144	1.15445	0.180408
23	1.62026	-0.843179	0.240652	N	23	0.687587	0.379397	0.113024
24	0.875618	-1.17197	0.0315153	N	24	0.247502	2.31075	0.131091
25	1.57778	4.02839	0.163657	N	25	0.515588	0.721923	0.146303
26	0.582137	1.19342	0.167492	N	26	0.832661	2.20532	0.250391
27	1.05017	-0.127897	0.169054	Y	27			
28	0.760282	-0.168851	0.0854056	Y	28			
29	1.14939	-0.0390075	0.275045	Y	29			
30	0.633629	-0.971435	0.0803206	Y	30			