

# Appendices

## 1. Photographs of the schools



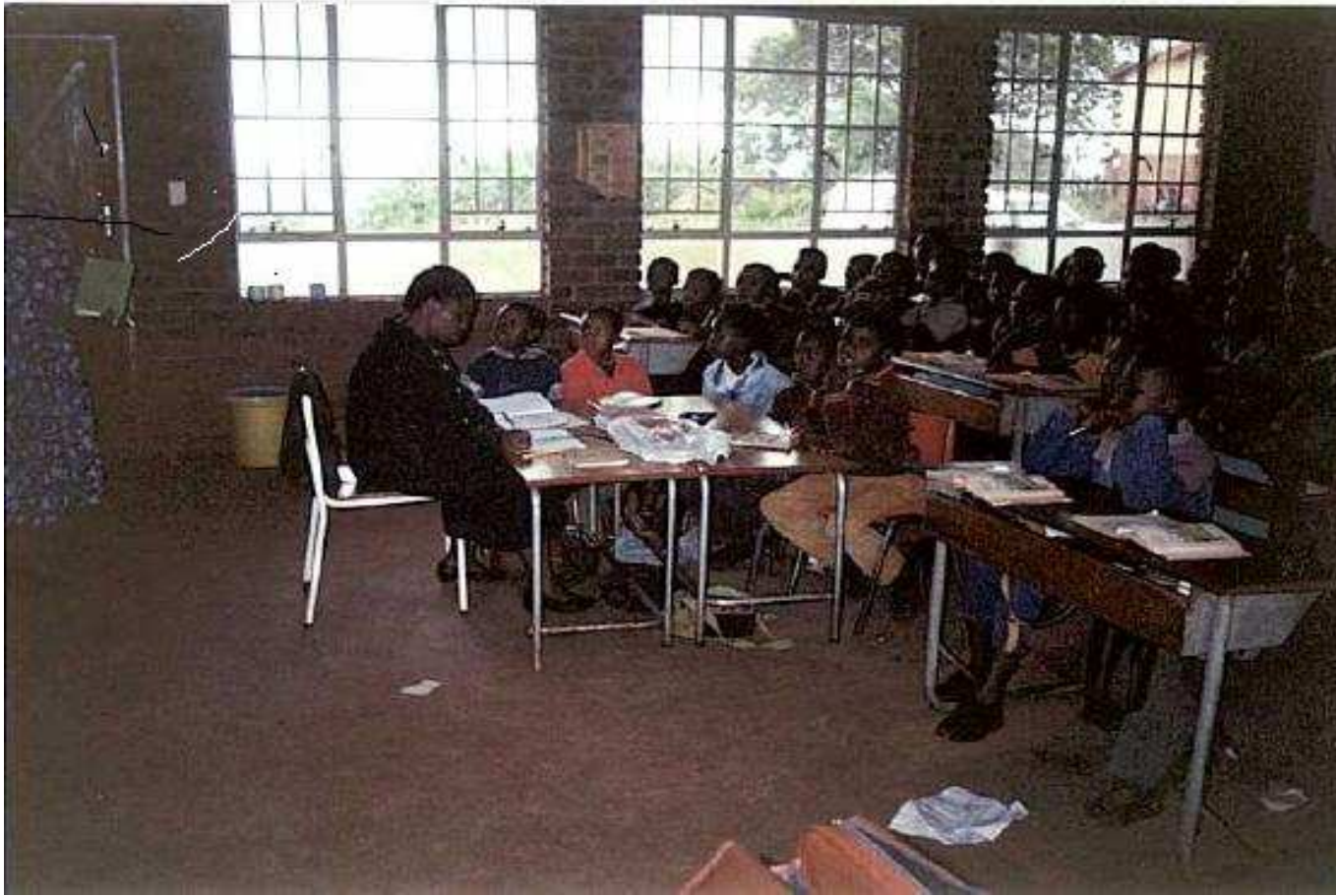
1.1. Women from the local community at Mbaleni junior primary school preparing pupils' state provided lunch, 1999.



1.2. Mmbara senior primary school pupils during break, 1999



1.3. Mbaleni junior primary school Grade Four class. Pupils raise hands to be nominated to answer the questions while the teacher moves between the rows of desks, 1999.



1.4. Mbaleni junior primary school Grade Three class. Two Grade Three classes share one room. One teacher, standing in the background, teaches while the other teacher marks pupils' books, 1999.



1.5. Mbaleni junior primary school's overcrowded Grade Two class. There are no enough desks for the pupils, hence some pupils kneel on the floor to write the exercise.

## 2. Experiments

### 2.1. Experiment 1: Circles Tasks questions and model answers

[The task situations are represented in the middle section of the columns]

**Situation 1:** Situation 1 questions involve two half circles: a red (or green) uncovered half and a tinfoil-covered half. Below are the task questions and the model answers presented to the subjects:

Task Questions	Situation 1	Model answers
1a. With the two halves, if we remove the foil, will it be possible to make an all-red circle?	$R + X = RR?$	Yes. The uncovered half is red. If the covered half turns out to be red, the circle will be all red.
1b. With these two halves, if we remove the foil, will it be possible to make an all-green circle?	$R + X = GG?$	No. It is not possible to make an all-green circle with these two half circles before us because the uncovered half is already red. Even if the covered half turns out to be green, the full circle cannot be all green.
1c. With the two halves, if we remove the foil, can the full-circle be red-and-green in colour?	$R + X = RG?$	Yes. If the covered half turns out to be green when the tinfoil is uncovered, the circle that can be made will have a red and a green colour.
1d. With these two halves, if we remove the foil, will the circle be of one or two colours?	$R + X = RR?$ OR $RG?$	It could be either, depending on the colour of the covered half. The circle will be one colour (red) if the covered half is red. However, if the covered half turns out to be green, then the circle will be of two colours, red-and-green.
1e. If the circle that is made out of these two halves is of one colour only, what colour does it have to be?	$R + X = RR?$	It will have to be a red colour circle because the uncovered half is red.
1f. A few minutes ago, another child made a one-coloured circle using the same halves as these in front of you. What colour do you think it was?	$R + X = RR?$	It must have been red, because if she/he used the same halves --with the uncovered half being red, the covered half had, of necessity, to be red so there

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1g. With the two halves in front of you, what colour can all the circles that can be made be?	R + X = RR? RG?	could be an all-red circle. If the covered half turns out to be red, the circle that can be made will be all red, but if the covered half turns out to be green, then the circle will be red-and-green.
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**Situation 2:** Situation 2 questions involve three half circles, a red uncovered half, a green uncovered half, and a tinfoil-covered half. After that the child has answered all the *situation 1* questions, the experimenter takes the remaining green half circle that had hitherto not been part of the “game” and places it with the other two halves in the game so that there are now three half circles: two uncovered half circles, one red and the other green in colour, and a tinfoil-covered half. The subject is again reminded that the colour of the tinfoil-covered half is either be red or green, and that all the questions to be asked will be based on the three half circles in the game. The following questions, the model answers and the representation of each task situation, were presented to the subjects:

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Task Questions	Situation 2	Model Answers
2a. With the half circles in front of you, can we make a red-and-green colour circle?	R+X+G = RG?	Yes. [The subject either provides a demonstration or a verbal answer to the question. The answer to this question is obvious as the uncovered red, and the uncovered green half-circles are lying right in front of the subject]
2b. Is there another way in which a red-and-green circle can be made from the half circles in front of you?	R+X+G = RG?	Yes. If the covered half turns out to be red or green, it could make a red-an-green colour circle when placed together with either one of the two uncovered halves.
2c. When the foil is uncovered, can we make an all-red circle?	R+X+G = RR?	Yes. If the tinfoil-covered half turns out to be red, it is possible to make an all-red circle.
2d. If the tinfoil is removed, can we make an all-green circle?	R+X+G = GG?	Yes. If the tinfoil-covered half turns out to be green, it will be possible to make an all-green circle.
2e. If the foil is removed from the covered half, can we make a one-	R+X+G = RR? OR GG?	Yes. The covered-half has to be the colour of either of the

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coloured circle from these halves in front of you?	uncovered halves to make a one-colour circle.
2f. If we want to make a one-colour circle by these halves in front of you, what colour will it be?	$R+X+G = RR?$ OR $GG?$ It will either be all-red or all-green, depending on what colour the covered half turns out to be.
2g. If the cover is removed, what are the different-colour circles that can possibly be made out of the half circles in front of you?	$R+X+G = RG?$ OR $RR?$ OR $GG?$ If the cover is removed, one could make a red-and-green colour circle or an all-red circle, or an all-green circle; depending on what colour the covered half turns out to be.
2h. If the circle that is made from these halves in front of you has to be one colour only; that is red or green, it has to take the colour of one of these halves. Can you say which one this half is, and why?	$RR$ OR $GG=$ $R?$ OR $X?$ OR $G?$ AND WHY? The one-coloured circle that can possibly be made has to take the colour of the covered half. If the circle that is made is to be red, the covered half has to be red, but if the circle that is made is to be green, the covered half has to be green.

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Legend:

R: Red uncovered half-circle

RR: An all-red circle

GG An all-green circle

RG: A red-and-green (or green-and-red) circle

X: Covered half-circle of unknown colour value

G: Green half-circle

+: Showing the possibility that the half circles can combine into a full circle

=: Showing the colour value that could be made as a result of a combination of the half circles

?: Question about the proposed colour value that can result from the possible combination of the different colour half circles

## 2.1. 1. Summary of the subjects' responses to the task questions.

<b>Tasks</b>	<b>Number of subjects with competent responses</b>				
	<b>Situation 1</b>	<b>Grade1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>
1a..		11	16	17	20
1b.		8	12	15	20
1c.		1	10	14	17
1d.		14	17	18	20
1e.		8	14	17	17
1f.		0	4	8	13
1g.		6	6	11	13
<b>Situation 2</b>	<b>Grade1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>	
2a.	13	18	19	20	
2b.	4	11	12	18	
2c.	7	14	19	19	
2d.	8	18	18	18	
2e.	16	19	17	20	
2f.	1	10	7	11	
2g.	0	4	4	12	
2h.	0	3	8	12	

2.1.2. Experiment 1, Circles Tasks: *Post hoc, Bonferroni*, test of the *Anova* procedure.

The ANOVA Procedure

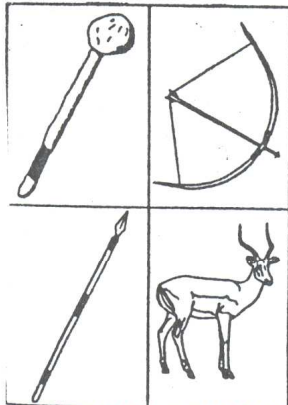
Bonferroni (Dunn) t Test for Experiment 1

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	76
<b>Error Mean Square</b>	3.075658
<b>Critical Value of t</b>	2.70907
<b>Minimum Significant Difference</b>	1.5024

Means with the same letter are not significantly different.				
Bon Grouping	Mean	N	grade	
	A	6.0000	20	7
	A			
B	A	5.0000	20	5
B				
B		3.9500	20	3
	C	2.4000	20	1

**Appendix 2.1.2: *Post hoc, Bonferroni*, test of the *Anova* procedure indicating that significant difference in tasks performance across the four grades are located between Grade One and Grade Three, and between Grade Three and Grade Seven. Same letter grouping indicates that there is no significant difference between the Grades.**

## 2.2. Classification and Generalisation Tasks



Task A: pick, panga, hoe and wheat

Task B: kraal, giraffe, goat and cow

Task C: tree, donkey, lizard and cow

Task D: hut, wheat, tree and mealie plant

A South African version of Luria's (1976) classification and abstraction tasks derived from Moll (1994).

Figure 2.1. Classification and Generalisation Tasks

Luria's (1976) classification and abstraction tasks derived from Moll (1994).

The figure displays four 2x2 grids of line drawings used for classification tasks. Grid A (top right) contains a pickaxe, wheat stalks, a panga, and a hoe. Grid B (middle left) contains a kraal (fence), a giraffe, a goat, and a cow. Grid C (middle right) contains a tree, a donkey, a lizard, and a cow. Grid D (bottom left) contains a hut, wheat stalks, a tree, and a mealie plant (corn). The text 'A South African version of Luria's (1976) classification and abstraction tasks derived from Moll (1994)' is written across the bottom of the figure area.

### 2.2.1. : Summary of each Grade's responses on each of the four Classification and Generalisation Tasks.

<b>Task A:</b>	<b>Grade1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>
Categorical classification	19	19	18	17
Functional classification	1	1	2	3
Categorical reasons	1	9	9	9
Functional reasons	19	11	11	11
<b>Task B:</b>	<b>Grade 1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>
Categorical classification	9	17	16	16
Functional classification	11	3	4	4
Categorical reasons	1	12	12	13
Functional reasons	19	8	8	7
<b>Task C</b>	<b>Grade1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>
Categorical classification	14	13	17	18
Functional classification	6	7	3	2
Categorical reasons	0	10	12	13
Functional reasons	20	10	8	7
<b>Task D</b>	<b>Grade 1 (n=20)</b>	<b>Grade3 (n=20)</b>	<b>Grade5 (n=20)</b>	<b>Grade 7 (n=20)</b>
Categorical classification	8	15	18	17

Functional classification	12	5	2	3
Categorical reasons	0	4	6	10
Functional reasons	20	16	14	10

2.2.2. *Post hoc, Bonferroni*, test of the *Anova* procedure on Experiment 2: Classification and Generalisation Tasks.

#### The ANOVA Procedure

##### Bonferroni (Dunn) Test for Experiment 2

<b>Alpha</b>	0.05
<b>Error Degrees of Freedom</b>	76
<b>Error Mean Square</b>	2.590789
<b>Critical Value of t</b>	2.70907
<b>Minimum Significant Difference</b>	1.3789

Means with the same letter are not significantly different.				
Bon Grouping	Mean	N	grade	
	A	6.5	20	7
	A			
B	A	5.2	20	5
B				
B		4.9	20	3
	C	2.4	20	1

**Appendix 2.2.2: The procedure indicates significant differences between the performance of the Grade One subjects and the Grade Three subjects; and between the Grade Three subjects and the Grade Seven subjects, respectively.**

### 3. Samples of lesson excerpts from classroom observations<sup>1</sup>

#### 3.1. Grade One Lesson

(a). The Grade One teacher below reported that her lesson integrates three learning areas of literacy, numeracy and life skills. She further reported that her pupils, unlike in the past, are active and speak out as a result of her using the new teaching methodology of the new curriculum. The teacher, an experienced woman who has been teaching for the past thirty years, further informed the researcher that the new curriculum enables her pupils to learn practical skills, which, in her view, would enable

1. A full range of the lesson excerpts notes, samples of the pupils' written exercises, and other documents such as the samples of textbooks, readers and official records and syllabuses, are kept by the researcher.

pupils to take technical careers in future, which, the teacher reports, had been reserved for White pupils only in the past.

After the introductions, the teacher goes to the chalk board and writes:

1. T. "*tsha tshe tshi tsho tshu*"

After that the teacher has written these, several pupils interrupt (the lessons are conducted in Tshivenda) :

2. P. "You did not write the dot".

The teacher had forgotten to put a dot on top of 'i', for "*tshi*". The teacher asks where it is that she has omitted to place a dot:

3. T. Where?.

Immediately, before the class responds to her question above, the teacher realises where she had made this error. However, the teacher writes "Tsh!", placing the dot underneath the "i".

Pupils again object to this in chorus, saying that the dot is still not in the right place. After this, the teacher then puts the dot in the right place. However, she again forgets to erase the other dot that she had earlier placed underneath the "i". Pupils again notice this and shout once more in chorus that the answer is still not correct. The teacher does not immediately realise where the error this time was. As the teacher stares at the whole class, in an apparent amazement, several pupils chant in chorus:

4. P. "There are two dots".

The teacher looks back on the board and thereupon realizes what the pupils are referring to. The teacher quickly erases the dot underneath. After this, the pupils express their approval by chanting in chorus:

5. P. "Yes".

After the episode above, the teacher asks the class a question:

6. T. "Who can write the number 5 on the board for me?"

*[Ndi nnyj a ne a nga nnwalela 5 kha bodo]*

One boy who raised his hand is nominated. The boy writes the number 5 incorrectly, the number is facing backwards.

The whole class says “No”, in chorus. Without remarking, the teacher nominates another pupil who goes to the front and writes the number correctly:

7. P. ‘5”.

The teacher asks the class if this is correct. The class answers in chorus:

8. P. “Yes”

[Ee]

The teacher asks another child:

9. T. Go to the board and write “*Tshikolo tsha Mbaleni*”.

[Iyani ni you nwalela “*Tshikolo tsha Mbaleni*].

The nominated pupil goes to the blackboard and writes the sentence but the word spacing is not correct:

10. P: *Tshikolo tshaMbaleni*.

The other pupils, without waiting for the teacher to react to what the nominated child has just written on the board, immediately say, in chorus, that the answer is not correct. The teacher nominates another pupil, among the pupils whose hands were raised, to go and write the sentence correctly. The nominated pupil goes to the board and writes:

11. P: *Tshikolo tsha Mbaleni*.

The teacher asks the class if what this pupil has just written is correct, and they answered in chorus:

12. P. “Yes”.

The teacher agrees and reiterates the answer by saying it aloud, as if reading from the board what the last pupil has just written. After this, the teacher instructs pupils to take out their exercise books and start writing.

Pupils took out their books and prepare to write. The teacher writes the sentence “*Tshikolo tsha Mbaleni*” on the board, within the neat horizontal lines that she has drawn on the board. The sentence starts from the left hand margin. The teacher instructs the class, who had already started copying the sentence into their exercise books, to copy

the sentence neatly into their books, and to fit the letters correctly into the lines, with capital letters filling the double line space while small letters should fill the single line space.

(b). The following written exercise illustrates some of these patterns:

13. T. "There should not be anyone who write facing backward, lets face the blackboard. We don't write facing backwards against the blackboard!"

*[Hu songo vha na ano nwala nga tshitiko, kha ri rembuluwe. A ri nwali nga tshitiko!]*

Upon this instruction, pupils begin to turn their chairs to face the front, making, in the process, a loud noise as they push the chairs and quarrel among themselves. The teacher moves around the classroom among the pupils and gives instructions to the whole class, while reprimanding individual pupils she says are either making noise or disturbing others. As she moves around the room, the teacher sees a pupil who is still seated facing the opposite direction, away from the chalkboard, and she instructs him to turn around and face to the front:

14. T. "Turn around and face the front, we do not write through our backs".

*[Kha vha rembuluwe vhone ari nwali nga tshitiko]*

The boy turns and faces the board. The teacher gives further instructions to the whole class on how they should write:

15. T. "When you finish writing "tshikolo" you must place a finger, after "tsha", again place a finger"

*[Ni tshi fhedza u nwala uri "tshikolo" ni vheye munwe, "tsha" ni vheye munwe].*

The teacher demonstrates this on the board, by placing a finger after every word to create a space, as she gives these instructions.

16. T. "We don't write, "tshikolotshambaleni"

*[Ari ri: "tshikolotshambaleni"]*

The teacher writes on the board, demonstrating to the whole class what she means. After this, the teacher begins to move around the class between the desks, checking what the learners are writing. She finds one pupil who is writing from the right hand side

of the book to the left. The teacher turns to the rest of the class and gives a further instruction, framed in the form of a question:

17. T. "From which direction did I say we should start when we write?"

*[Ndo ri ri tshi nwala ro thoma kha tshifhio?]*

Several children answer the teacher's question in chorus:

18. P. "From the left"

*[Kha tsha monde]*

The teacher announces to the whole class that there is someone who is writing from the right hand side to the left (referring to the boy who did this, beside whom the teacher is still standing):

19. T. "This one writes from right to left, he writes strangely".

*[Hoyu u khou nwala a tshi thoma kha tsha ula, u khou nwala tshigula].*

After this, the teacher continues walking around, monitoring as the pupils write. After a while the teacher goes back to her seat. Some pupils stop writing and start talking to each other. One pupil goes to the teacher with her exercise book open. The teacher talks to her and lets her go back to her seat and continues writing. The teacher instructs the whole class that no one should forget to write a name at the top of the sheet they are writing on:

20. T. "No one should forget to write his or her name on top of page, others have not written their names".

*[Ni songo vhuya na hangwa u nwala dzina lanu hafho nthu, vhanwe a vho ngo nwala madzina]*

The teacher continues giving instructions and assisting individual pupils as she moves around the desks. She reprimands those who she finds not following her instructions. The teacher bends over next to one boy who is not writing correctly as instructed. This boy's work is not complete and he is not leaving the correct spaces between the words:

21. T. "He, he, he! Young man ... don't you have ears? ...what is wrong? Write the whole sentence. You have not placed your finger between the words, have you?".

*[He,he,he! Vhakalaha vhang... dzi khou dzula nthha ha thoho ndevhe? Andani ho tshiyala ni? Nwalani na fhungo la hone. A no ngo vhuya na dzhenisa munwe, no u dzhenisa?]*

After writing, the teacher leads the class in continuing with the lesson. She instructs pupils to put away their exercise books and asks them to give words that begin with each of the five syllables already on the board. The teacher instructs class to give her the words as she mentions one syllable after the other:

22. T. "Right, give me the words that begin with "tshi", "tsha", and "tsho", so we write them on the board".

*[Ndi zwone, ni mphe maipfi a no thoma nga "tshi" na a no thoma nga "tsha" na "tsho", ri tshi a nwala kha blackboard.]*

Pupils raise hands in response to the teacher's instruction above. The teacher nominates pupils one after the other, calling them by their names. Pupils give the names, with the teacher writing all the words on the board:

23. P: "Tshinakaho", "Tshilidzi", "Tshililo", "Tshifhiwa", "tshinoni", "Tshivhidzo", "Tshimangadzo".

The teacher asks the pupils if they can tell her why she begins with a capital letter when writing some of the words she has written on the board. Pupils raise their hands and the teacher nominates one pupil, calling her by name. The pupil answers:

24. P: "Because names (nouns) begin with capital letters"

*[Ngauri madzina a thoma nga khulwane]*

The teacher agrees showing satisfaction with the response by remarking to the whole class:

25. T. "Did you hear what she said? Because names begin with capital letters. I really did not think that she would know the answer. Lets proceed".

*[No zwi pfa uri o ri mini? Ngauri madzina a thoma nga khulwane. Nda ndi songo zwi humbula lini. Kha ri ye phanda].*

The lesson continues, with pupils raising their hands, and the teacher pointing them, one after the other, to give more words that begin with "tshi". Pupils give the words and the teacher continues to write them on the board. After this, the teacher asks the whole

class why the word, “*tshinoni*” [bird] does not begin with a capital letter. Pupils raise hands to be nominated and the teacher calls the name of one pupil who answer:

26. P. “Because *tshinoni* [bird] is not a name”.

[*Ngauri tshinoni a si dzina*].

The teacher agrees to this answer and continues to ask more questions:

After the activity, above, the teacher asks pupils to tell the number of sound patterns that each of the words, above, has. The teacher reads out a word from those she has already written on the board and asks the class to say how many sounds it has:

27. T. “Lets divide the sounds now, “*Tshinakaho*”. How many sounds are there?”

[*Kha ri khethekanye mibvumo zwino. “Tshinakaho”, ndi mingana mibvumo?*]

Few pupils raise their hands to be nominated to give the answer. The teacher nominates three pupils, one after the other, with each pupil giving incorrect answer to the question. The fourth pupil to be nominated gives the correct answer:

28. P. “They are four”.

[*Ndi mina*]

The teacher agrees and repeats the answer to the whole class.

The teacher proceeds to the next question, this time saying out the word and simultaneously writing it down on the board:

29. T. “*Tshililo*”

Several pupils raise their hands to be nominated. The teacher nominates one pupil who did not answer correctly. The teacher continues to point, nominating the children whose hands are raised. Several pupils --five in number, are nominated one after the other and they all gave incorrect answers. The sixth pupil to be nominated gives an answer that the teacher agrees with:

30. P. “Two”.

[*Mivhili*]

The teacher agrees to the answer and repeats it loudly to the whole class. The teacher asks the class why it is that they say there are two sound patterns in the word “*Tshililo*”. The teacher nominates one pupil whose hand is raised to answer this question. The child stands up and gives the answer:

31. P. "Because "li" and "lo" are the same".

[Ngauri "li" na "lo" zwi a fana.]

The teacher repeats this answer to the whole class.

After this, the teacher points at another word on the board: "*tshinoni*", also saying it aloud for the whole class to hear. She nominates one pupil, whose hand is raised, calling her by name:

32. T. "Tshipuliso"<sup>2</sup>.

The nominated child answers:

33. P. "Four".

The teacher keeps quiet, not saying anything in response to the child's answer. The other pupils, realizing that the answer is not correct, raise their hands high and compete for the teacher's attention. The teacher nominates several pupils—one after the other, without anybody able to give the correct answer to the question. Some of the pupils nominated to answer this question guessed that there are four sounds, thus repeating the same error committed by the first pupil to answer the question. About seven pupils had already been nominated, one after the other, when it eventually became clear to the teacher that pupils' answers have become guess work and that they are not likely to give the correct answer. The teacher instructs the class to vote for the correct answer between two possibilities. That is; that there are two sound patterns in the word "*tshinoni*" and that there are three sound patterns. The teacher instructs pupils to vote by raising their hands to indicate whether they agree with one or the other of the two answers:

34. T. "Lets raise our hands and vote".

[*Kha ri tou imisa zwanda, kha ri tou vouta*]

After that the pupils have raised their hands and voted for the answer they think is correct, the teacher said to the whole class:

35. T. "Those who say there are two sound patterns are in the majority, which means that there are two sound patterns."

[*Vho no ri ndi mivhili ndi vhanzhi, zwi amba uri ndi mivhili*].

The teacher concludes her lesson in this way, and instructs the pupils to draw Mbaleni's

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2. Pseudonyms are used throughout this work to protect the true identity of the subjects.

school on pieces of papers that the other pupils took out from the cupboards and distribute to the whole class. As the pupils begin to draw their school, the teacher comes around to the researcher and explains that the lesson was about pupils identifying the different syllables that are found in *Tshivenda* words. The teacher explains further saying that the lesson integrates *Literacy, Numeracy and Life Skills*, and that literacy involved the reading and writing part of the lesson, while numeracy involved pupils counting and working with numbers, where, in this lesson, pupils identified the number of syllables found in each of the specified words. Life Skills, the teacher explains further, involves pupils drawing their school.

### 3.2. Grade Two Writing Lesson

The following early morning (08h15) Grade Two writing lesson was also on learning how to write neatly in cursive form. The teacher write one sentence on the board between the well drawn horizontal lines (with a date at the top) and instructs children to copy the sentence and repeat it several times in their exercise books. Several children who could not copy the letters and words exactly as the teacher has written them on the board were reprimanded. The teacher seats in front on her desk marking another exercise as children write the current work. The teacher reprimand children who have been talking to each other. She also instructs those children who either did not have a pen to write with or were having problems with their pens to ask their parents to buy pens for them rather than relying on the ones that were supplied by the government.

The teacher writes the date on the board:

1. "*Lavhuna 12 Thangule 1999*"

The teacher underlines the date, draws horizontal lines below the date and writes the sentence:

2. "*Khukhwana yo gidima*"

[A kitten has run]

The teacher instructs the children to write this sentence several times in their exercise books. She is busy marking another exercise that was written previously. She calls one

child to come forward and take a book she has just finished marking:

3. "Lutendo, khade a dzhiye bugu heyinoni". [Lutendo, come and take this book]

The child who the teacher called goes to the front and collects the book from the teacher. The teacher stands up and goes to the middle row desk and reprimands one boy:

4. "*Ndi mini inwi? Na dovha ndi do rwa tshitiko hetshi, ndi do rwa*"

[What is happening? If you do it again I will beat you].

The teacher says showing irritation and pushing the boy's head. The teacher returns to her desk in front but continues reprimanding the other children sitting with the first boy:

5. "*Arali vhoiwe no dzulaho tsini nae na mu tendela a tshi ni khakhisa ndi rwa vhoiwi*"

[If you who are seated next to him allow him to disturb you I will beat you as well].

The teacher continues marking while the children continue writing the sentence repeatedly in their books. The teacher asks the class if they have finished writing:

6. "*No fhedza?*"

[Have you finished?]

The children answered that they are not yet finished:

7. "*Hm-hm*".

The teacher tells them to finish up:

8. "*Hoo! Fhedzisan!*".

The children continue to write this time making soft noise. Some children go to the front individually to throw wastes into the dustbin behind the door. As the children concentrates in writing their exercise the teacher continues marking the books in

front and reprimanding those children she thinks are making noise or not concentrating on their work:

9. "*Murendeni! Fhedzisan!*"

[Murendeni! Finish up]

The teacher stands up and tell the class to bring their exercise books to her in front:

10. "*No fhedza musu? No fhedza disani hafha (pointing), ni fhe hoyu, inwi ni fhe*

*hoyu*”

[You are finished, not so? If you are finished bring the books here (pointing) and give them to this one, you also give this one]

As some children were exchanging the books, the teacher moves between the rows of desks to inspect what the children have been writing. She comments on the work of one child:

11. *“Ee! Hai! Arali ni kha di tou balelwa u vhona zwino ni kha divha muswa...”*

[How is it that you are unable to see clearly now when you are still young..]

The teacher explains to the child she has been addressing how she needs to write correctly. Several children seem to have problems with their pens. The pens they are using seem not to write well. The teacher addresses one child who she finds struggling to get his pen to write properly, aiming at the same time that all the children will listen:

12. *“Ni ambe navho hayani vha ni renegele ballpeni ntswa ni litshe hedzi dza Vho-Mandela”*

[You must tell them at home to buy you new ballpens and stop using these ones for Mr. Mandela].

After that the teacher has given this instruction she instructs several children help her collect all the exercise books from those children who had already finished writing. The books were placed on the teacher’s desk and after a while the teacher introduces another lesson.

### 3.3. Grade Three English Written Exercise

This is a Grade Three class (average age of 8), with 98 children and two teachers sharing the teaching. Each teacher has her own class list but, for lack of enough classrooms, the children are taught together as one class and the teachers share subjects and take turns to teach. The lesson below involves learners identifying the object represented in the drawing in the reader from which the children were writing the exercise. The children also have to complete the omitted words in the sentences by filling in the name identifying the object the picture represents and also say what prepositional relations the objects represented in each picture have. From the discussion that transpired between the teacher and the children before the written

exercise, it was clear that the children have already done the oral part of this lesson and had also started with the written part of the lesson but did not finish it. As could be expected, children have been experiencing some difficulties with the prepositions while other could not correctly name a picture in English or spell the name correctly although the teacher had described the pictures and the relations they have in Tshivenda before the written exercise.

The teacher tells the class that they are going to write. She tells them to open at page 94 of the reader and tries to find out if they understand, from the written instructions in the reader what they are supposed to do in the exercise:

1. "*Ri ita mini fhala?*"

[What do we do there?].

One child answered:

2. "*Ri a nwala*"

[We write].

The teacher asks again if they really have to write:

3. "*Ri a nwala? Hee!*"

[Do we really write?].

Another boy said:

4. "*Ri a dirowa*"

[We draw].

The teacher asks again if they really have to do drawing:

5. "*Ri a dirowa?*"

[Do we really have to draw?]

The third child in line gave the answer the teacher probably wanted:

6. "*Ri vhala maipfi ra dirowa*"

[We read the words and draw].

The teacher accepts this answer and instructs the pupils to read:

7. "*Kha ri do vhala*".

[Let us read].

The whole class reads in chorus:

8. "The fish is in the nest".

The teacher asks the children in Tshivenda what the sentence they have read means (but again gave the answer herself), reformulating her question to something like an enquiry about what is it from the sentence that needs to be drawn:

9. "*Hu pfi mini afha? Khovhe i nga ngomu tshitahani, ri khou yo dirowa mini?*"

[What does it mean here? The fish is inside a nest, what are we going to draw?]

The children explain to the teacher in Tshivenda what it is the sentence wants them to draw.

The teacher again asks the children to read number three. The children read number three in chorus:

10. "The cart is on the car".

The teacher asks the class:

11. "What does it mean?"

One child whose hand was raised answers correctly in Tshivenda after being nominated:

12. "Tshigariki tshi ntha ha goloji".

The teacher agrees but goes on to ask the whole class, in a way of confirming what needs to be done:

13. "*Ni do dirowa mini? Tshigariki tshi ntha ha goloji, thiri?*"

[What will you draw? A cart on top of a car, not so?]

The children agree to the teacher's statement in chorus. The teacher instructs the class again to read number four. The class reads in chorus. The teacher asks the class, after that they have read in chorus, if they know what they need to draw in this case? The class answer the question again in chorus:

14. "*Kumba na munna nga ntha*"

[An egg and a man on top].

The teacher gives further instructions (in Tshivenda) to the learners as they begin writing.

The teacher checks the work of some children and remarks:

15. *“Vhanwe a vho ngo fhedza vho guma henehala kha tsumbo mbili dze nne nda ita dzone molovha”*

[There are some are not finished writing, they have only done up to the two examples I gave yesterday]

As the children are writing, the teacher begins drawing pictures of two hens kissing on the board under the sentence:

16. *“The hens are kissing”*.

The teacher instructs the class to do the drawing for all the other sentences below:

17. *“Ni khou vhona ndo ita namba wani, inwi ni khou ita hedzo dzinwe dzothe”*.

[You see I did number one, you will do all the others below].

The children start writing. The teacher continues giving instructions:

18. *“No zwi vhona thiri, nne ndo tou ni thomela namba wani, inwi ni ita sa zwezwi na ita namba thuu, namba thirii, namba foo, namba faifi”*

[You have seen it, not so? I have started number one for you, now you do likewise for number two, number three, number four, and number five]

The children are talking loudly to each other as if confused. The teacher reprimands them asking them if they have already finished addressing the first sentence:

19. *“Hai! Nda da afho ndi do wana no no fhedza namba wani? Hafhu tshikolo a tshi a thu u bva na ubva”*.

[Heh! If I come there, will I find you finished doing number one? Remember the school is not yet out]

After this statement the children become quiet and resume the writing. The teacher stands in front, next to the chalkboard for a while and then start writing the second sentence copying it from the textbook:

20. *“2. The \_\_\_\_ is \_\_\_\_ the \_\_\_\_”*.

As the teacher writes the sentences on the board, the second teacher, who is now walking around checking on what the children were writing, also gives instructions

regarding the spaces which they need to leave between the words in the sentences:

21. *“Ni sedze zwikhala zwa mudededzi hafhala, ni sogo sokou nwala lini!”*

[You must check the spaces the teacher is leaving in-between there, you shouldn't just write]

The subject teacher stops copying the sentences on the board and start to move around among the children, giving instructions on their writing and reprimanding those she finds making noise or disturbing others. She gives an instruction to the children who she says haven't written the exercise saying that they will need to write everything now:

22. *“Ha vha vha songo nwalaho vhe vha vha vha sina dzibugu vha ya u nwala zwithu zwothe hezwi. A thi divhi uri havho vha sina dzibugu vha do tou ita hani” .*

[Those who did not write because they did not have books are now going to write everything here. I don't know how those who do not as yet have books are going to do].

The teacher continues writing more sentences on the board copying them from the textbook which the children are sharing. She is probably writing for children who have not received the textbook due to the shortage. Almost all the children, including those who have the textbooks, write from the blackboard and not from the textbooks. The teacher writes more sentences on the board:

23. “3. The \_\_\_ is \_\_\_ the \_\_\_”.

“4. The \_\_\_ \_\_\_ one the \_\_\_”

By 12h50 the teacher instructs the children to prepare themselves and tells them that they will have to complete drawing at home. The other teacher tells the class that those who do not have the books will have to go to those who have if living near their homes and write with together. The teacher who has been teaching reprimands one child for merely copying all the sentences which are on the board without drawing after every sentence:

24. *“Ndi dza mini hedzo senthentsi, ndi dza mini Ndivho? A ni zwi vhoni izwi zwe nne nda ita zwone afha kha bodo. Ndi dza mini hedzo senthentsi nnzhinnzhi? Ndi*

*vhubva hezwo zwithu ho dirowa, ndi vhubva ho dirowa hezwi”.*

[What are these sentences for? What are they for? Ndivho! Don't you see what I have done on the board? What you have done shows laziness to draw]

The teacher reprimands the boy with a strong tone of irritation. She continues walking around between the desks checking if the children are following the instructions she gave them. It is now 13h00. The teacher tells the class to stand up and pray and the whole class stand and they pray. After prayer children go out and a group of girls remained cleaning the classroom. The official time for end of school day is 13h30.

### 3.4. Grade Four Reading Lesson

The Grade Four lesson below is presented by as middle-aged woman teacher who has been teaching for the past twenty years. The Grade Four pupils, average age of nine years, seat in rows of desks that seat four pupils each and face the front of the classroom where the teacher is standing.

The lesson was observed in October, just a month before the end of the school year. There are about fifty pupils in class. It is still early during the day, just after ten o'clock. The teacher has just returned to class from the long meeting with the other teachers in the principal's office.

After greeting and introducing the researcher, the teacher goes to the blackboard and prepares to begin with the lesson:

(a). After cleaning the blackboard in front, the teacher writes a topic about what she is going to teach on the board. The teacher is holding the only reader in her hand. The reader shows that it was first published three decades ago, and it is not officially prescribed for this class. The teacher reads the statement she has just written on the board, urging her pupils to read as well. The whole class reads in chorus as the teacher urges them to repeat several times after her:

1. T. "A visit to grandmother"

After this, the teacher reads a paragraph, ending with the sentence below, which she repeats in Tshivenda and, asks a question:

2. T. "They were very pleased with the present...*no fhiwa presenthe a ni takali?*"

[...if you are given a present won't you be happy?]

To this question, the pupils respond in chorus:

"*Ri a takala!*"

[We would be happy!]

The teacher continues to read the text and ends a paragraph she is reading with a sentence, which she repeats to the pupils in a form of a question, which needs pupils to answer by adding the omitted word.

3. T. "They said goodbye grandfather and what?"

Pupils answer in chorus:

P. "Grandmother".

The teacher reads further and explains each sentence to pupils in *Tshivenda*, writing down some of the sentences on the board and urging pupils to repeat each of these sentences after her in chorus:

4. T. "The mother carried Siphon on her..."

The teacher points her back and the pupils answered in chorus:

P. "On her back".

The teacher continues to read the next paragraph, urging the pupils to repeat the last sentence after her:

5. T. "She was waiting for them. She was..."

Pupils answer in chorus:

P. "Waiting for them".

The teacher reads a paragraph again and repeats the sentence she needs the pupils to repeat:

6. T. "Then they all went inside the house and sat down [...] There was a new pair of trousers for what? Grandmother, grandfather? For what?"

Pupils answer in chorus:

P. "Grandfather".

7. T. "And black skirt for grandmother. For what?"

Again the pupils answer in chorus:

P. "Grandmother".

8. T. “[...] she was waiting for them, she was?”

P. “She was waiting for them”

The lesson continues like this for the whole period of about an hour of oral lesson, followed by another hour of written work.

The teacher copies the following questions from the reader into the blackboard and instructs pupils to write as class exercise. The answers for the questions had been written on the board, and the teacher instructs pupils that she is not going to erase them:

English Classwork 19 October 1999

- (a) On what day did the children go to visit their grandmother?
- (b) Who carried Siphos?
- (c) How far did they go in the bus?
- (d) Who drove carefully?
- (e) Where did the bus stop?
- (f) Who was waiting for them?
- (g) What was grandfather doing?
- (h) What was inside the first parcel?
- (i) What was inside the second parcel?
- (j) What did the children have for dinner?

### 3.5. Grade Six Geography Lesson

(a). The Grade Six Geography teacher begins to introduce the topic of the lesson to his pupils of an average age of eleven years old:

1. T. “What do you understand by the term, mining? When I say mine, I am using the same word. [...]. Which country are we referring to... Which country are we reading about?”

The teacher asks these questions holding a textbook in his hand. Pupils raise their hands to be nominated to give the answer. One pupil is nominated and he answers:

P. “Egypt”.

The teacher proceeds, without making any further remark on the pupil's answer, although he clearly deems it to be correct:

2. T. "What is the capital city of Egypt?"

Pupils raise their hands to be nominated, but the teacher immediately changes the question before nominating a pupil to give an answer:

3. T. "What is the capital city of South Africa?"

Pupils raise their hands again and the teacher nominates one boy who answers:

"Pretoria".

After this answer, the teacher goes back to the earlier question that he had just skipped:

4. T. "What is the capital city of Egypt?"

Pupils raise their hands and the teacher nominates one pupil to answer:

P. "Cairo".

Again, the teacher proceeds to ask another question, without commenting on the answer the pupil has just offered:

5. T. "Who is the president of South Africa?"

Pupils raise their hands again and the teacher nominates one pupil among them who answers the question correctly:

P. "Thabo Mbeki".

6. T. "What do you call a person who is president in Egypt?"

One pupil, whose hand is raised, is nominated to answer:

P. "President".

(b) The lesson continues like this for a while before it changes to a format, based on text reading and text interpretation. While the form of question-answer exchanges above proceeds without the teacher translating the ideas into the pupils' home language, the text-reading-translation- based teaching involves the teacher translating the ideas in the text into the local language and explaining further in his own terms:

7. T. "Now we have got a very short paragraph here....Some of you will say this is gas [...] by gas we mean petroleum.[...] Now this gas is very horrible.....". [in

Tshivenda] “God has really provided...God is good. After he had made the earth he hid gas under the ground so we could use it at the appropriate time”.

The whole class sits quietly with their textbooks opened before them, looking attentively at the teacher as he explains. The teacher continues with the explanation, on another issue:

8. T. “Now the iron ore is the iron which has not been purified...[In Tshivenda] “...it is still raw and impure”.

The teacher reads another paragraph again and continues to explain to the pupils what it means:

9. T. “[...] Ok, now we are having phosphates for making fertilisers. These fertilisers are being made from raw materials and we call them finished products? [...] Turn to page ninety now, you can find Alexandria?”.

Pupils turn their books to page ninety and answer the teacher’s question in chorus:

P. “Yes”.

Without commenting anything further on this issue, the teacher instructs pupils again to turn to page ninety-four:

10. T. “Turn to page ninety four again. Many poor farmers have left their farms for the cities...Now Egypt is the second most populated country in Africa after Nigeria. We are number hundred, am I right?”

( c). The following excerpt of the same lesson above shows an instance where the teacher elaborates on the text information in Tshivenda, with pupils now offering their answers in Tshivenda as well:

11. T. “...*Hu tshi pfi motor car, hu khou ambiwa mini muthannga?*”

[...By motor car, what does it mean, young man?].

None of the pupils raise hands. One boy is nominated, nevertheless, and he answers:

P. “*Goloi*”

[Car]

Without commenting on this answer, the teacher reads another paragraph from the textbook, in English, and explains it in *Tshivenda*:

12. T. *“Assembly ari ambi kereke, ri amba hafha hu no kweiwa hone golo. Hai dzi no tsheiswa hone. Ni fhanu golo dzi tou tsheiswa. Golo dzi a itiwa fhanu South Africa, hafho PE”.*

[By assembly we do not mean a church congregation, we refer to where cars are assembled. Not where they are cut (bodyrepairs). Here in South Africa cars are assembled in PE].

Pupils laugh loudly as the teacher says this. The word *“tsheiswa”*, that invokes loud laughter among the pupils, refers to the vehicle body work that unscrupulous vehicle dealers conduct on unlawfully acquired vehicles. Some pupils in class begin to play with each other behind the teacher’s back, while most pupils look into their textbooks, as if they are reading.

### 3.6. Grade Seven Mathematics Lesson

Then period starts with the teacher instructing the pupils to take out their homework, which they were given to do the previous day. Each pupil marks his or her own book. Most pupils, about half of the whole class of forty-five pupils seem not to have done this homework. Some of the pupils write this work at the same time as the teacher is leading them in the marking. Because every pupil marks his or her own work, some pupils write the answers in, as the teacher confirms them. The teacher does not seem to be bothered by all these, even when the other pupils report to her that some pupils were dishonestly writing in the answers.

The following task, which is still on the board as the present lesson begins, was given a day before as homework:

If  $x=10$ ;  $y=5$  and  $z=3$

- (a).  $x+y$
- (b).  $x-z$
- (c).  $2(x+y)-2$
- (d).  $3(y-z)$
- (e).  $y \times z$
- (f).  $x/y$

The teacher nominates a group of pupils to go to the board to work out the answers to these questions. There are six pupils nominated, one pupil per question. Five of the six answers on the board are deemed to be correct. One answer in which a pupil find 5 as the answer to question (d), is not deemed to be correct.

The following answers were written on the board:

(d). $2(y-z)$	(c). $2(x+y)-z$	(b). $x-z$	(e). $y \times z$	(a). $x+y$	(f). $x/y$
$= (5-3)$	$2(10+5)-3$	$10-3$	$5 \times 3$	$10+5$	$=10/5$
$=2(8)$	$2(15-3)$	$7$	$=15$	$=15$	$=2$
$= 16$	$=30-3$				
	$= 27$				

After that the nominated pupils have written the answers to the questions on the board they go back to their seats.

The other pupils sit quietly, each one marking his or her work. The teacher, noticing that one answer, question (d), is not correct, asks:

1. "*Number d, who wrote number d? Number 'd' asi yone heyi. Ni khou vhona i tshi fana na heyi*" (pointing at question (d) on the board?)

[Number 'd', who wrote number 'd'? Number 'd' is not correct like this. Do you think it is similar to this one] (pointing at question 'd', on the board)].

“

After this remark, the teacher invites pupils to volunteer to answer this question correctly:

2. "Someone come and write us number 'd'".

One boy volunteers to go to the front and write the answer to question (d). As the boy writes the answer in front, on the board, the teacher reprimands the pupils she says are making noise and disturbing the others. The boy writes the answer like: seat:

$$\begin{aligned}
 3. (d). & 3(y-z) \\
 & =3(5-3) \\
 & =3(2) \\
 & =6
 \end{aligned}$$

After this, the teacher instructs pupils to bring their books for her to sign them. Several pupils stand up and took their book to the teacher in front at her desk. As she sign the books, she comments on the work of the individual pupils, and sometimes interrupts the comments on the work of the pupils in front to reprimand the pupils in class for making noise:

4. *“Ndi do ni rwa vhoiwe ni songo nwalaho homework”.*

[I will beat you, especially those who did not do the homework].

The pupils continue to talk to each other making some humming noise while the teacher continues to initial their books. While some pupils are taking their books for first time, others are now going for the second time to submitting the corrections.

One girl walks around the classroom asking a red pen from the other pupils so she can mark her work. Only few pupils have red pens to mark with and few pens circulate among many all pupils in class during marking. Only a few pupils are still bringing their books for the teacher to sign. The teacher instructs all pupils who have not written their homework to go to the front. Upon this instruction, pupils begin accusing each other of not having done the homework and of copying the answers into their books during the lesson. The argument grows loud and noisy. Only fourteen pupils admitting not writing the homework go to the front. The teacher reprimands pupils still insisting that others have written in the answers in class, copying from the blackboard:

5. *“Ndi nnyi o ni vhudzisaho uri o nwala gai?”*

[Who asked you whether they have written their work?]

After this, the teacher instructs one girl to write down the names of all those pupils, in front, who have not written the homework, before letting them return back to their seats.

After that the class has finished marking the written exercise, the teacher draws a number line on the board and asks the pupils what it is she has drawn:

6. "Now what have I drawn?"

Several pupils answer in chorus, in *Tshivenda*:

7. "*Mutalombalo*"

[Number line].

The teacher repeats the question again, without giving any comment regarding the answer the pupils have just given and the pupils respond again to her question, this time in English:

8. "Number-line".

The teacher accepts the answer and repeats it to the pupils.

The teacher writes the number zero up to twelve and leads pupils to chant every number as she writes it in the number line. After this, the teacher writes negative numbers, from negative one to negative eleven, and urges the whole class to recite every number, in chorus, as she finishes writing it in the number line. The teacher explains to the pupils that in the number line there are positive and negative numbers.

As she speaks, the teacher interrupts her explanations to reprimand pupils who she says are making noise:

9. *T. "Nne a thi divhi uri ndi do ri ni ngoho ni! Ni khou zwi vhona uri ni khou ri fhedzela tshifhinga?"*

[I just don't really know what more to say! Don't you see you are wasting our time?].

After this, the teacher urges pupils to respond to her questions in chorus, by way of completing the sentences she utters:

10. "When we count going right, numbers are....?."

Pupils give the answer, in chorus:

11. P. "Increasing".

The teacher proceeds:

T. "When we count going left, numbers are...?"

Pupils again give an answer, in chorus:

P. "Decreasing".

The bell rings and pupils begin packing their bags and talking to each other, even as the teacher continues saying more sentences for them to complete. The teacher tells the pupils that they are going to continue with this lesson when they come back from break. Pupils go out in a hurry, clearly not paying any attention to anything else the teacher is saying to them at this stage.

After break, pupils come back to class to proceed with the lesson. The teacher instructs pupils to pay attention:

12. T. "Ok, lets continue".

The teacher says this twice and proceeds giving further instructions:

13. T. "We were talking about number line [...] I said from one plus one what do we do? It gives us...."

Pupils respond to this in chorus:

14. P. "Two".

The teacher explains:

15. T. "That means the numbers are ascending, they are becoming bigger and bigger. [...] Again minus one minus one we get minus one [...] It means minus one is bigger than what?"

Pupils respond, in chorus:

16. P. "Quota".

The teacher remarks, without directly referring to the answer above:

17. T. "Is bigger than minus two; minus two; minus three [...] up to infinity (pointing on the number line). Which means if you have these (the teacher writes on the board, copying from the textbook in her hand:

18. “-5      0”

The teacher asks:

19. T. “Which one (of the symbols designating “greater than” and “smaller than” respectively) do you insert?”

The whole class seems not to know the answer. No one volunteers to give an answer, and the teacher continues:

20. T. “Which means you do not know these symbols, heh? (pointing the symbols on the chalkboard) Lets go through them step by step”.

After saying this, the teacher writes the symbols on the board:

21. T.  $\leq$                    $\geq$

The teacher asks the pupils further:

22. T. “Which side is “bigger than” in this? (pointing on the relevant sign on the board)”

Still no pupil seems to know as no one volunteers to give the answer. Seeing no one knows the answer, the teacher explains to the pupils which one of the two sides in the signs she has written on the board indicates “bigger than” and which side indicates “smaller than”.

After this explanation, the teacher asks the question again:

23. T. “So which one (of the two symbols) must we insert here?”

The teacher asks this question while pointing at the signs she has written on the board and making a star sign between -5 and 0:

24. T. “-5 \* 0”

The teacher continues to ask the question as she writes a star between -5 and 0, indicating that something needs to be inserted as an answer to the question, saying:

25. T. “Negative Five is *hmm* to zero”.

Pupils begin to raise their hands, and the teacher nominates one girl who answers, saying:

26. P. “Less than”.

The teacher, not accepting the pupil's answer, responds:

27. T. "Ai! -5 less than zero?"

The pupils, seemingly confident that the answer is correct, affirm this simultaneously, in chorus:

28. P. "Yes".

The teacher disagrees with the pupils' answer and gives her answer where she says that the correct answer is that minus five is "smaller" than zero. Immediately after offering this explanation, the teacher hurries to the back row desks and beats one boy, several lashes on the back with a stick she is using to point on the board, saying to the boy that as she beats him:

29. T. "*Nne ndi a neta mani, u kaidza muthu muthihi*".

[I am tired of reprimanding only one person].

After this, the teacher writes on the board:

30. T.  $-5 < 0$

$0 > -11$

The teacher further asked the pupils, which one is greater or smaller between the two numbers, writing them on the board:

31. T.  $1 * 0$

"One is *hmmm* than zero".

The pupils give contrasting answers, some saying "less than" while others say "greater than". The teacher asks pupils to work out the answer in groups. After a while she asks the different groups what answer they got:

32. T. "Finish up! That group, what did we find?"

The teacher interrupts her question to reprimand one pupil:

33. T. "*Hai! Hoyu u khou dovha ari disiteba vha na ene*".

[Hey! This one is disturbing us once again].

The teacher proceeds asking the question from one group to the other:

34. T. "This group, one is *hmm* to nought]?"

Several groups offer different answers, seemingly guessing the answers:

35. P. "Greater than"; "less than".

The teacher uses the numbers in the number line on the board to explain further to the pupils. She points at six and minus six, one after the other, and tells the pupils that if they say minus six is bigger than six they would not be referring to what she is teaching them:

36. T. "[*Arali nari bigger than six (pointing minus six) a ni khou amba hezwi zwine ra khou amba zwone hafha*".

[If you say bigger than six (pointing at minus six in the number line), you are no longer referring to what we are doing here].

The teacher again asks which number is it she is pointing at. Pupils answer, in chorus:

37. P. "Minus six".

The teacher asks pupils to discuss in their groups which number is "bigger than" the other between the numbers; "minus three" and "minus six", and she writes on the board:

38. T.  $-3 * -6$

The teacher lets pupils discuss for a while. Pupils discuss among themselves in their groups with some pupils chanting loudly:

39. P. "Bigger than!; Bigger than!; Bigger than!"

After the discussion, the teacher nominates one boy to give an answer to the question above.

The boy stands up and gives a one word answer:

40. P. "Equal".

The teacher asks the pupil in *Tshivenda*, a little irritated, where he got the answer he has just given.

The teacher again explains to the pupils how numbers increase, and decrease, in the number-line. After the explanation, the teacher goes back to the question for which the pupils have just given the wrong answer and she gives the correct answer herself:

41. T. "Minus three is bigger than minus six"

After giving the answer, the teacher writes another number on the board for the pupils to solve:

42. T. " $-7 * 7$ . Which one is big?"

Pupils begin to discuss the question among them. Few pupils raise their hands. The teacher rephrases her question, saying:

43. T. "Which sign must we put?"

The pupils answer the question, in chorus:

44. P. "Less than".

Although pupils do not specify which number is less than the other in their answer, the teacher goes to the board and writes:

45. " $-7 < 7$ "

After writing, the teacher explains that  $-7$  is less than  $7$ .

The teacher asks the next question and writes, at the same time, the numbers on the board:

46. T. " $-18 * 1$ ".

The teacher asks the question:

47. T. "Which one ( of the two symbols) must we put?"

Pupils raise their hands and one pupil is nominated and she answers:

48. P. "Less than".

Again, it is not specified exactly which of the two numbers is less than the other. The teacher lead the class into specifying which number is less than the other:

49. T. "Is  $-18$  less than  $1$ ?"

Pupils answer the question, in chorus:

50. P. "Yes".

The teacher makes a follow-up probing remark:

51. T. "But  $-18$  looks big".

The whole class objects in chorus:

52. P. "No".

There was by this time an apparent understanding on the part of some pupils that all negative numbers have less value than the positive numbers. It is however not clear if the pupils would equally understand such relation as it applies to negative numbers among themselves. The teacher seems to avoid asking questions involving two negative numbers, after the pupils were unable to offer a correct answer to the question relating to the numbers -3 and -6 above.

The teacher continues with the lesson, copying the following series of numbers from the textbook in her hand into the blackboard:

53. T. 1; -18; 0; -2; 3; -4.

The teacher gives the instruction to learners:

54. T. "Arrange in ascending order".

After saying this statement, which the teacher reads out from the textbook, the teacher continues to explain, in *Tshivenda*, what arranging the numbers in ascending order means. After the explanation, the teacher leads pupils to chant the numbers, in chorus, one number after the other:

55. T. "Minus eighteen, minus four, minus two, zero, one, three".

After this, the teacher instructs pupils to write the exercise about arranging numbers in their order and indicating which number is greater, smaller, or equal to the other next to it. The teacher begins by writing the heading of the exercise, and the instructions on how the exercise need to be written, reciting this at the same time as she writes:

56. T. "Classwork"

The teacher says this as she writes on the blackboard:

57. T. "Write from smallest to largest."

The teacher copies the following exercise from the textbook into the blackboard:

58. (a). 0; -7; 10; -9; -20; 4; 1

(b). put < ; > or =

i.  $8 * -8$

ii.  $0 * -10$

iii. -3 \* -3

iv. 7 \* -20

Pupils start writing as the teacher continues to copy the exercise from the textbook into the blackboard. She sometimes asks, without looking back to the pupils from the front:

59. T. "Who is talking? Are you writing?"

Pupils respond in chorus:

60. P. "Yes".

The teacher sometimes obstructs pupils' view of the chalkboard as she copies the exercise. Several pupils stand up, while others bend over sideways in order to catch the view of what the teacher is writing on the board. Meanwhile, pupils make noise, talking to each other. The teacher again asks them without looking back to see who are talking:

61. T. "Are you writing?"

Pupils respond, in chorus:

62. P. "Yes".

After writing the exercise on the board, the teacher moves around among the desks, checking what pupils are writing. It took just over eight minutes for most pupils to finish writing. After five more minutes the teacher starts asking pupils:

63. T. "Finish?"

Some of the pupils say they have not finished writing, while some say that they haven't. The teacher gives them few more minutes to finish up. After less than two and half minutes, the teacher asks the pupils again if they have finished. The majority of the pupils say that they have finished writing, while only a few pupils still say that they have not finished. The teacher instructs the pupils:

64. T. "OK, lets correct".

After saying this, the teacher waits for another three minutes, probably giving more time for the few pupils who are still bending over as if writing to finish. After a while, the teacher says again:

65. T. "Who is still writing? Finish up".

This time no one says that they are still writing.

The teacher asks pupils to volunteer to answer the first question:

66. T. "Who can come and arrange for us here number 'a'?"

The teacher nominates a boy who had raised his hand. The boy goes to the blackboard, in front, and writes:

67. P. "-20; 9; -7; 0; 1; 4; 10"

Even before he finishes writing, several pupils had already started saying out loud that what he is writing is not correct. The teacher ignores these pupils and asks the whole class, after that the pupil has finished writing, if what he has written is correct:

68. T. "Is that correct"?

The whole class answer, in loud chorus:

69. P. "No".

The pupils raise their hands again, immediately after their answer above, so as to be nominated. The teacher nominates a girl to give the answer without having to go to the front to write on the chalkboard. The nominated girl says the answer, arranging the numbers in their order, but gets one number, -7, in the wrong place. The bell rings to end the period and the pupils begin to hurry out of the classroom to the next class.

**Table 4.1. Learner-teacher ratio in the various grades visited during the four year of observational study of classroom teaching and learning.**

Year	Grade I	Grade II	Grade III	Grade IV	Grade V	Grade VI	Grade VII
27 to 31 Oct. 1997	40: 1	48: 1	33: 1 & 72: 1	76:2	40: 1	38: 1	45;1
17 to 28 Aug. 1998	46: 1	49: 1	44: 1 & 83: 2	84: 2	48: 1	39: 1	44: 1
10 to 13 Aug. 1999 & 11 to 22	48:1	36:1 & 75: 2	50: 1 & 80: 2	81: 2	34:1	54:1	33:1

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Oct. 1999

23. Oct. 45: 1      49: 1      54:1      49: 1      34: 1      38: 1

2000 – 03

Nov. 2000

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