

## APPENDICES

## APPENDIX A :

## ADAPTATIONS TO SITUATIONAL CONTEXTS

Situations Retained / Altered/ Added	Number	Content
Retained	10	Soccer Match
		People catching a taxi
		Man painting a school
		Lady with umbrella
		Boy reaching for a box
		Child eating ice-cream
		Boy with a bicycle with a puncture
		Motor car accident
		Boy hurt his knee
		Girls playing netball
Altered	5	Restaurant scene
		Child playing record loudly while mother is in the phone
		Children at a fun fair
		Children climbing on the roof of their house to fetch their cat
		There is lightening - the electricity has gone off
Added as potential training items	2	Pregnant woman with nurse, the phone is broken
		Rural river scene

APPENDIX B:

REASONS FOR ALTERING OF INAPPROPRIATE SITUATIONAL CONTEXTS

The original context	Reasons for Changes:	The new context
Restaurant	Unfamiliar context as the children don't go to restaurants	African wedding scene, with guests eating at a table inside a hall.
Child playing a record loudly while mother is talking on the phone	Records are not commonly used, and not all homes have telephones.	A taxi rank , with loud music coming from the taxis while a man is speaking at the public phone close by
Children at a Fun Fair.	Unfamiliar context to rural children	Children buying sweets from the sellers outside the school
Children climbing on the roof of a house to fetch their cat	Few families keep cats as pets, and most houses in the area are thatched therefore it is not easy to climb onto them	Children climbing up a tree to fetch their ball, and their ladder has fallen down
The electricity has gone off - there is lightning outside	Not all homes have electricity, though many do.	There is food cooking on a primus stove - a baby is crawling near by

## APPENDIX C:

## CONVERSION OF AMERICAN ENGLISH TO SOUTH AFRICAN ENGLISH, WITH ZULU TRANSLATION

American English	South African English	Zulu
What should he (the taxi driver) have done to keep from getting lost?	What could he (the taxi driver) have done so he did not get lost?	Bekumele enzeni ukuze angaduki?
What could this lady have done to keep from getting caught in bad weather?	What could this lady have done so that she was not caught in bad weather? (The Zulu to English translation was: What could this lady have done so she was not in trouble because of bad weather?)	Bekumele yenzi le nkosazane ukuze ingazitholi isihlupheka ngenxa yesimo esibi sezulu?
What could he(the boy) have done to keep from getting his shirt dirty?	What could he have done so that he would not get dirty?	Bekumele enzeni ukuze angangcoli?
Basket-ball	net-ball	webhola lomnqakiswano
Cookies	Biscuits	amabhisikidi (this commonly used Zulu word has been derived from the English)
Pop-sickle	Ice-cream	u- ayisikhilimu (This commonly used Zulu word has been derived from the English)

## APPENDIX D:

## EXAMPLES OF LITERAL AND COMPARABLE TRANSLATION OF ZULU TO ENGLISH

Zulu	Literal Translation	English
Umshayeli wetekisi ulahlekhile ohambeni lwakhe Oluya esithshini nabagibeli bakhe bashiywa yisitimela?	The taxi driver lost his journey, which goes to the station, and his passengers were left by the train. (Special passive Zulu construction). What should he have done that he not go astray.	The taxi driver lost his way to the station, and his passengers missed the train. What should he have done so he did not get lost?
Sazi ngani ukuthi sekusondele isikhathi sokhudla kwakusihlwa?	We know by what that it has now approached the time of eating at dusk?	How do we know that the time for eating the evening meal has now arrived.

## APPENDIX E:

## DISTRIBUTION OF PICTURES AND QUESTIONS ACCORDING TO EACH THINKING SKILL

Explaining Inferences	Determining Causes	Negative Why Question	Determining Solutions	Avoiding Problems
P1: Q1	P1:Q2	P1: Q3		
P2: Q4	P2: Q5		P2: Q6	
P3: Q7	P3: Q8		P3: Q9	P3: Q10
	P4: Q11		P4: Q12	P4: Q13
	P5: Q14	P5: Q15	P5: Q16	P5: Q17
	P6: Q18			P6: Q19
P7: Q20		P7: Q21	P7: Q22	P7: Q23
P8: Q24	P8: Q25	P8: Q26		P8: Q27
	P9: Q28	P9: Q29		P9: Q30
P10: Q31	P10: Q32	P10: Q33	P10: Q34	
P11: Q35			P11: Q36	P11: Q37
P12: Q38		P12: Q39	P12: Q40	
		P13: Q41	P13: Q42	P13: Q43
P14: Q44	P14: Q45	P14: Q46	P14: Q47	
P15: Q48		P15: Q49		P15: Q50
10 questions	10 questions	10 questions	10 questions	10 questions

Key: P15: Q48 = Picture 15 : Question 48

APPENDIX F:  
TATE-ZC SCORE SHEET

*TEST OF ABILITY TO EXPLAIN  
FOR BILINGUAL-SPEAKING CHILDREN*

Name	
Age	
Date of Birth	
Grade	
School	
Date of Test	

*TEST SCORES*

	<u>Task A</u> Explaining Inferences E I	<u>Task B</u> Determining Causes D C	<u>Task C</u> Negative Why N W	<u>Task D</u> Determining Solutions D S	<u>Task E</u> Avoiding problems A P	<u>Total</u>
<u>Raw Score</u>	40	40	40	40	40	200
<u>Score as %</u>						

*RESPONSE TO PICTURES*

NEGATIVE	NEUTRAL	POSITIVE
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## APPENDIX G:

## SCORING CRITERIA FOR THE TATE-ZC USING A 5 POINT SCALE

Each question will be given a score using the following criteria as a guideline.

Score	Criteria
0	<ul style="list-style-type: none"> <li>* No response.</li> <li>* Simple affect is used as the explanation</li> <li>* <b>The response is inappropriate or irrelevant.</b></li> </ul>
1	<ul style="list-style-type: none"> <li>* There is indication that the question has been understood, although the most relevant information for the problem is not presented.</li> <li>* Precise vocabulary is not used.</li> <li>* The answer may be correct, but does not directly relate to the context in the illustration</li> <li>* <b>The answer is vague and imprecise in relation to the question.</b></li> </ul>
2	<ul style="list-style-type: none"> <li>* There is indication that the question has been understood in that the response relates accurately to the question.</li> <li>* Use is made of precise vocabulary.</li> <li>* Physical causality related to the context of the illustration is expressed.</li> <li>* <b>One concrete/observable factor is presented in the answer.</b></li> </ul>
3	<ul style="list-style-type: none"> <li>* The response reflects clear understanding of the context.</li> <li>* Use is made of precise vocabulary</li> <li>* The answer relates directly to the context of the illustration</li> <li>* <b>Two or more concrete factors</b> may be presented in relation to physical causality between two events .                   OR</li> <li>* <b>One abstract factor</b> in relation to psychological or logical causality may be expressed between : two actions or an event/agent and an action</li> </ul>
4	<ul style="list-style-type: none"> <li>* The response reflects a clear understanding of the context.</li> <li>* Use is made of precise vocabulary and language is clearly formulated</li> <li>* Physical or psychological causality is presented in addition to logical/deductive causality.</li> <li>* At least one concrete factor plus one abstract factor is presented.</li> <li>* <b>A complete answer giving cause and effect / A creative answer</b></li> </ul>

APPENDIX H:

SCORING GUIDELINES - EXAMPLES OF POSSIBLE RESPONSES AND THE SCORE ALLOCATED

Picture 1: WEDDING SCENE

Question 2: What made them decide to go to the hall? (Determining cause)

Score	Reference made to	Example
0	Emotions	There is happiness
1	The wedding  People seeing easily	Because it's a wedding. Because they wanted to get married. Because they want to be seen They invited people They chose it
2	Many people being there  Wanting to seat people well  Wanting people to see them well	Its because maybe there will be many people They want all the people to be seated well They want all the people to be able to see them well
3	2 of the above  Many people and reference to the wedding	It is because there will be many people at their wedding. At a wedding there are many people
4	Relationship between a venue that is too small and the number of people.	They cannot get married at home, and maybe their home is quite small. It cannot fit all the people.

Picture 2: THE TAXI RANK AND THE MAN TALKING ON THE PHONE



Question 4: How do we know that the man has a problem talking on the phone?

(Explaining inference)

Score	Reference made to	Example
0	Emotion  An event	Its because he's crying Its because he's in a hurry He's quiet They have robbed him
1	The telephone is faulty	The phone is not working properly He pressed the wrong button He must put in money
2	Loud music Man closing one ear Taxi People are noisy /dancing	There is loud music The man is closing his ear The taxi showed up
3	2 of the above	The taxi is playing the music loudly, and the people are noisy The people are noisy and dancing
4	The relationship between the noise and the man's reaction	We can see him talking, and he is holding his ear to block out the noise that the taxi and the people are making

APPENDIX I:

EXAMPLES OF AGREEMENT/DISAGREEMENT IN THE INTER-TRANSLATOR  
RELIABILITY MEASURE (PILOT STUDY II)

**Examples of scoring for agreement between translators**

If it was still raining / seeing that it is raining  
Lower / shorter  
Guard / look after  
Worried / downhearted  
Punctured because of / punctured by  
He was not that much injured / he was not that hurt  
As if he can't hear properly / as if he's deaf

**Examples of scoring for disagreement between translators**

They were not supposed to kick it towards the tree / they were supposed to play far from  
the tree  
She sees the ice-cream all over his mouth / she sees his mouth and there's ice-cream all  
over him  
Because of thorns / because of thorns and broken glass

APPENDIX J:

EXAMPLES OF TEST STIMULI DEMONSTRATING ADAPTATIONS MADE

Picture and questions from the TOPS:



- Question 1: All the people in the picture had planned to take the bus. They all wanted to ride together. Why are they taking a taxi instead?
- 2: These three people on the sidewalk don't know the address of the restaurant they are going to. What should they do?
- 3: The taxi driver got lost on the way to the restaurant, What could he have done to keep from getting lost?

Adapted picture and questions from the TATE-ZC:



Question 1: **Bonke labantu bahlele ukuya esitheshini saseThekwini ngebhasi. Yini eyenza bagibele itekisi esikhundleni sebhasi?**

All of these people arranged to go to Durban Station by bus. Why are they riding in the taxi instead of the bus? (Determining Cause)

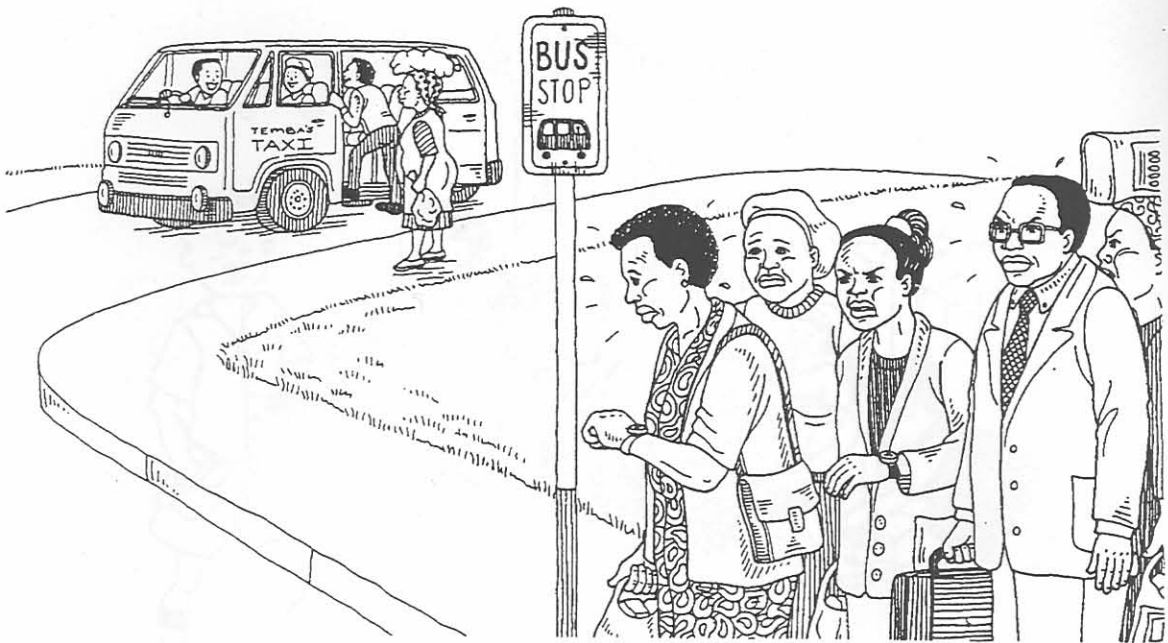
2: **Lo mshayeli wetekisi akawazi umgwaqo oya esitheshini saseThekwini. Kufanele enze njani?**

The taxi driver doesn't know the way to the Durban Station. What should he do about it? (Determining Solution)

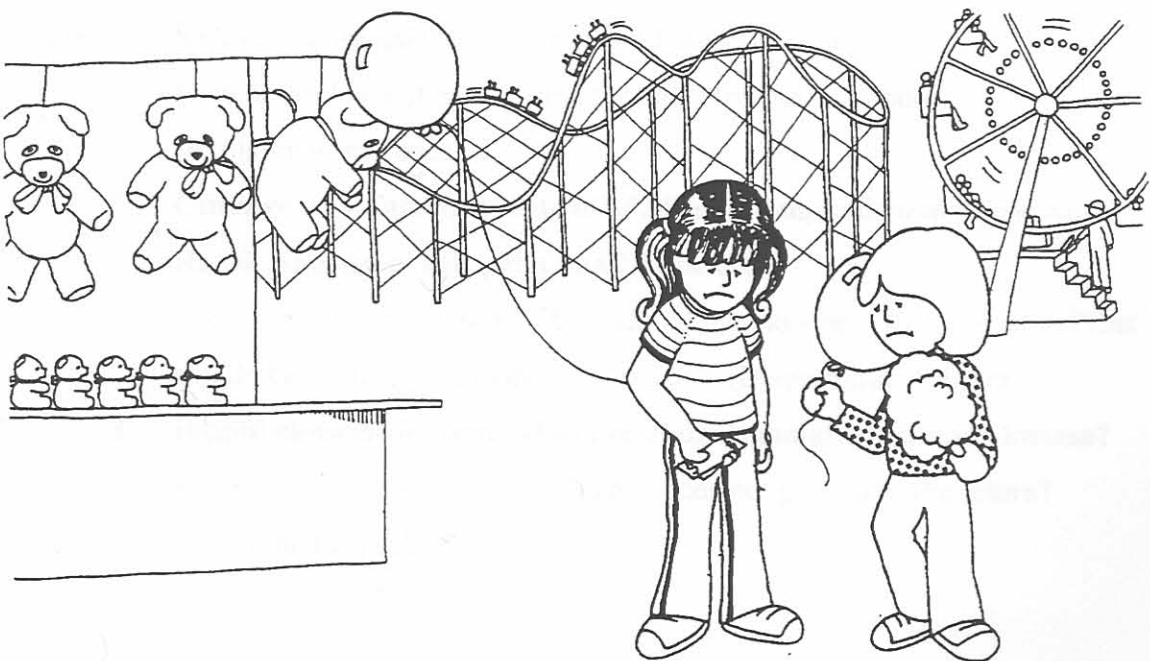
3: **Umshayeli wetekisi ulahlekile ohambeni lwakhe oluya esitheshini ngabagibeli bakhe bashiywa yisitimela. Bekumele enzeni ukuze angaduki.**

The taxi driver lost his way to the station and his passengers missed the train. What should he have done so he did not get lost? (Avoiding the problem)

Final adaptation of Illustration for TATE-ZC



Picture and question from the TOPS:



- Question 1: How do we know these children are at a fair?
- 2: The oldest girl knew she had \$5, but now she can only find \$3. What should she do about her missing money?

Adapted Picture and questions from the TATE-ZC:



Question 1: **Sazi ngani ukuhti sekayisikhati sekhefu esikoleni?**

How do we know it is now time for break (recess) at school?

(Explaining Inference)

2: **Omunye wabafana ubephete u-R5.00 esikoleni, kodwa manje eseno-R2.00. Angenzani njengoba imali ilahlekile?**

One of the boys brought R5.00 to school, but now he only has R2.00. What should he do about the money that is lost? (Determining Solution)

3: **Ikuphi okumele lomfana akwenze ukuze ingmlahlekeli imali kusasa?**

What should the boy do so his money does not get lost in the future?

(Avoiding the problem)

Final adaptation of Illustration for the TATE-ZC



## APPENDIX K:

## PEARSON INTER-SCALE CORRELATION PER AGE GROUP

The tables below reflect inter-scale correlation for each age group, as well as correlation of each scale per age group with the total score to identify the scale that correlates best with the total score and to identify a possible sequence in the development of the different scales.

## 7 year group (N=51)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.72328*	0.50517	0.55967*	0.53820*	0.85797*
DC	0.72329*	1.000	0.42869	0.56448*	0.61827*	0.84442*
NW	0.50517	0.42869	1.000	0.49126	0.41515	0.71539*
DS	0.55967*	0.56448*	0.49126	1.000	0.37016	0.76204*
AP	0.53820*	0.61827*	0.41515	0.37016	1.000	0.74683*
Total Score	0.85797*	0.84442*	0.71539*	0.76204*	0.74683*	1.000

$p < .0001$

## 8 year group (N=51)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.27765	0.45583	0.31171	0.32661	0.65180*
DC	0.27765	1.000	0.59263*	0.43589	0.56014*	0.77956*
NW	0.45583	0.59263*	1.000	0.42079	0.43651	0.79517*
DS	0.31171	0.43589	0.42079	1.000	0.42275	0.69831*
AP	0.32261	0.56014*	0.43651	0.42275	1.000	0.74653*
Total Score	0.65180 *	0.77956*	0.79517*	0.69831*	.074653*	1.000

$p < .0001$

## 9 year group (N=50)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.46840	0.64357*	0.37213	0.39355	0.75986*
DC	0.46840	1.000	0.59182*	0.61032*	0.54598*	0.81877*
NW	0.64357*	0.59182*	1.000	0.56049*	0.40634	0.82295*
DS	0.37213	0.61032*	0.56049*	1.000	0.44472*	0.75486*
AP	0.39355	0.54598*	0.40634	0.44472	1.000	0.72398*
Total Score	0.75986*	0.81877*	0.82295*	0.75486*	0.72398*	1.000

$p < .0001$



## 10 year group (N= 48)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.62944*	0.57857*	0.49247	0.41199	0.74822*
DC	0.62944*	1.000	0.58420*	0.64971*	0.59056*	0.82794*
NW	0.57857*	0.58420*	1.000	0.65792*	0.61510*	0.84472*
DS	0.49247	0.64971*	0.65792*	1.000	0.68792*	0.85099*
AP	0.41199	0.59056*	0.61510*	0.68792*	1.000	0.82361*
Total Score	0.74822*	0.82794*	0.84472*	0.85099*	0.82361*	1.000

p&lt; .0001

## 11 year group (N=45)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.52984	0.52545	0.48611	0.53249	0.76256*
DC	0.52984	1.000	0.57939*	0.44583	0.62448*	0.80376*
NW	0.52545	0.57939*	1.000	0.39696	0.60111*	0.79167*
DS	0.48611	0.44583	0.39696	1.000	0.51121	0.73636*
AP	0.53249	0.62448*	0.60111*	0.51121	1.000	0.83583*
Total Score	0.76256*	0.80376*	0.79167*	0.73636*	0.83583*	1.000

p&lt; .0001

## 12 year group (N=47)

	EI	DC	NW	DS	AP	Total Score
EI	1.000	0.51291	0.54538*	0.46506	0.55543*	0.80606*
DC	0.51291	1.000	0.52109	0.6377*	0.47464	0.80296*
NW	0.54538*	0.52109	1.000	0.38993	0.42066	0.74532*
DS	0.46506	0.61377*	0.38993	1.000	0.41259	0.73902*
AP	0.55543*	0.47464	0.42066	0.41259	1.000	0.75569*
Total Score	0.80606*	0.80296*	0.74532*	0.73902*	0.75569*	1.000

p&lt; .0001