Socio-cognitive Analysis of Socratic Dialogue: A Blend of Theories

Ph D Laura Billings, University of North Carolina, USA **Ph D Ann S Pihlgren**, Stockholm University, Sweden

Abstract

Our work involves close analysis of Socratic dialogue and Paideia Seminar (Billings and Fitzgerald, 2002; Pihlgren, 2008), grounded in socio-cognitive theory. Similar to Socratic dialogue, The Paideia Seminar is defined as "a collaborative, intellectual dialogue about ideas and values, based on a text, facilitated by open-ended questions, resulting in enhanced conceptual understanding (Roberts and Billings, 2008)." By examining both quantitative and qualitative aspects of thinking in dialogue, we have found important socio-cognitive patterns. In developing systems for analysis we have identified the following important features:

- o Ratio of teacher to student talk
- o Content of talk
- O Use of gestures and various means of non-verbal communication
- o Levels of cognition

In addition, we have found a curious interpersonal cognitive processing which frequently occurs in Seminar dialogue, prompting new individual and collective thinking. This, we believe, poses an important challenge to existing theory on thinking.

1.0 Introduction

A growing body of literature suggests a strategic approach to measuring thinking, one that takes a *socio-cognitive* perspective. Briefly stated, a socio-cognitive view includes a "way of thinking and speaking" (Langer, 1987). It implies that we become more literate thinkers not just alone with a book or a pen but also in a social context. Indeed, Lev Vygotsky, a seminal thinker in the area of socio-cognitive theory, argued that all higher order thinking skills appear on two levels: First, on an *interpersonal* or social level, and then, and later, on an *intrapersonal* or individual level (Vygotsky, 1978). From this view, dialogue between teacher and students, and among students, is crucial in the development of broad literacy skills, as well as in the development of higher levels of thinking.

Our previous work has involved close analysis of Socratic dialogue and Paideia Seminar (Billings and Fitzgerald, 2002; Pihlgren, 2008), grounded in socio-cognitive theory. By examining both quantitative and qualitative aspects of thinking in dialogue, we have found important socio-cognitive patterns. In developing systems for analysis we have identified the following important features:

- Ratio of teacher to student talk (turns and time)
- Content of talk (textual ideas, personal connections)
- Use of gestures and various means of non-verbal communication
- Levels of cognition (recall to synthesis)

Our findings suggest correlations between Socratic dialogue practice and participants'











2.1 The sen	ninar context fo	r supporting th	ninking		

















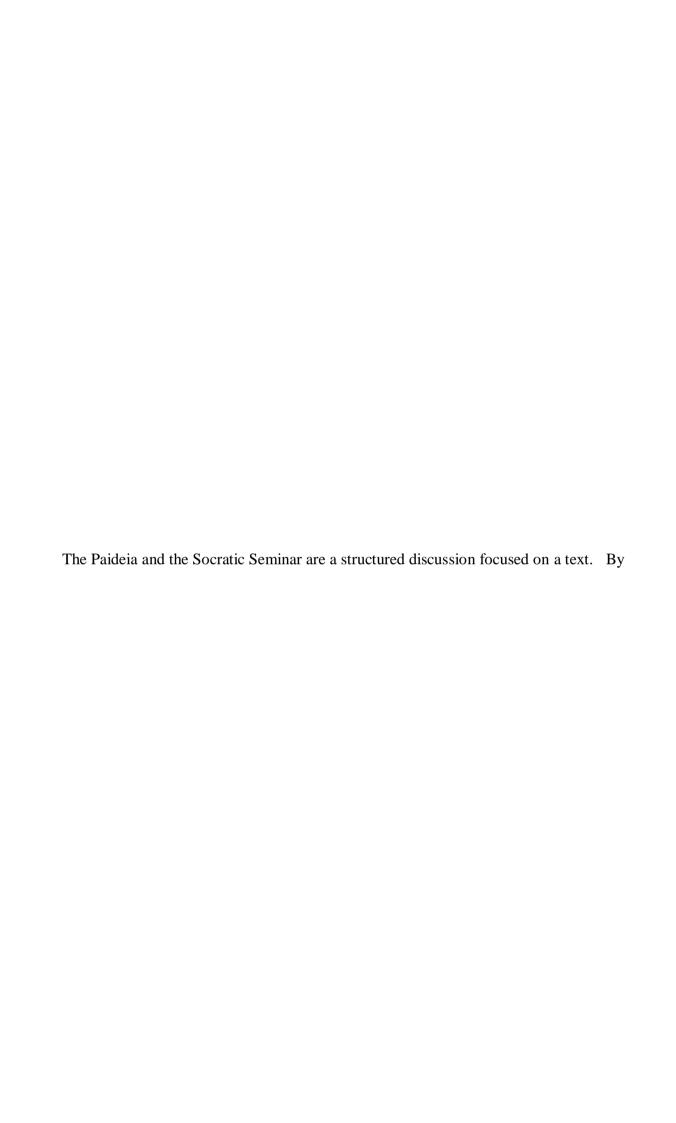






































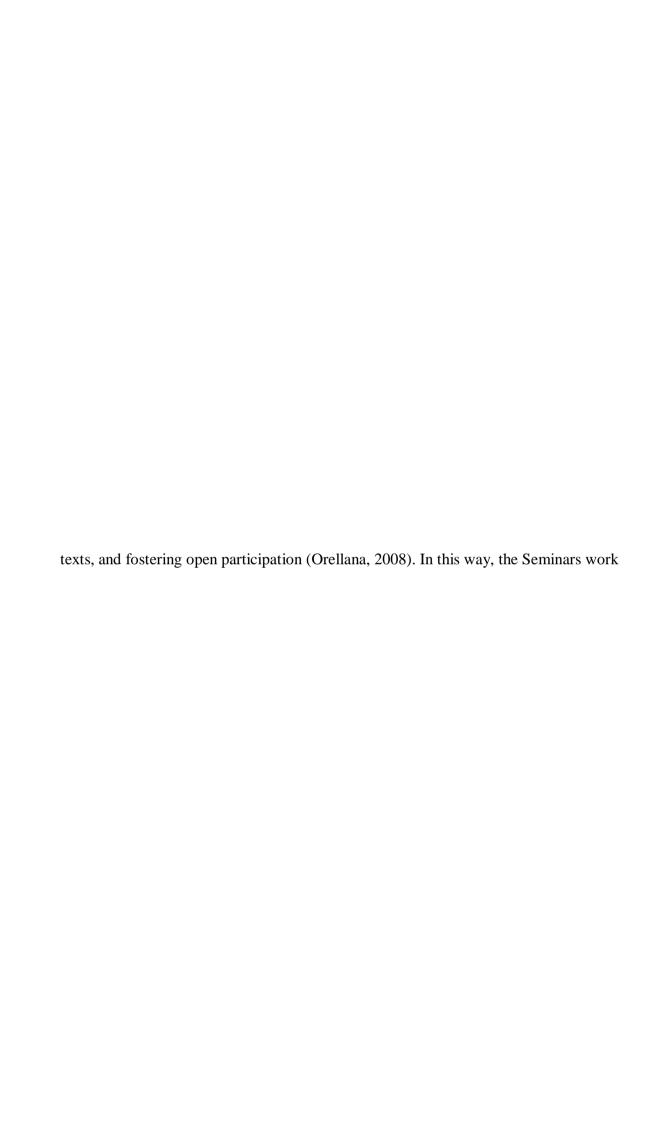








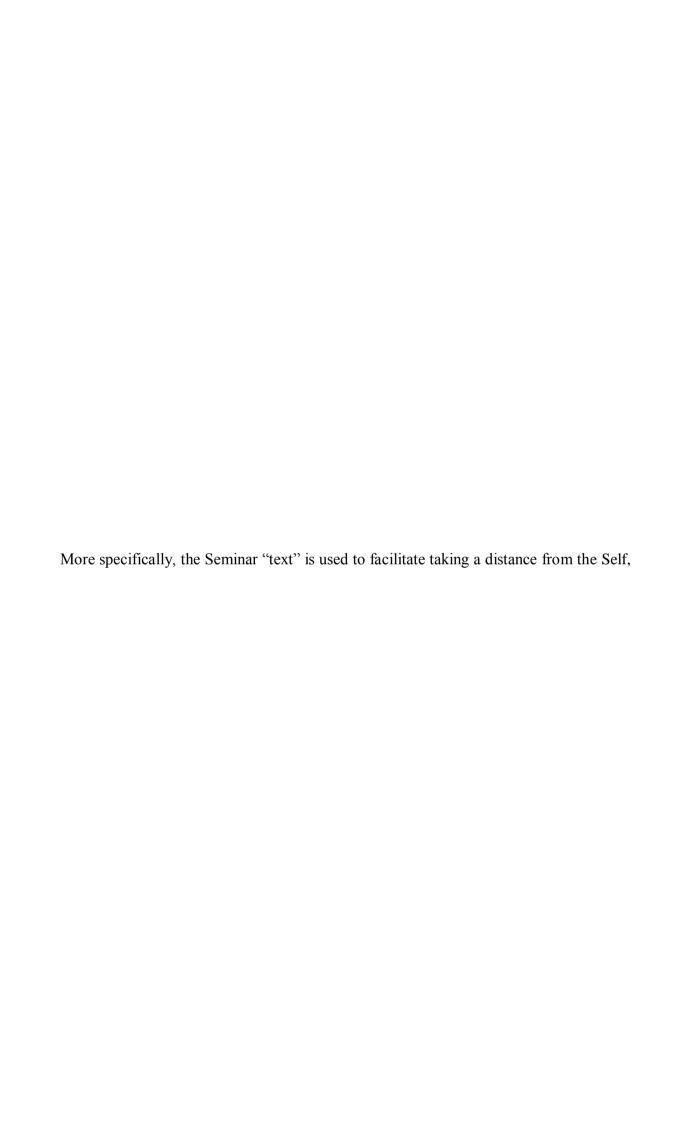




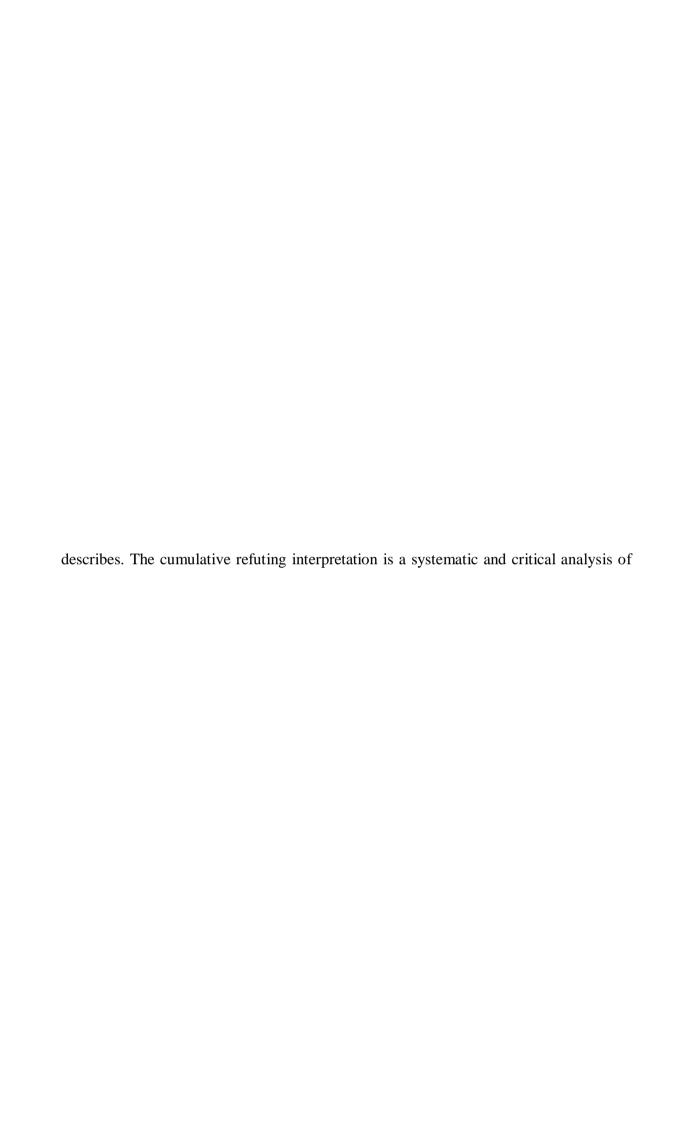






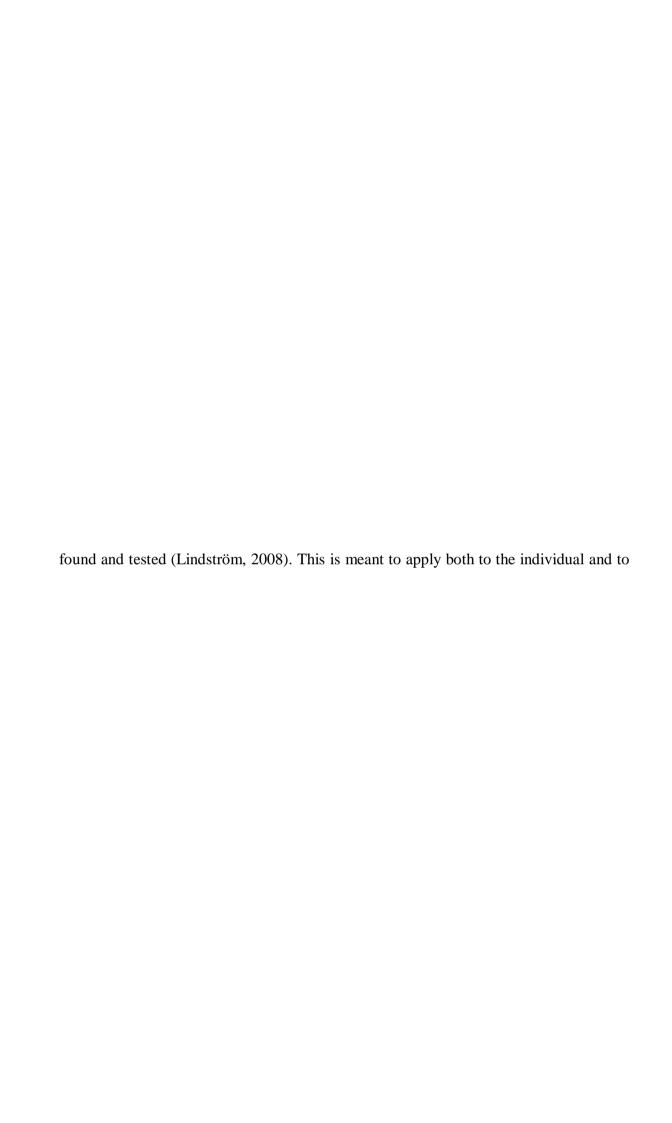














Intrapersonal thinking process

Interpersonal, contextual thinking process

Cumulative interpretive Process

Confirming and deepening OR refuting one's own idea or understanding

Group working together to find evidence and to confirm OR refute previous ideas or understandings

Creative adjustment interpretive process Changing one's own idea or understanding as a result of a new idea found and tested by self or other participant Group discussion leaves previous assumption, idea or understandings and builds further dialogue on a new idea being presented and tested by some participant

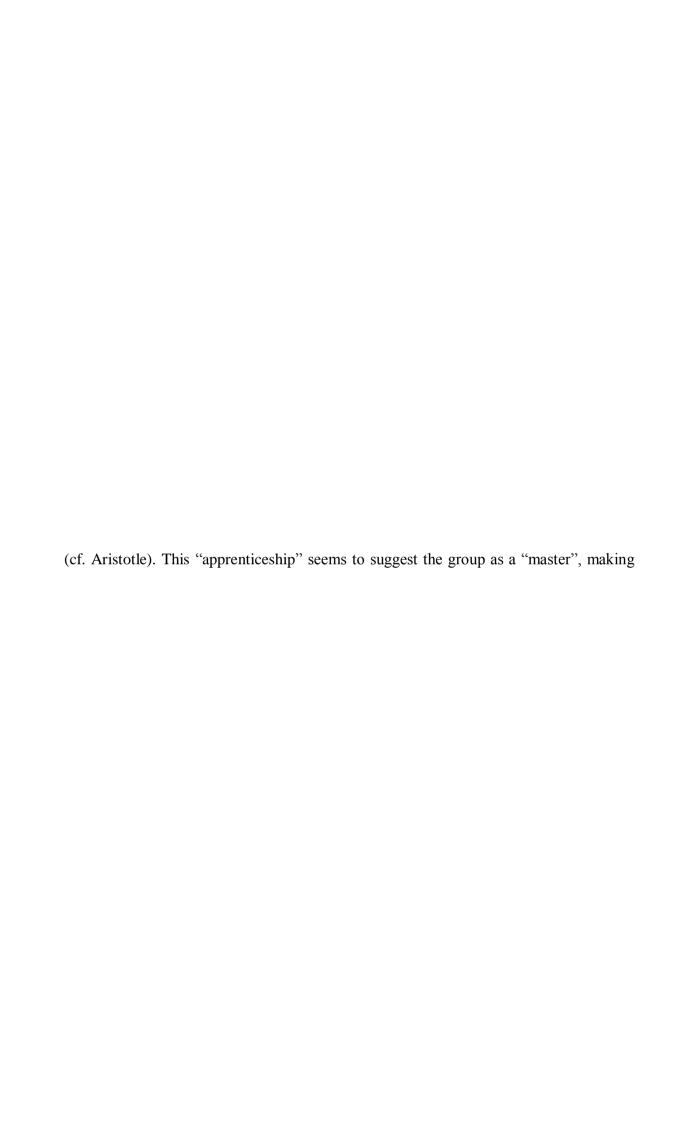
Figure 1. Intellectual process in seminar





















2.2 Research o	n specific aspects of	dialogue that sup	port thinking	

















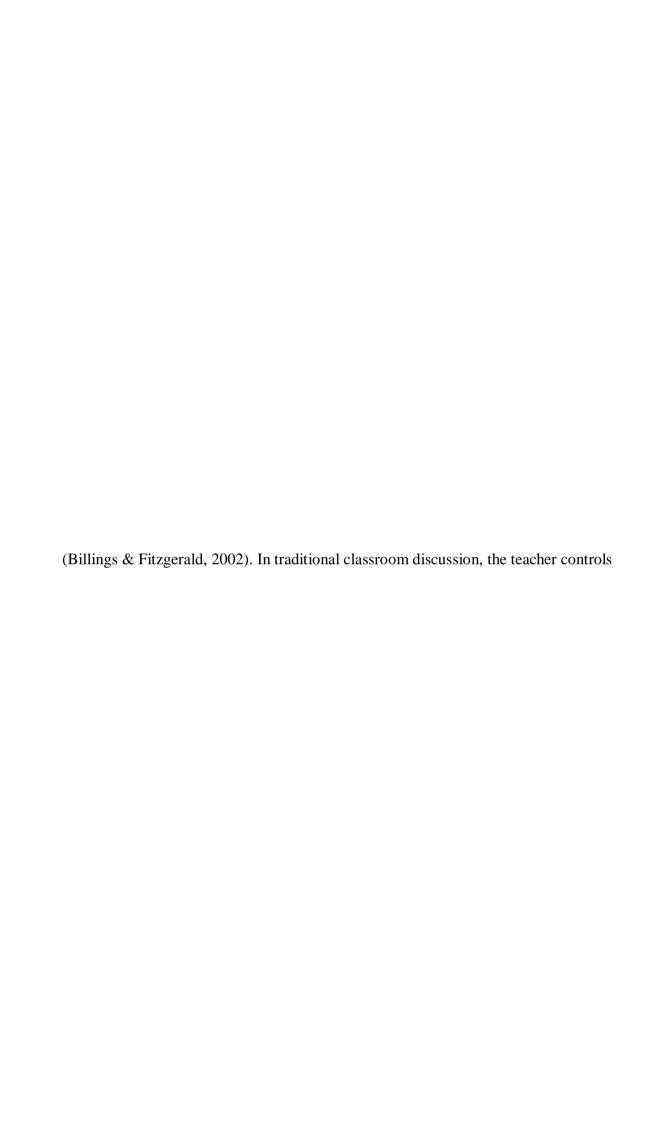










































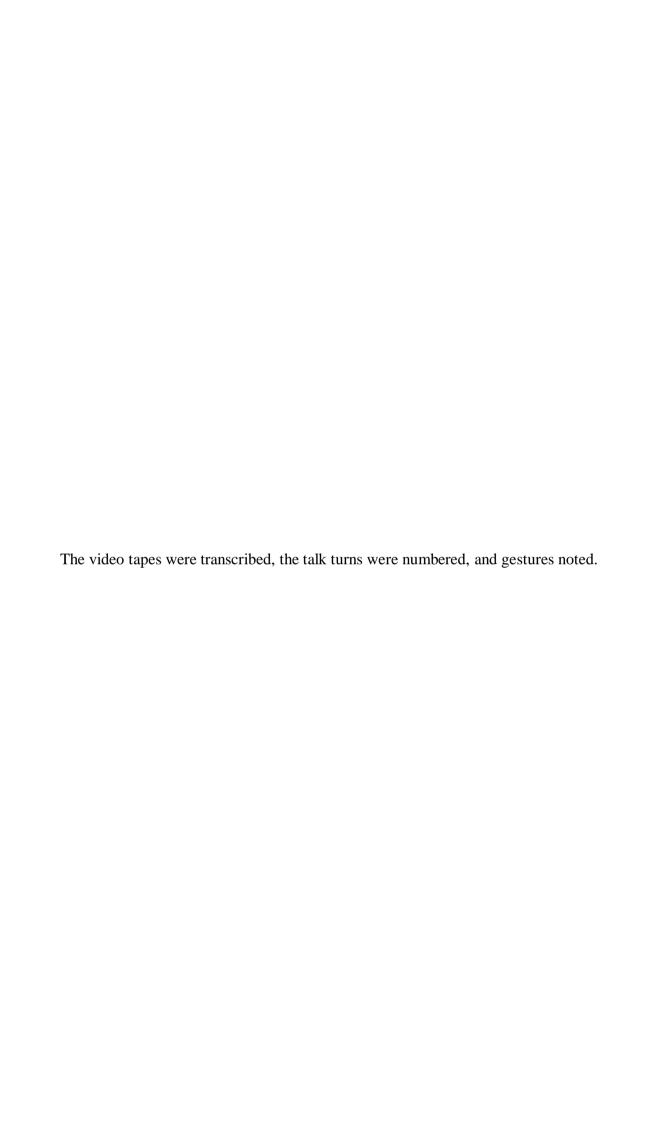










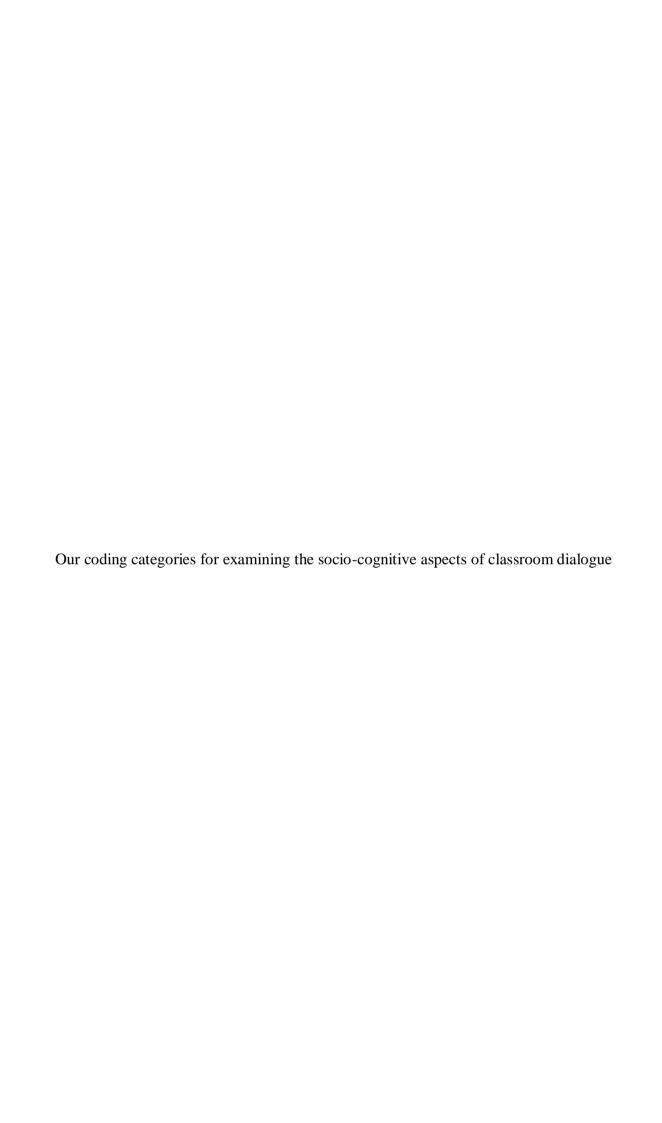
















Paideia Seminar Transcript Coding Matrix				
--	--	--	--	--

<u>Number</u>	<u>Source</u>	<u>Form</u>	<u>Relation</u>	<u>Cognitive</u>	<u>Cognitive</u>
				<u>Process</u>	<u>Content</u>
	Facilitator/		Stick /		Text
	Participant	Statement/		Clarify	
	-		Roll	Analyze	Self
		Question		Speculate	
				Synthesize	Group
				Apply	-
				Evaluate	Other topic
				Generalize	-
				Compare	Others/ the
				Affirm	world
					Process

Total talk turns	Ratio of teacher: student talk	Ratio of statements: questions	Popcorn Vs Continuity	Thinking levels	Focal point(s) Ideas Values

Balance in	Who is in	Questions	Building	Close	Relationship
participan	control/ or	that		analysis to	to thinking
t talk;	leading	generate	on others'	inform	levels.
Length of		additional		Evaluation	
turns		thinking	comments		



4.1 Everylar of active				
4.1 Everyles of source				
4.1 Evenules of accident				
4.1 Everyles of access				
4.1 Examples of seminar t	ranscripts a	and analyzes		















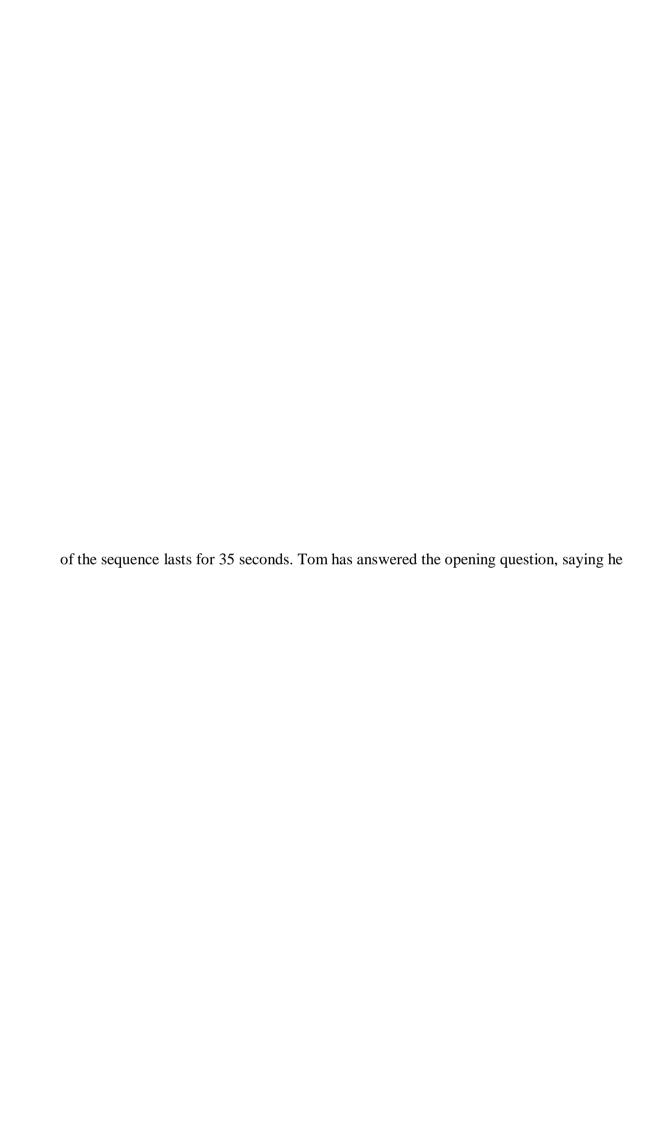














1. Saari: I think (?) it's a good

2. Facilitator: It's good to be her friend



4. Martin	Van Sanadala Din			
4. Martin:	You forgot the D in	the beginning /He le	eans forward, facilit	ator looks



5. Facilitator: m (.)	d'you know (.) /S	he looks at Martin, s	shakes her head, raisin



















8. Facilitator: No? /She shakes her head, writes on her note pad. Idun starts					
8. Facilitator: No? /She shakes her head, writes on her note pad. Idun starts					
	8. Facilitator:	No?/She shakes l	ner head, writes o	n her note pad. Id	lun starts

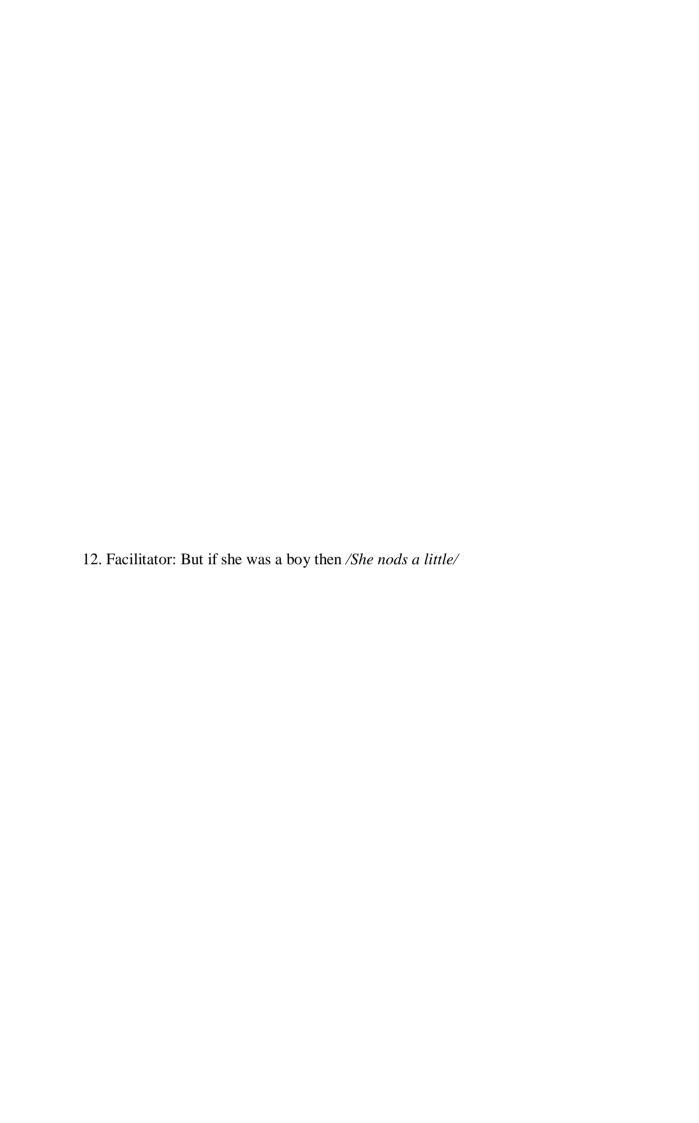


9. Martin: Never

10. Facilitator: <u>Never</u> (.) why never

11. Martin: I	Becau:::se (.) sh	e's a girl (†)/	He turns towa	rds Tom, smile.	s. Tom loo









15. Tom: No /He shakes his head/

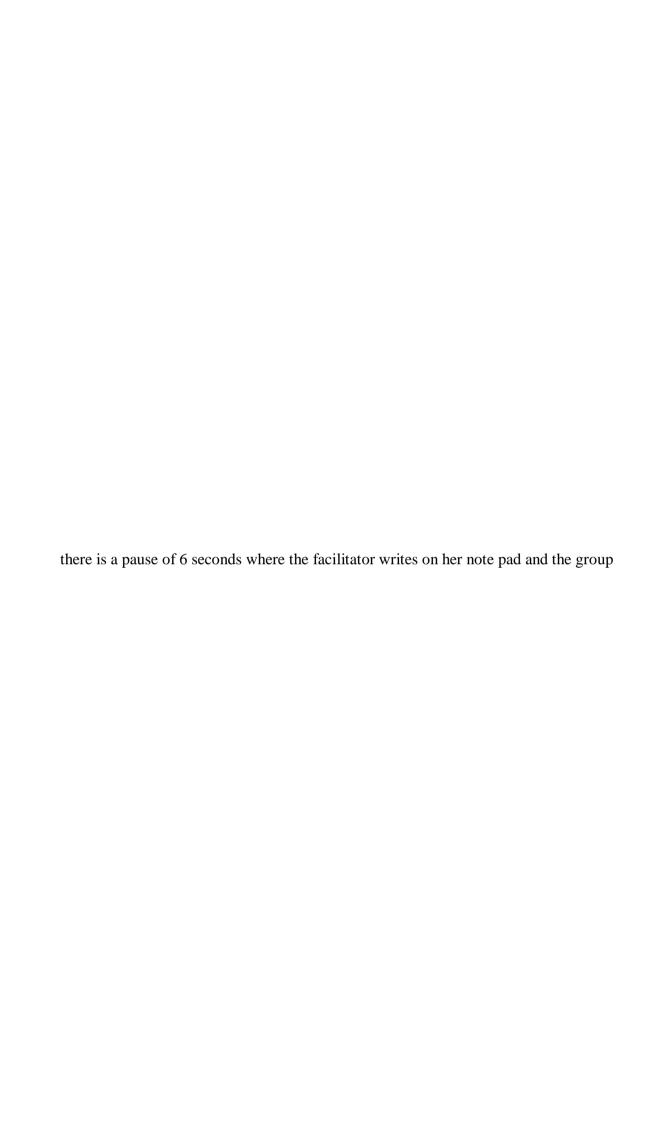


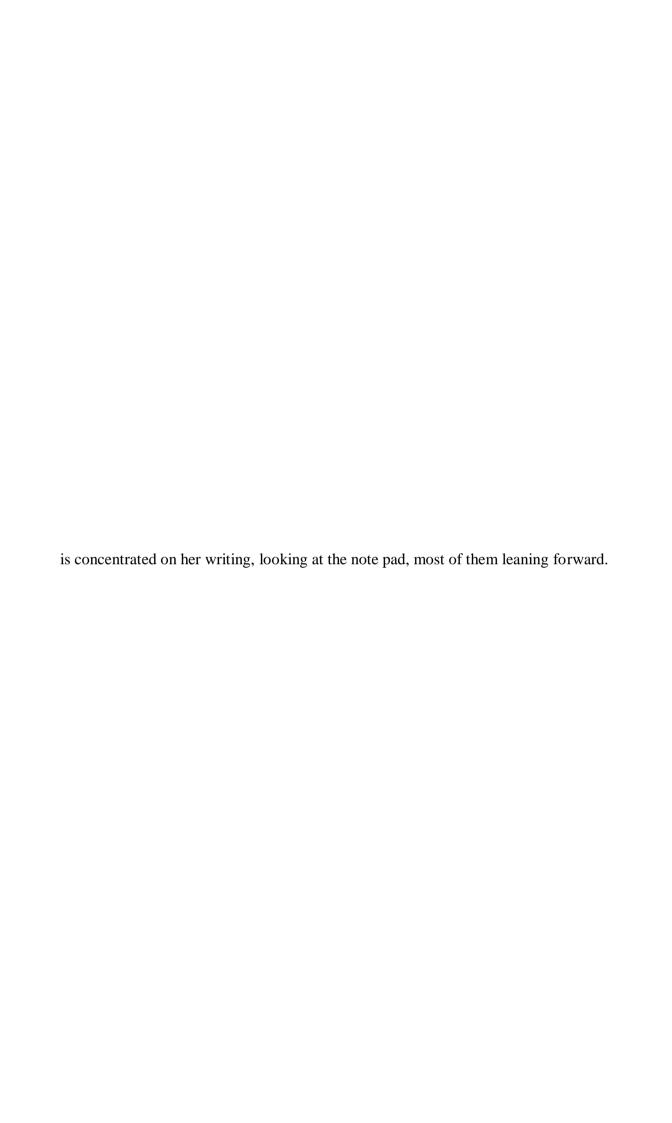


















situation.





















1.	Facilitator	: Would you	ı like Pippi a	s your frien	nd?		

2. Tom: Nope /He shakes his head/

3.	Facilitator:	No? And v	why not? /S/	ne writes and	l turns her he	ead towards To



4. Tom: She:'sa girl (↓)

5. Facilitator:	No but (.) <u>you</u>	have frieds tha	t are girls /Mar	tin puts his han	ds to hi.



6. Tom: Mm so	ometimes yah (.) t	ou' not Pippi <i>/He le</i>	eans back and puts	his hand to



7. Facil	itator: <u>Not</u> Pi	ppi, but if she	e was (.) boy	then /She tu.	rns her hand	d to her



8. Tom: Not (.) no

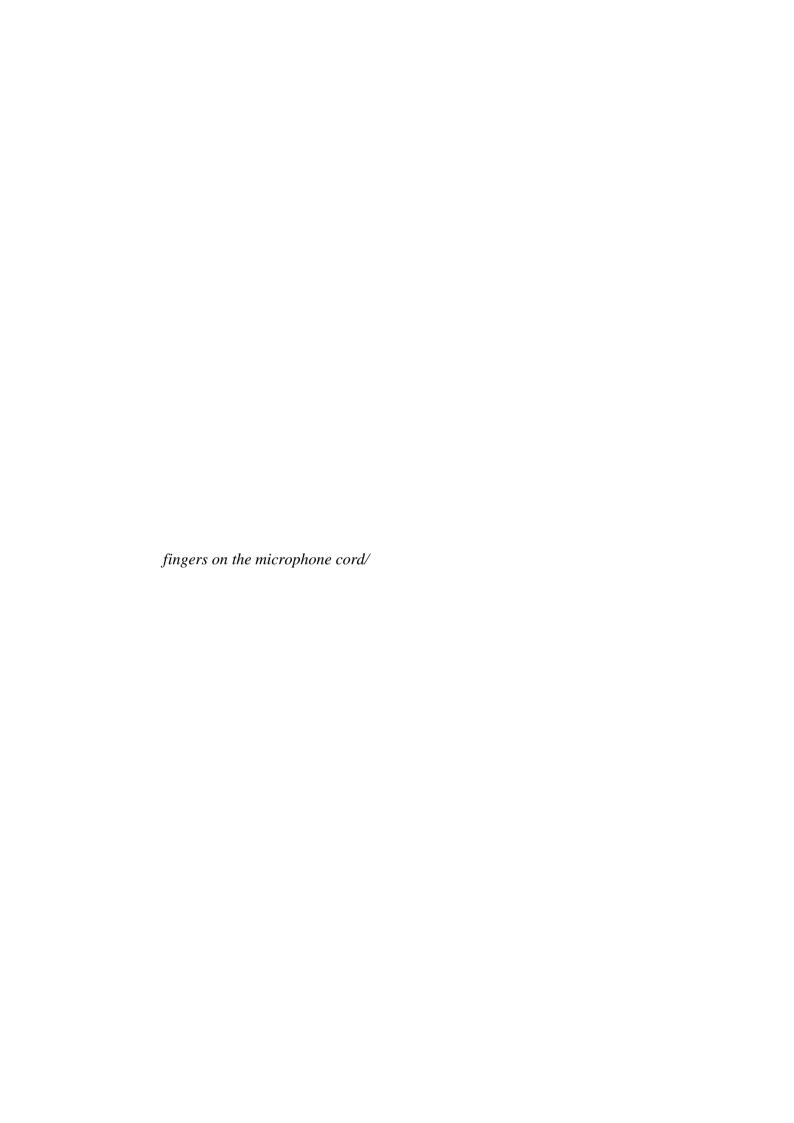
9. Facilitator	: But but is it reall	ly so Mart (.) eh T	Γom that you thin	ık so /She smiles



10. Tom: Yes

11 Facilitate	V l 11		de cida	
11. Facilitato	r: You who usually	play a lot with	the girls	

12. Tom: N	Am atleast inste	ead smaller bo	ys it doesn't n	natta if it's a gir	rl or a boy /E





14. Tom: Mm

15. Facilitator: Okay

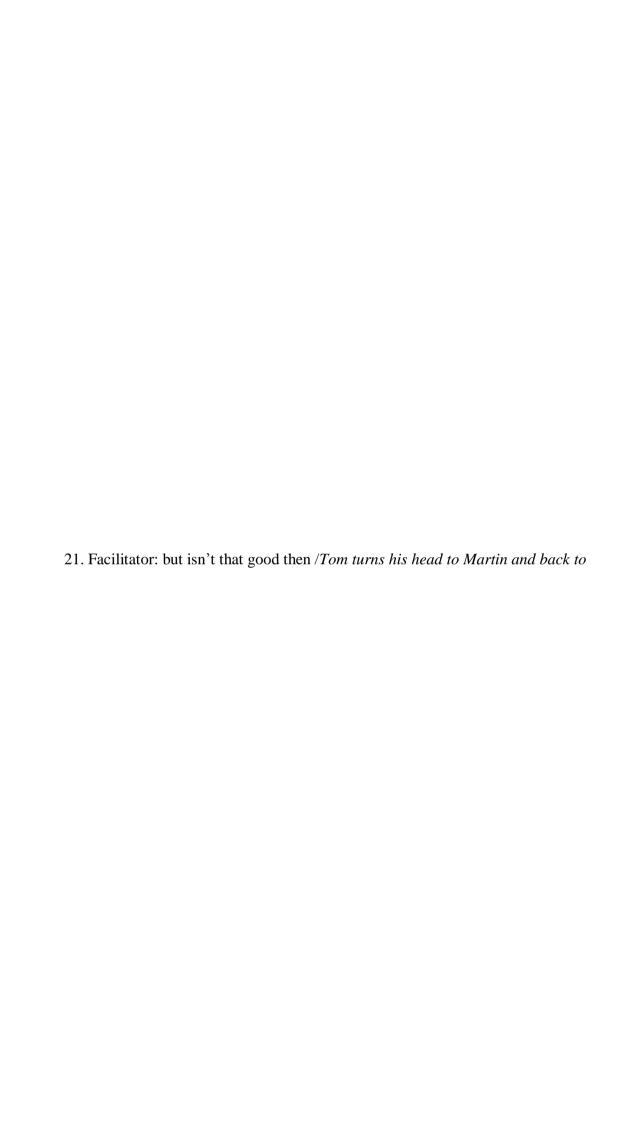


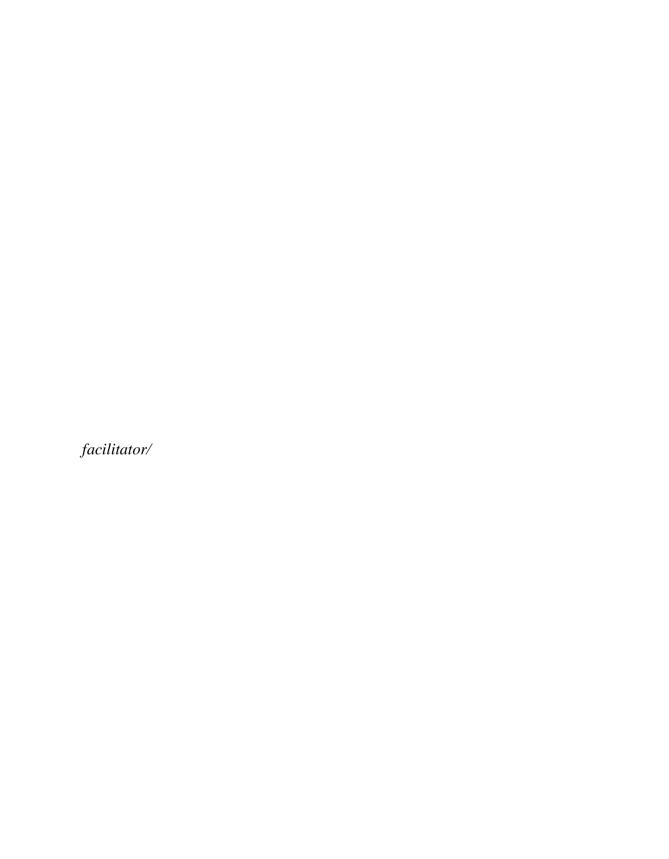


18. Facilitator: Yes

19. Martin: and braids standing right out

20. Johanna: <u>TOM</u>

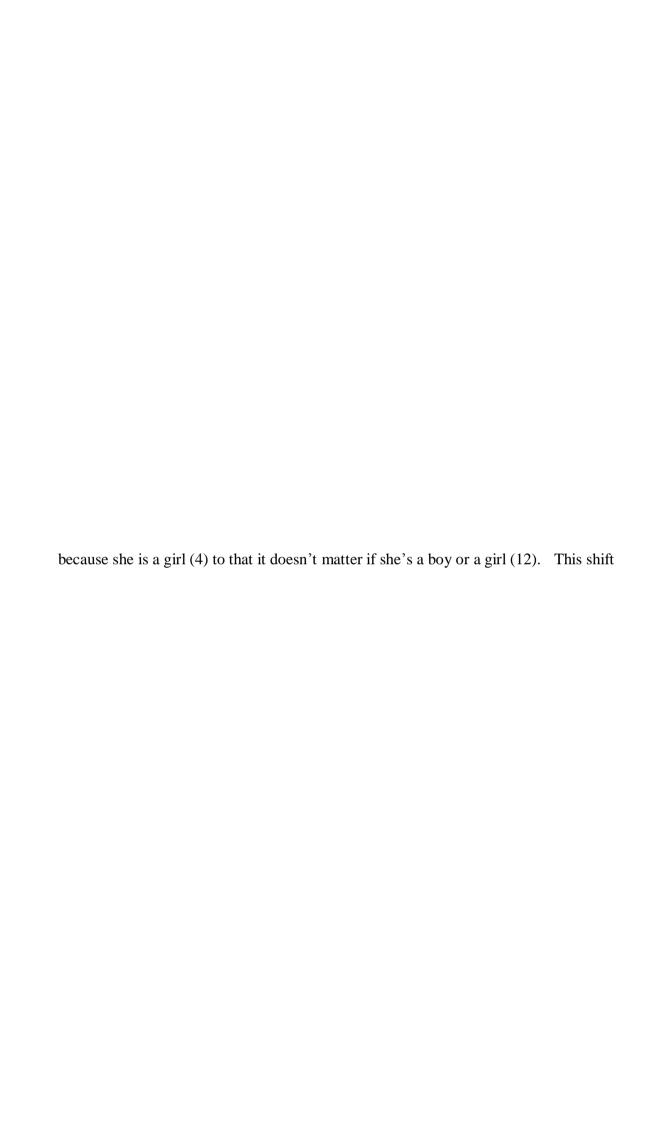




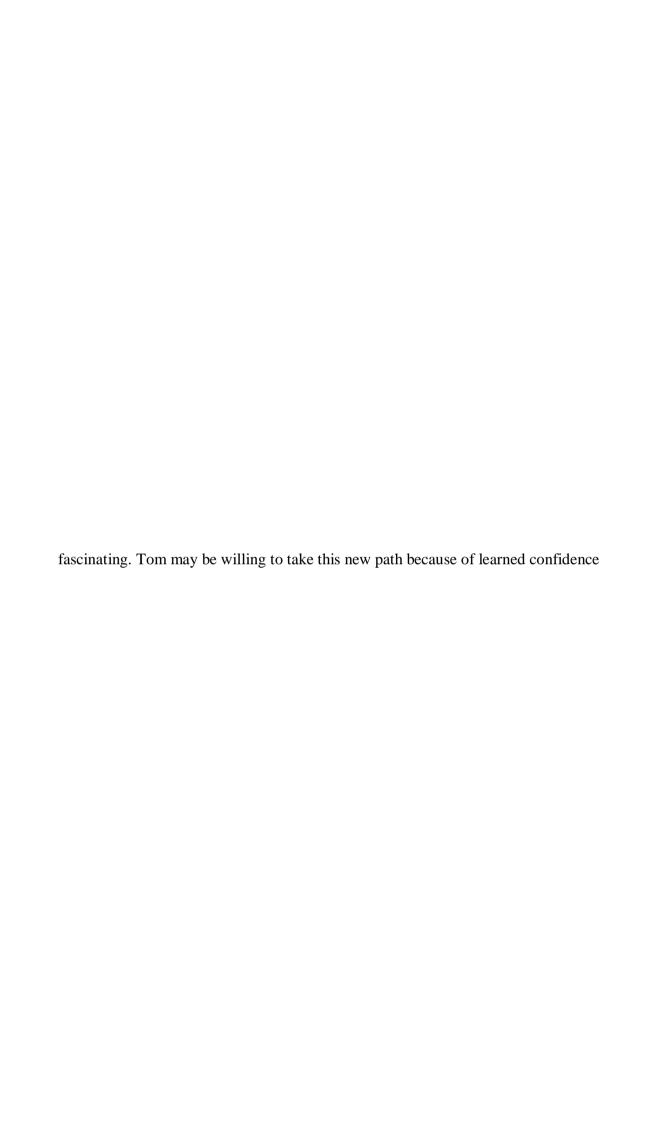
22. Tom: No

23. Martin: God no:









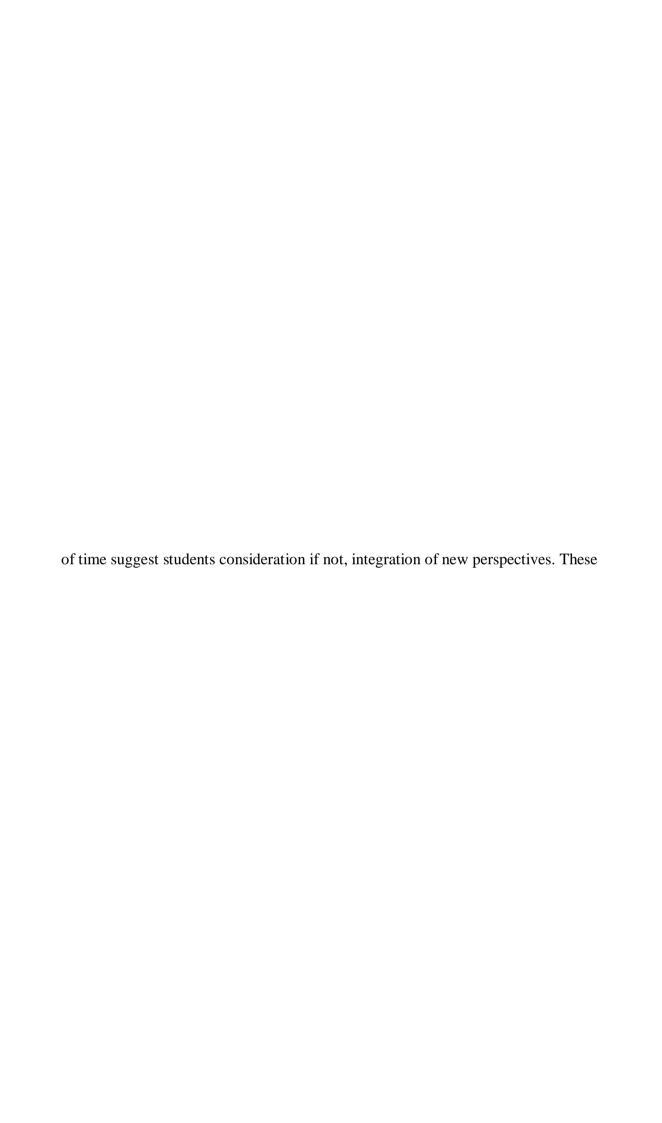






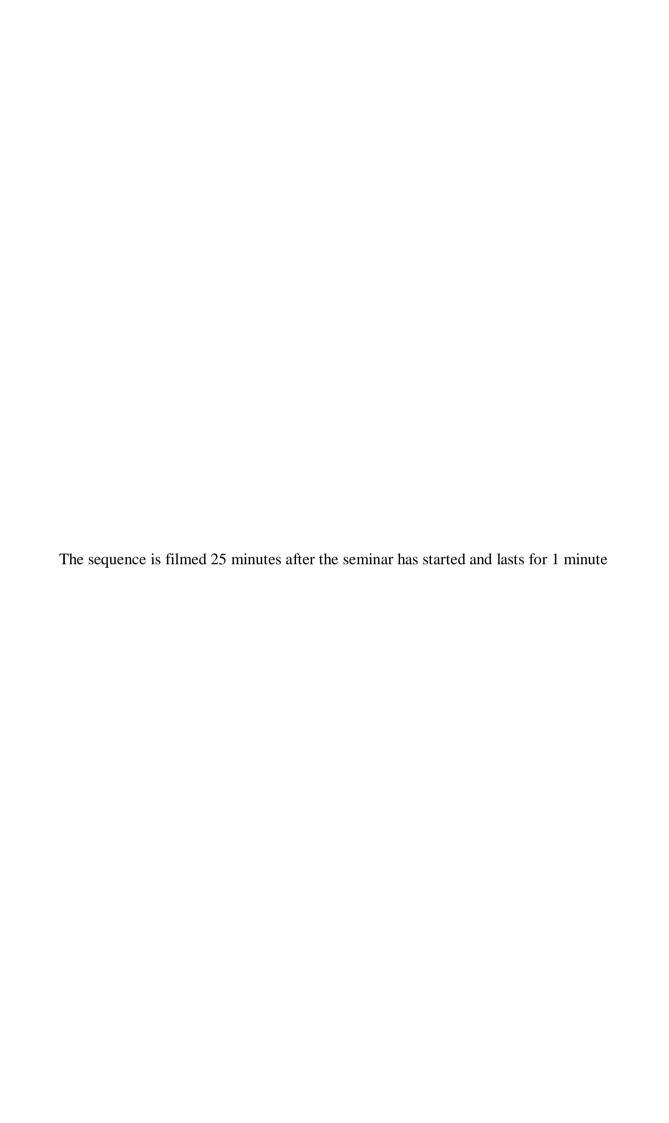


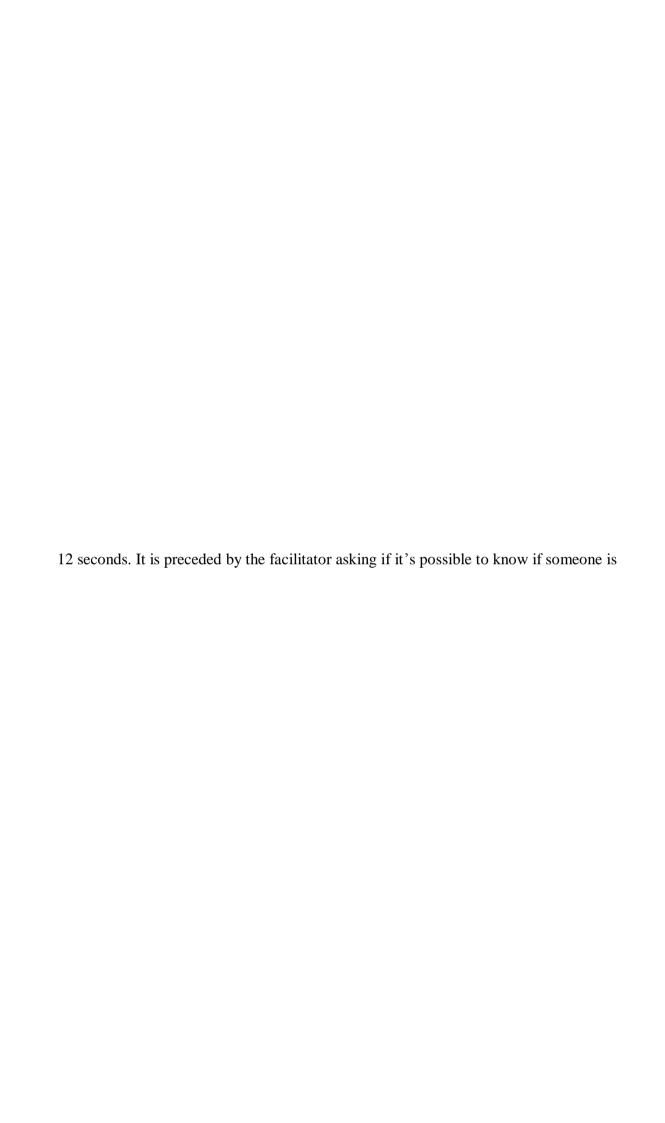


















1. Facilitator	: D'youknow (Christian you'r	e di <u>sturbing</u> th	e others theyha	ve think







2. Diana: Christia:n

3. Christian	n: To thishere chic	eken <u>pox</u> /All exce	ept Igor and Do	avid look at C	hristian/

4. Abel: ((giggles))

5. Otilia: ((giggles))

6 Fa					
o. ra	acilitator: Wl	hat'ya say <i>/Sh</i>	e leans forwa	rd/	
o. ra	ecilitator: Wl	hat'ya say <i>/Sh</i>	ne leans forwa	rd/	
o. Fa	ecilitator: Wl	hat'ya say /Sh	ne leans forwa	rd/	
o. Fa	ecilitator: Wl	hat'ya say /Sh	ne leans forwa	rd/	

7. Christian: Heas <u>CHICKEN</u>pox

8. Facilitator: Heas <u>chickenpox</u>

9. Abel: ((laughs))

10. Christian: eh have done

11 Facilitator: C	'an you get chickenr	nov 'causa vou'ra w	orried /She and Kaspe
11. Pacificator. C	an you get emeken	oox cause you le w	omeu/sne ana Kaspe



12. Abel, Nancy, Kasper, Micl	kan, Markus: ((laug	(hs)) /Otilia smiles/	

13. Kasper: Nohooo



15. Facilitator: Th	ne <u>eraser</u> has I th	ought it was R	lonny ya mean	t who was all	spotty



16. Mickan: ((laughs))

17. Markus: But then maybe it can infect you

18. Facilitator:	But listen if you	notice that a frie	end is this worrie	d or sad or



19. Markus: Cheer'em up

20. Facilitator: What did'ya say

21. Markus: cheer them up can d

22. Facilitator: Cheer them up howdoyou do that

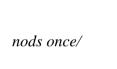




25. Markus: (1) a flower or whatever



27. Christian: A <u>DR</u>	AWING /He	leans over th	ne table with hi	s arms out. F	Facilitate



28. Facilitator: A drawing whatelse can you do

29. Christian: An <u>UGLY</u>



31. Nancy: That	wouldn't make	you <u>glad</u> /She lo	ooks at Markus.	Christian draws



32. Christian: B

34. Markus: If you make an	ı <u>ugly</u> draw	ing then you	just had to da	ub an' then yo







36. Carl: Yea but I (?)



38. David: I daubed on my airplane







42. Facilitator	: Listen (.) I think	we say like this	(.) an' thanks ve	ery much for the



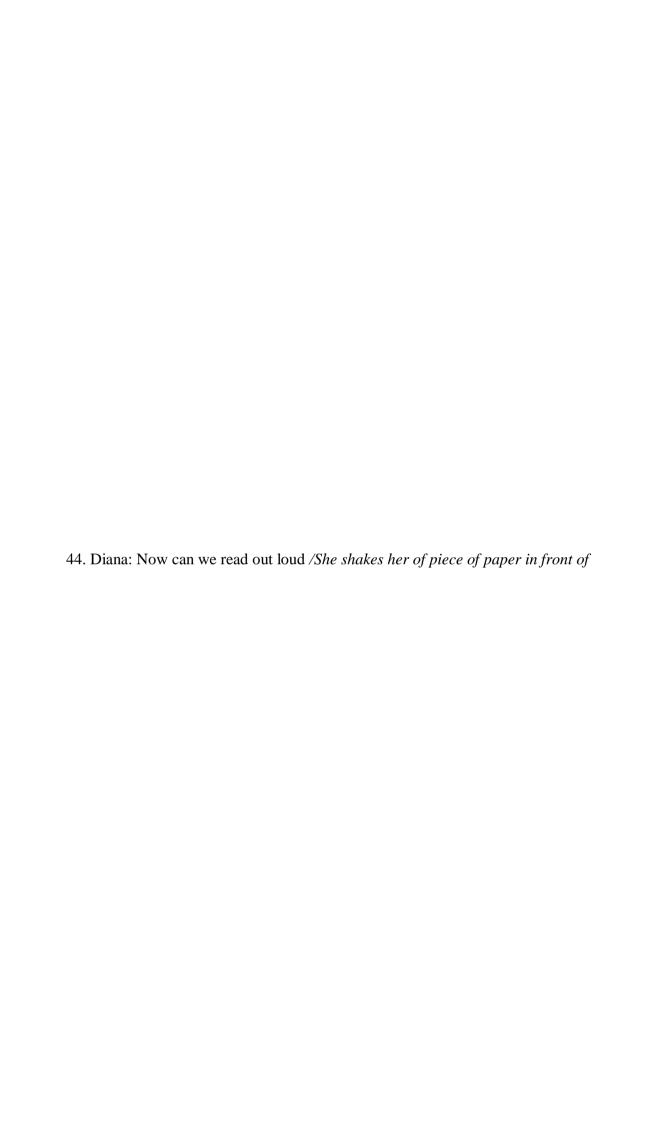






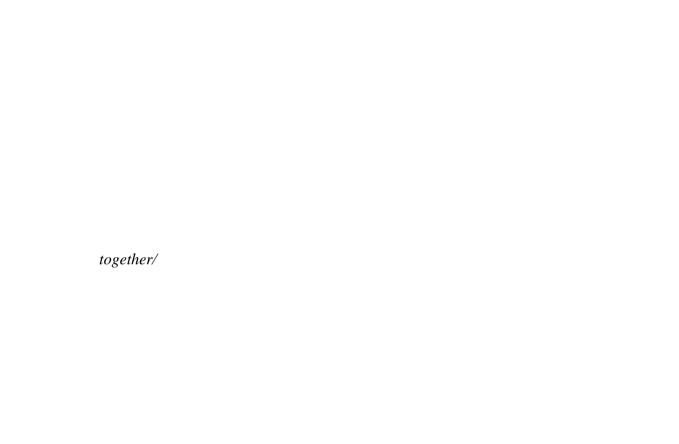


43. Christian: Yeaah





45. Facilitator:	Those who want	to (.) /She puts d	lown her pencil a	nd puts her hand



46. Diana: read out loud



48. Carl: <u>OOPS</u>

49. Diana: I want to

50. Facilitator: on these noteshere instead

51. Carl: Right

52. Facilitator: Otilia would you like to tell

53. Carl: That you could do

54. Abel: One doesn't have to



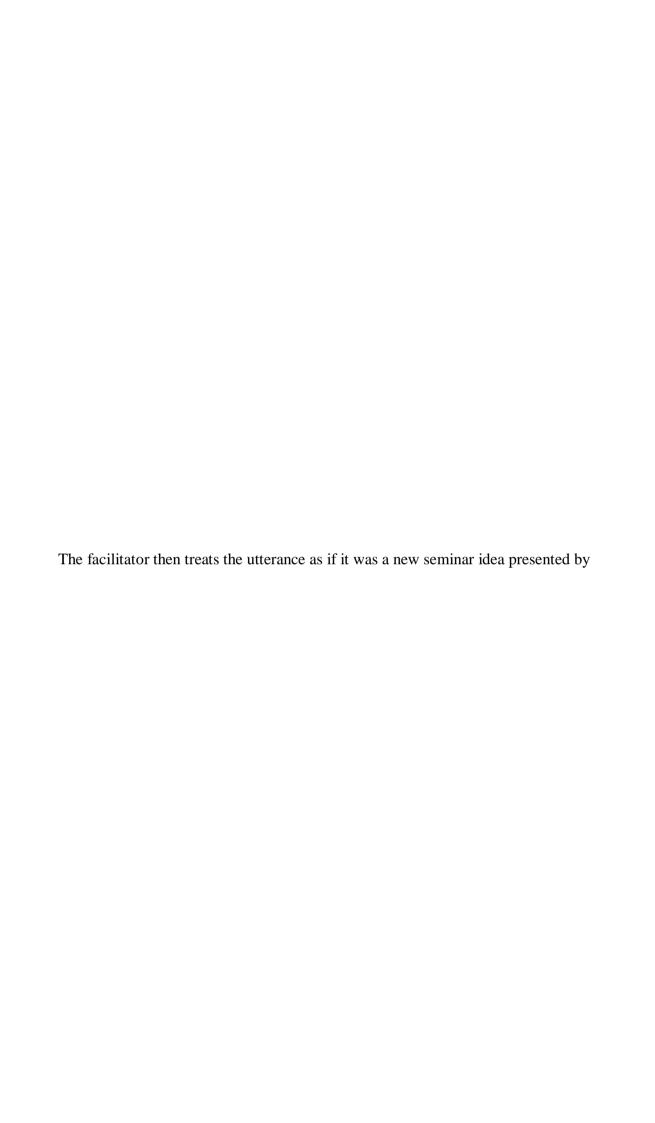












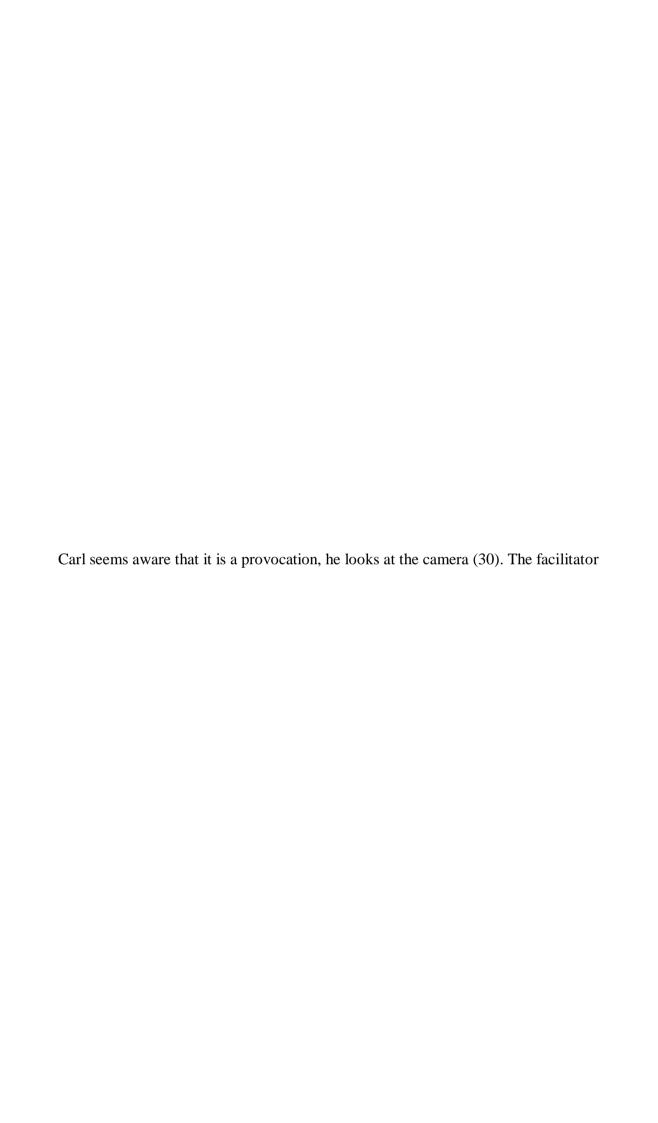






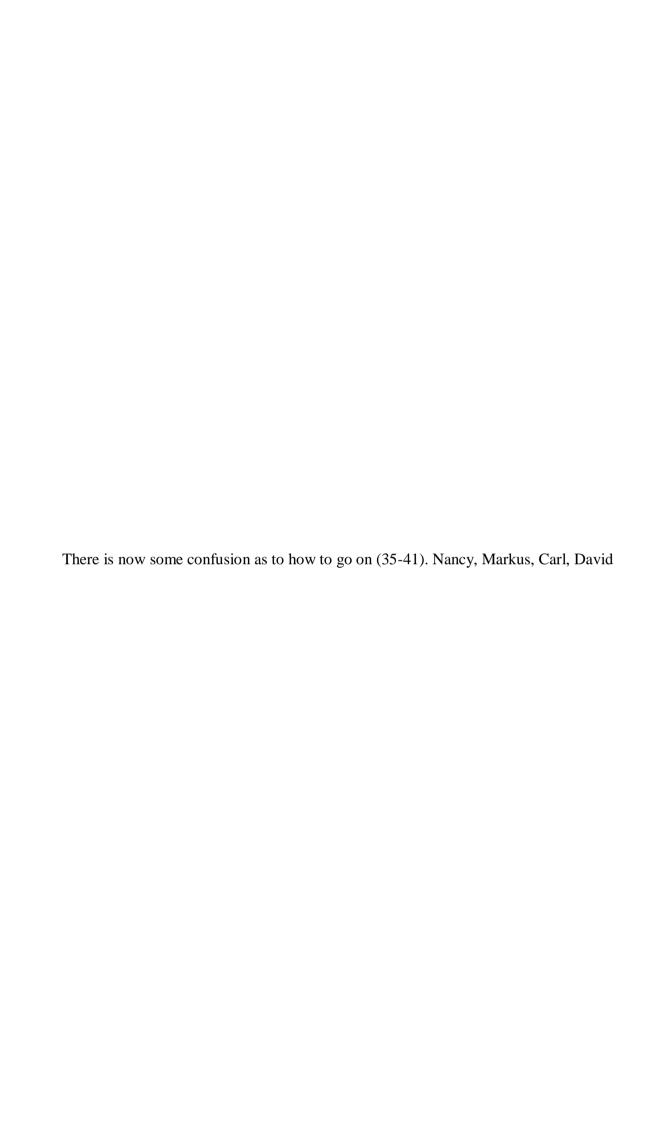








(34) on the other	hand refute th	ne idea in accord	lance with semin	nar practice.	

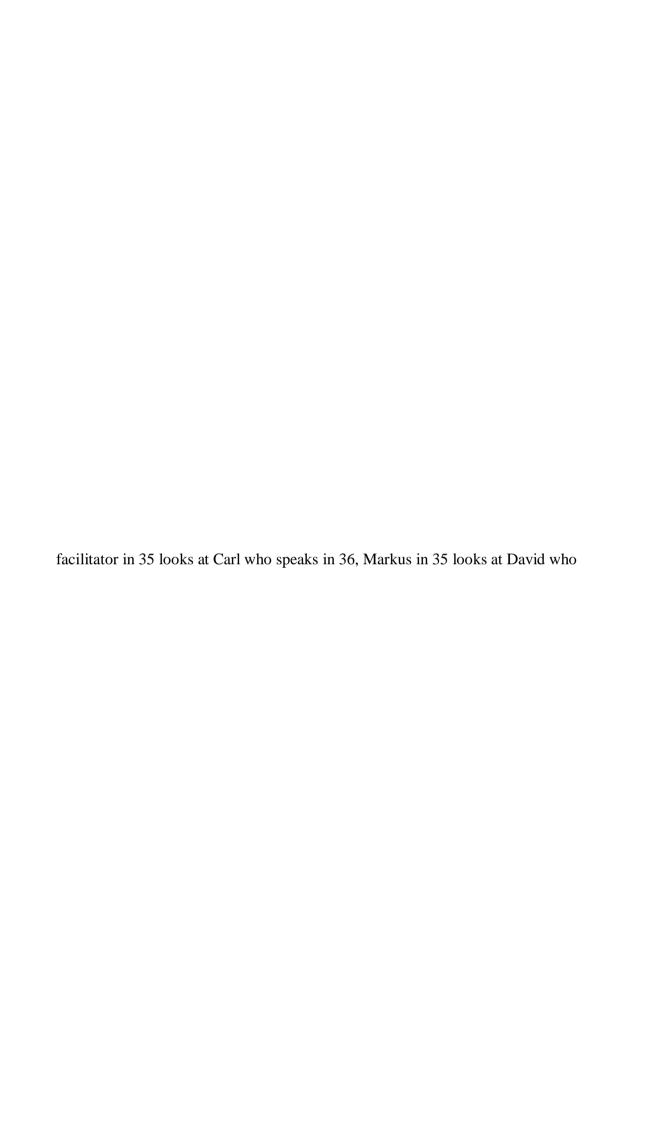


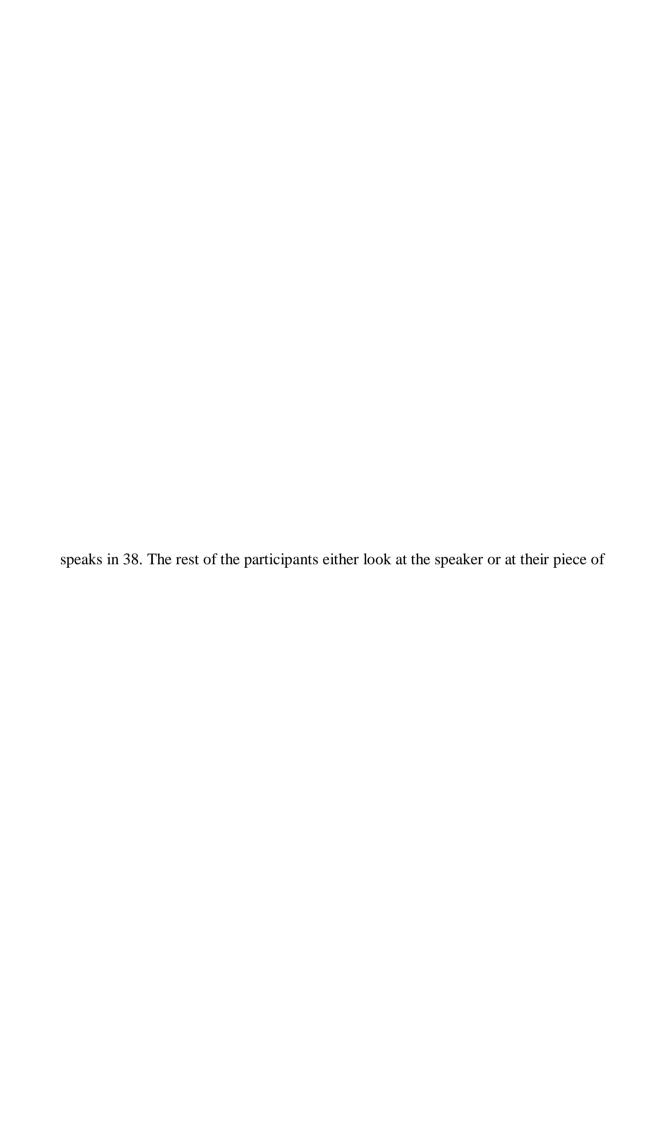




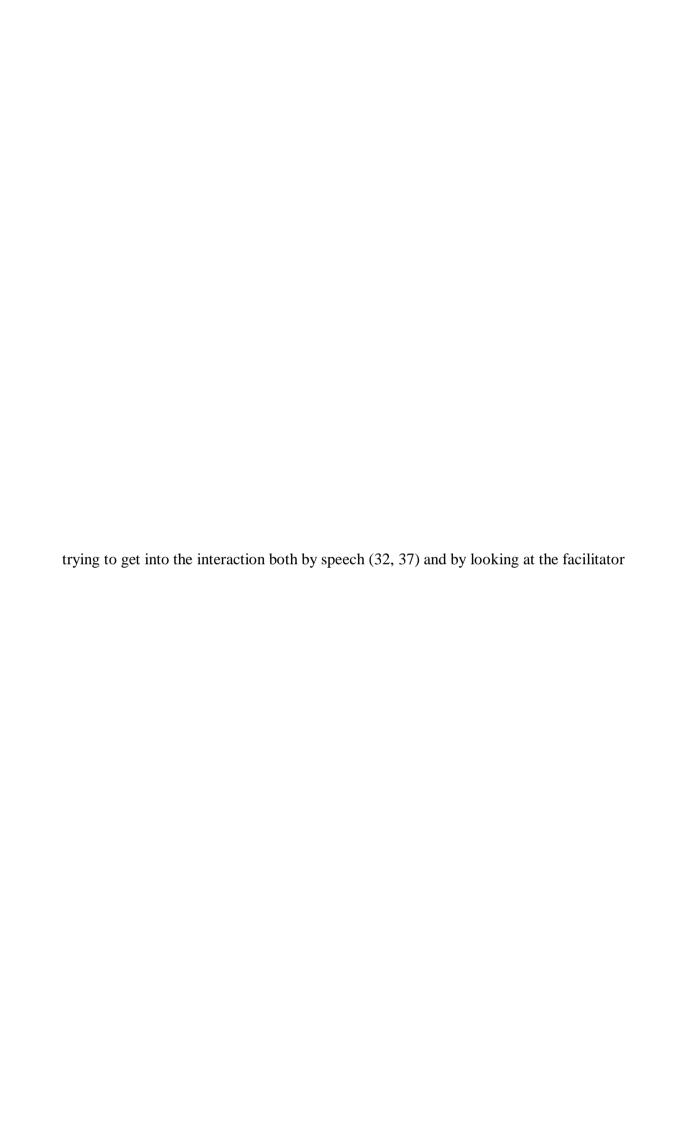




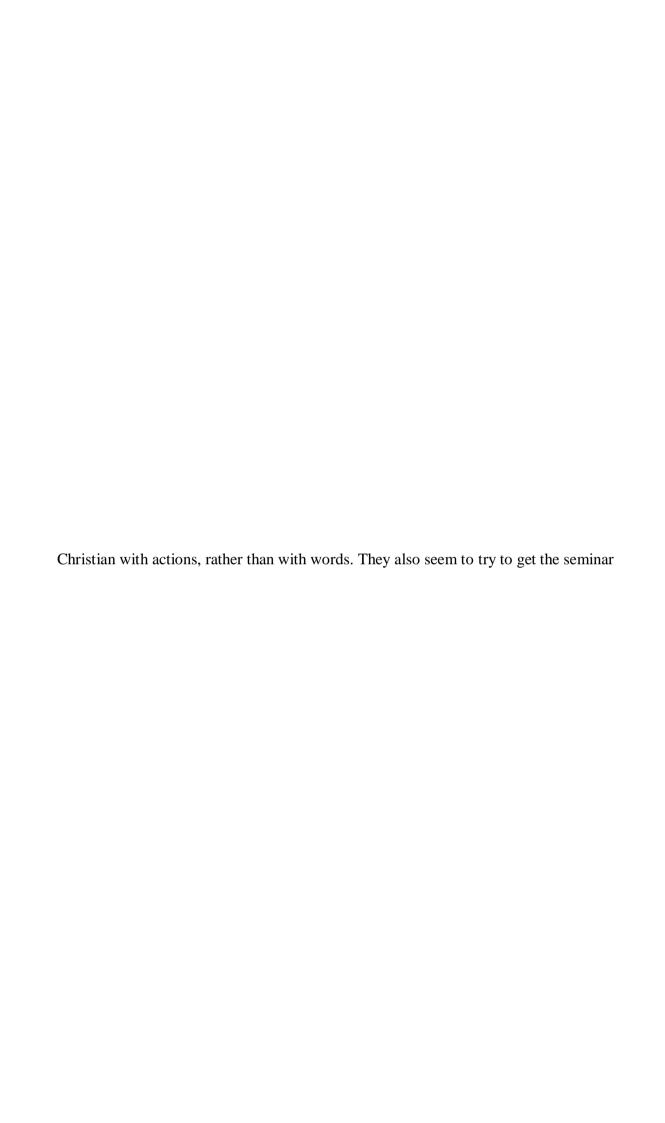










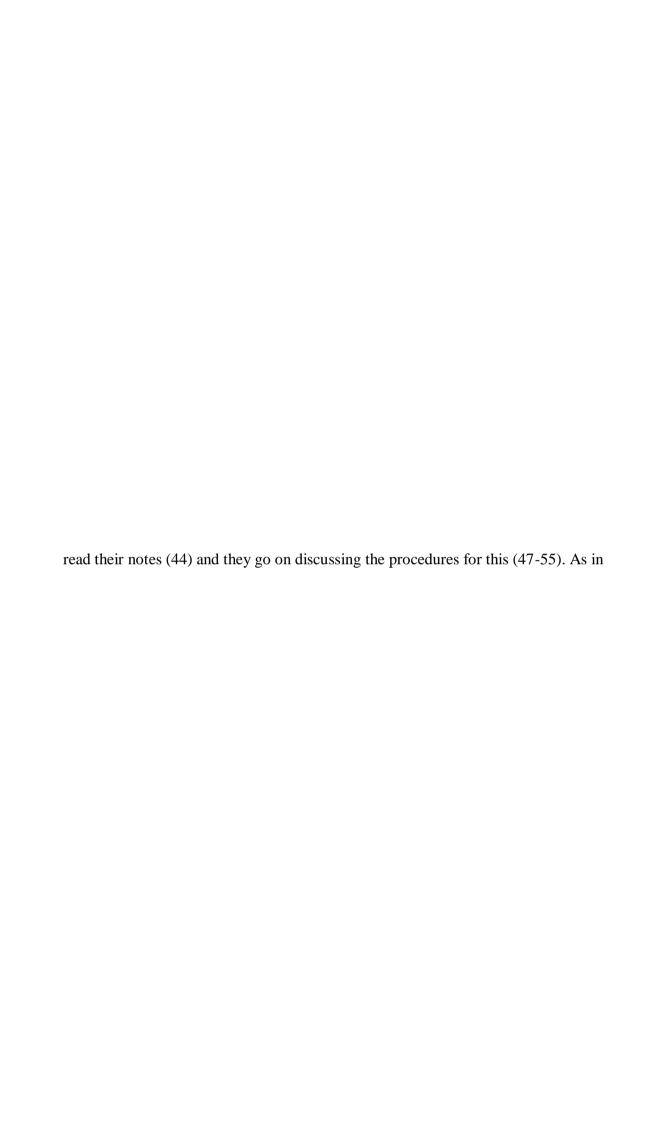












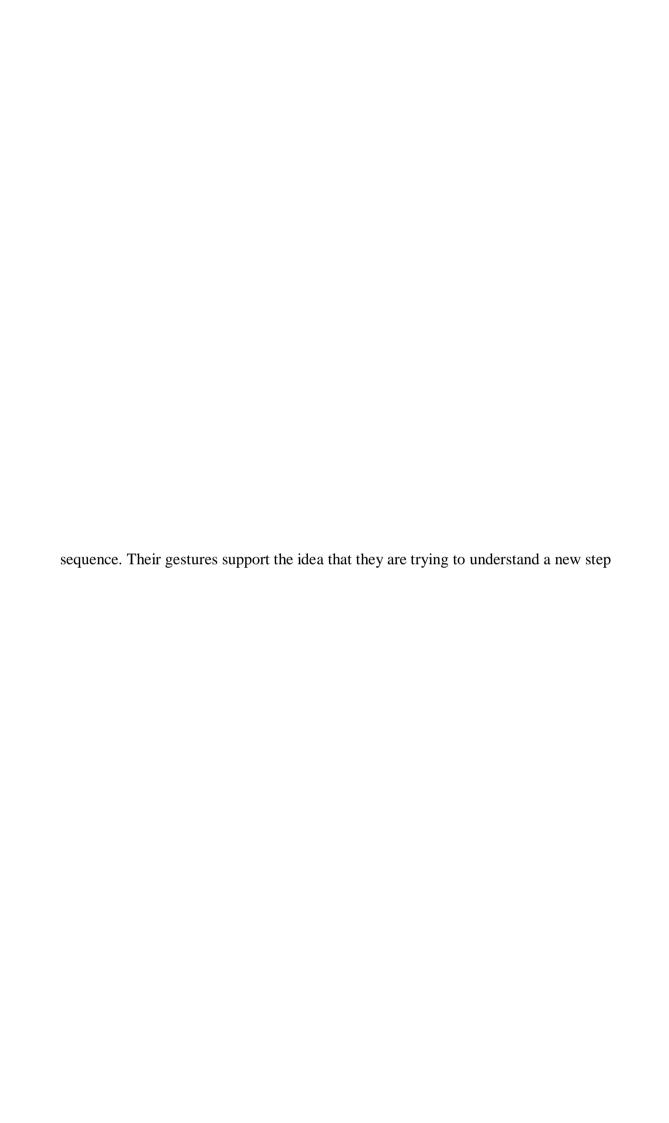
























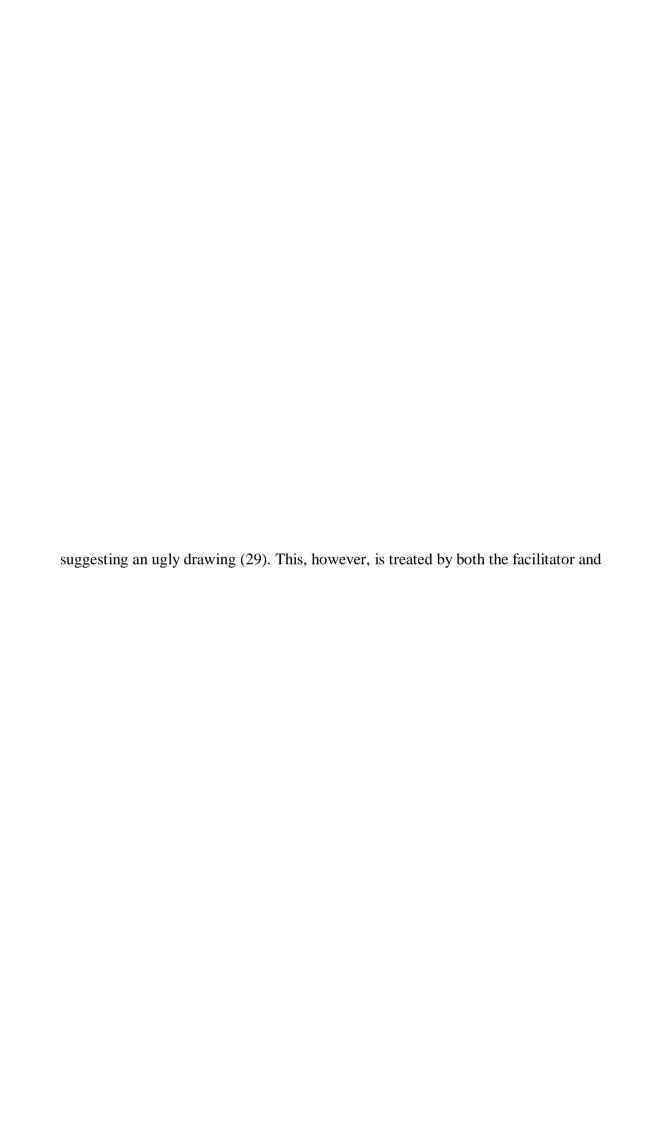










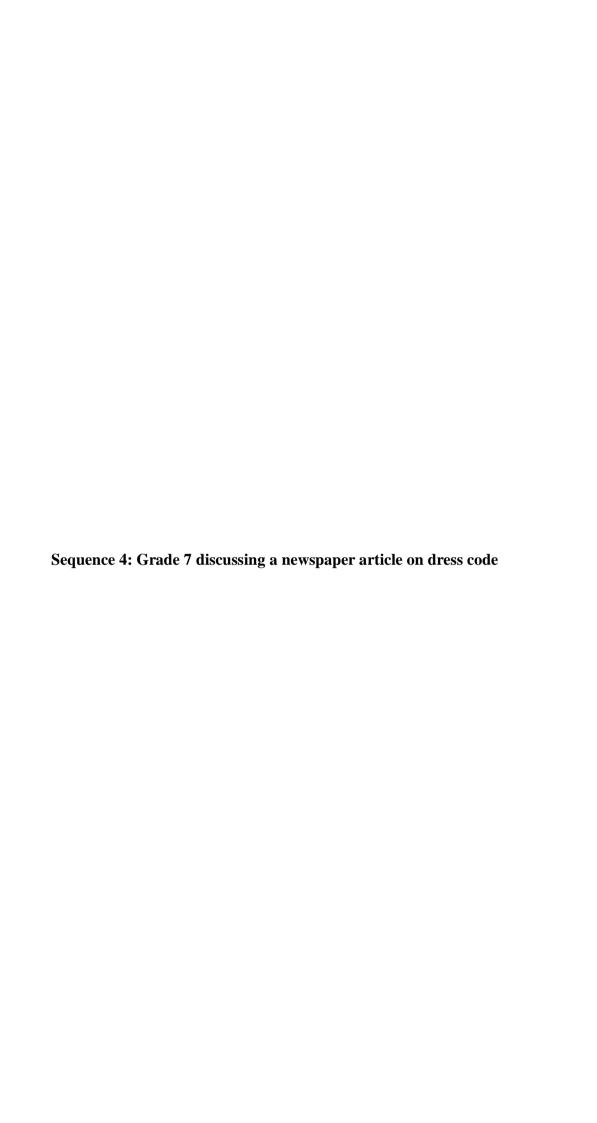






















1. Facilitator: It	's isn't it <u>some</u> one	s (.) job to infor	rm the youngster	sin is still on







2. Anna A: Yes (.) it could be school's job but

3. Facilitator	: And the home or /S/	he bows to one side	e, turns her hand o	ut, moves





5. Facilitator:	But not forbid is	that what you're	e getting at /She	turns to Mattis,



6. Anna A	a: ba exactly schoo	ol should inform	but not forbid /S	he shakes her head



7. Mattis: M

8. Johnny: M

9. Facilitator: M okay







11. Facilitator: Yes yea

12. Anna A	.: yea <u>though</u> th	e parents <u>can</u>	forbid /She tal	kes up her pape	er and turns



13. Facilitator: If the parents don't

14. Ruben:	But if the pare	nts don't bid ()) uh (.) ah (.) n	ot care so ah	

15. Facilitator:	If the parents don	n't inform then it	t's the task of the	e school is that



16. Anna A:	Yes the <u>school</u>	and parents s	should inform	but the school	should no





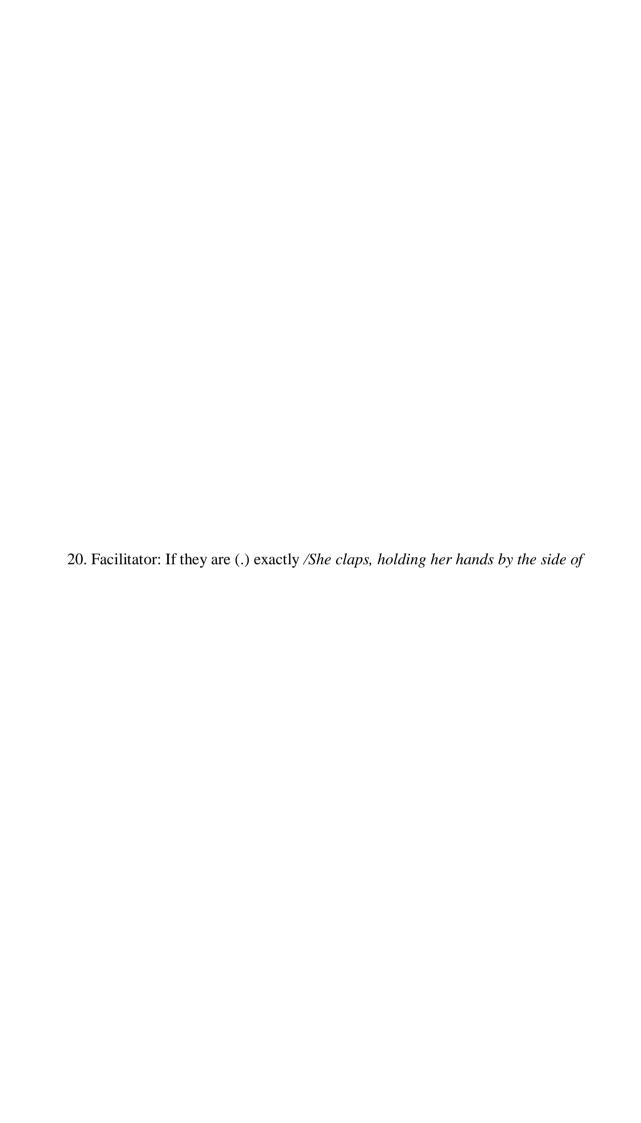


17. Facilitator:	No yea the parents	s can choose that	as they like /She	shakes her hed











21. Anna A: Yeah it's likethis

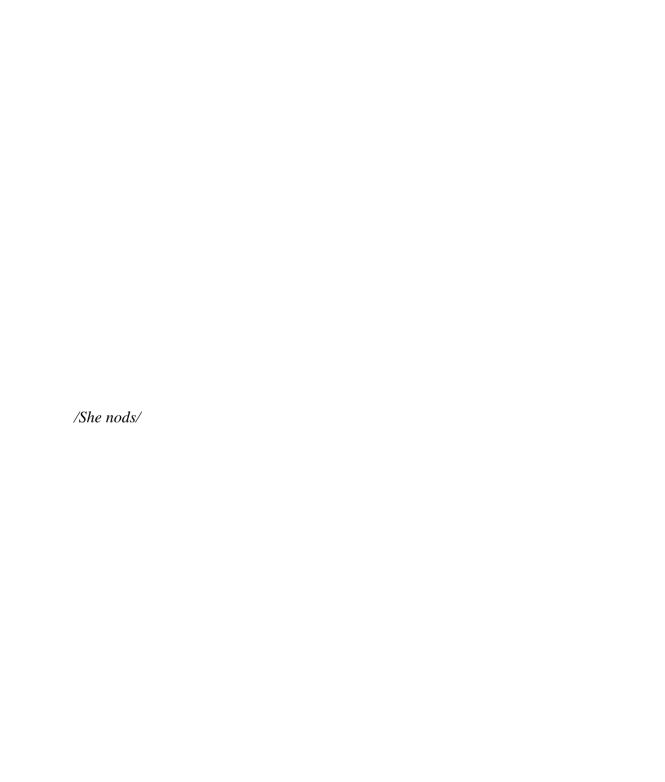
22. Mattis: Yes	but at the <u>same</u>	time it feels l	ike th (.) now	(.) parents <u>car</u>	<u>e</u> about th







23. Facilitator:	It should have be	en done at home	e andifnot done	at home it ought

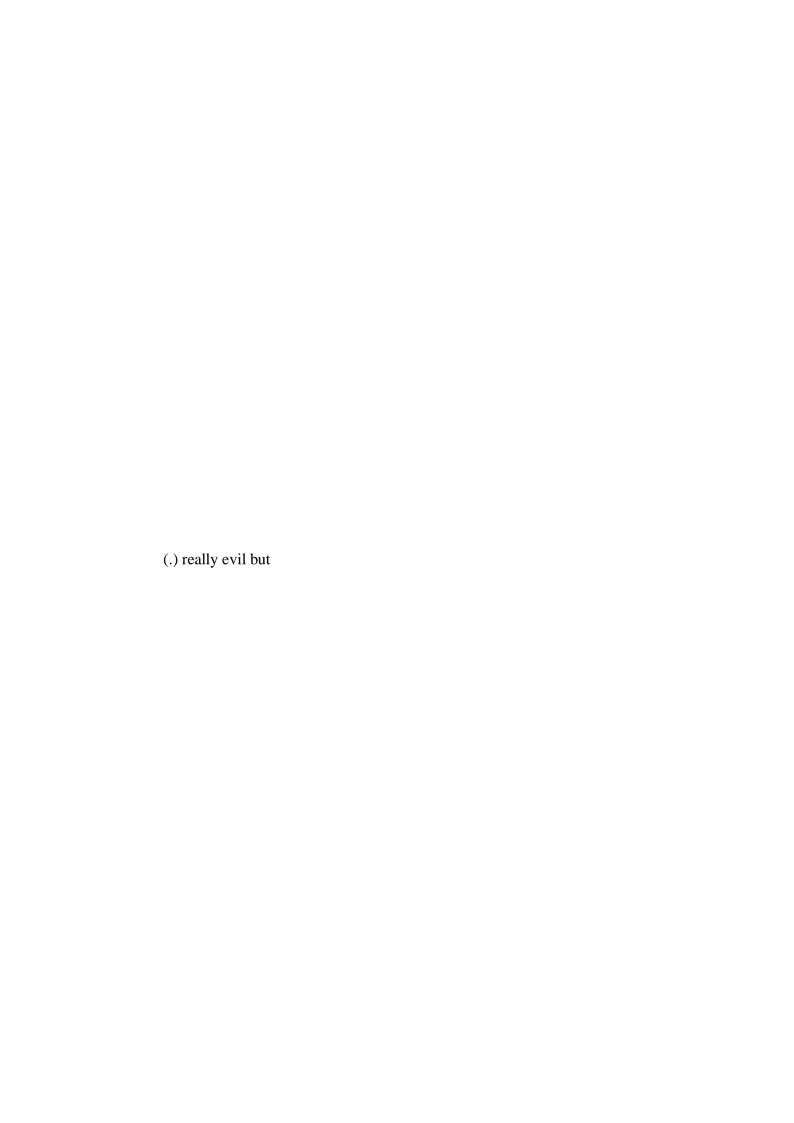


24. Mattis: Yes

25. Ruben:	Well I thinkthi	s principal see	ems to <u>care</u> abo	out the <u>stud</u> ents	<u>still</u> althoug







26. Facilitator: M /She nods/

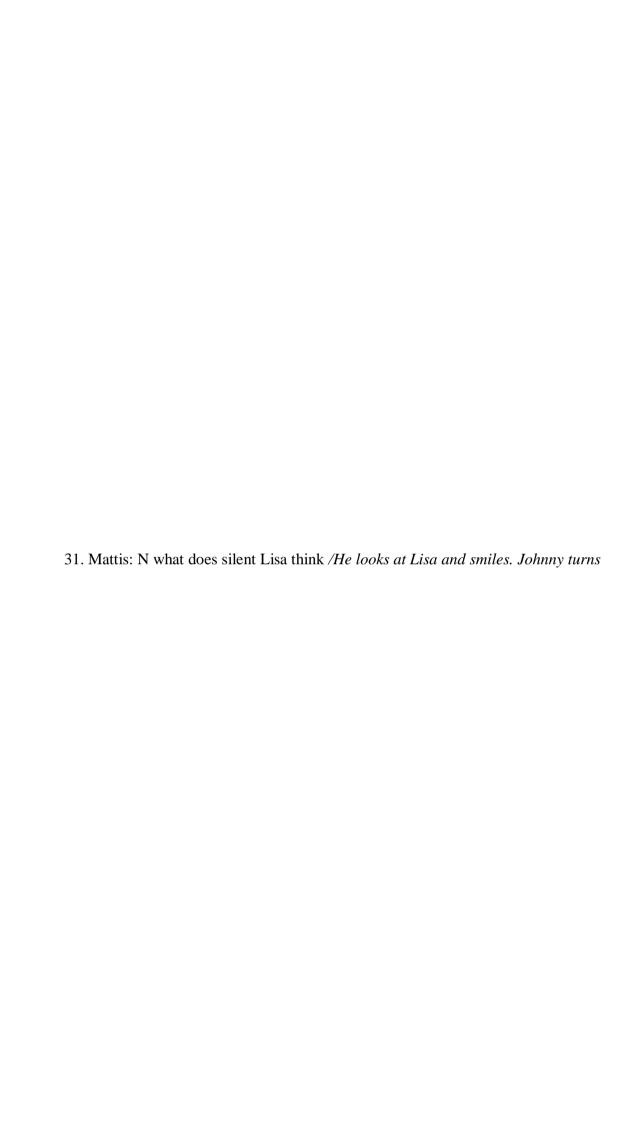
27. Mattis: M



















33. Lisa:	I think (1) wr	ong /She move	es her body, le	ans back, mov	es her fingers























37. Mattis: Mh typical



39. Mattis: What?



41. Susanna: (?) /She smiles/

42. Lisa: Jack ((giggles))

43. Faclitator: (?)

44. Mattis	s: yeahbut Jacky	has alr hasal a	lready beenb in	invited	

45. Jakob: butyou youhave to talk for yourself then

46. Susanne: ((laughs))

47. Lucy: ((laughs, giggle in talk)) (?)









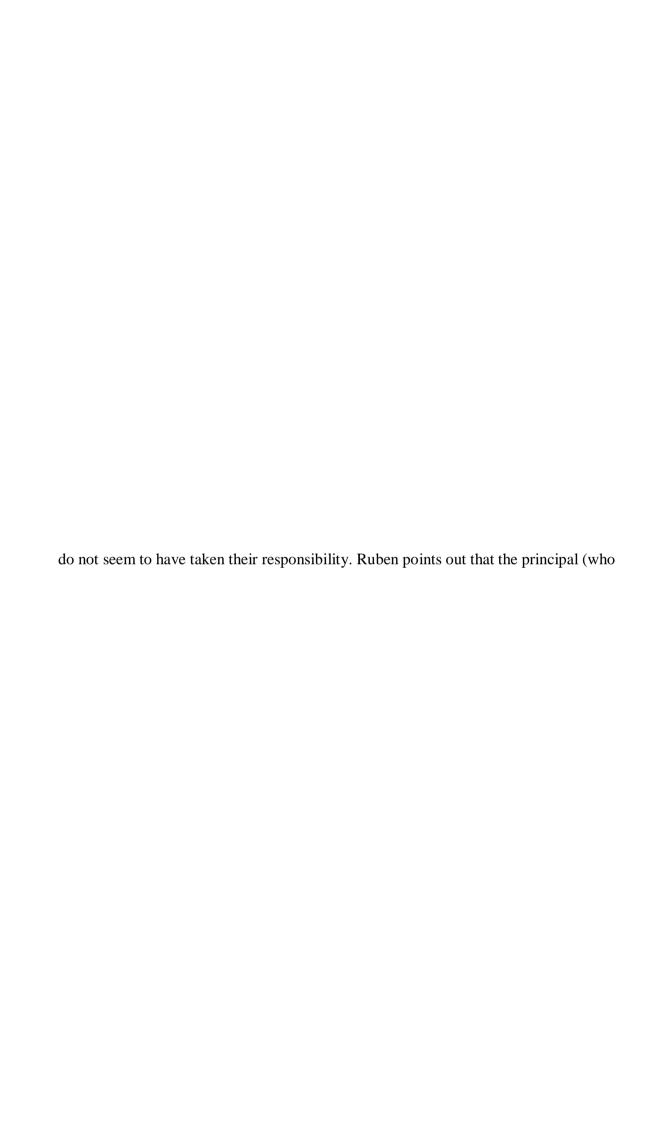






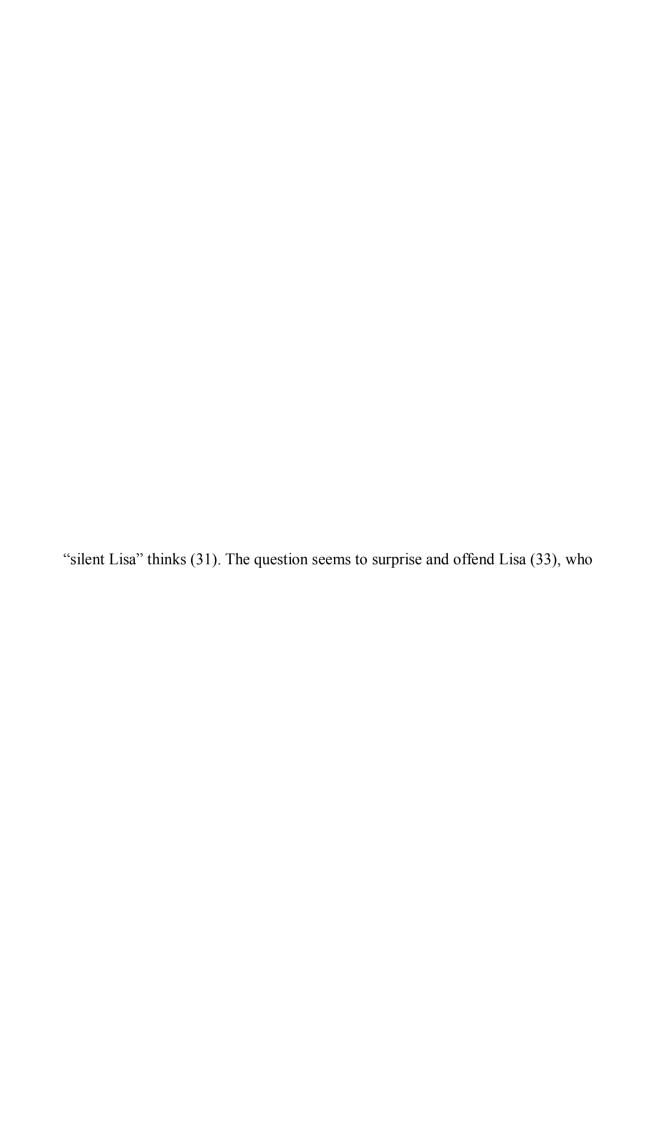




















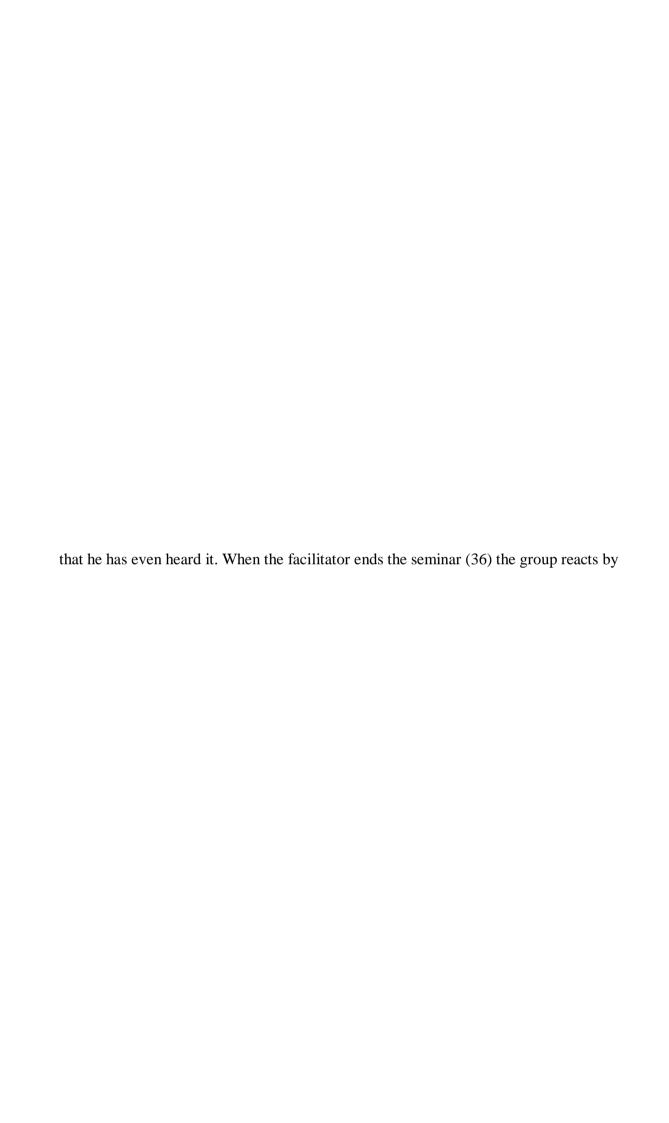








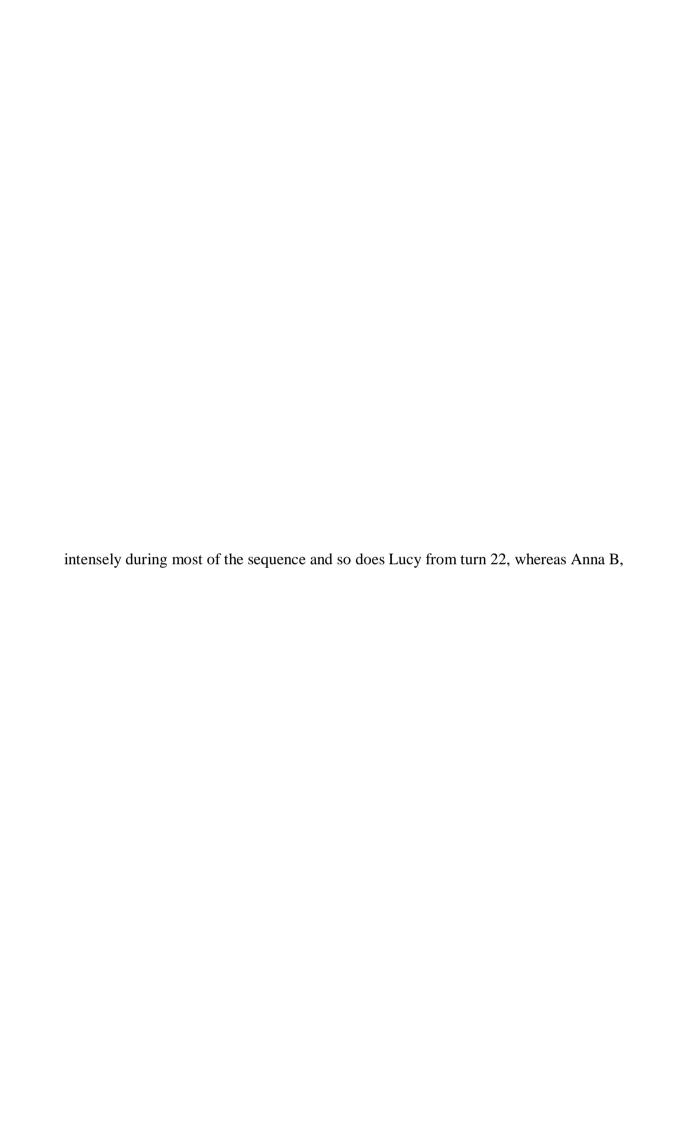






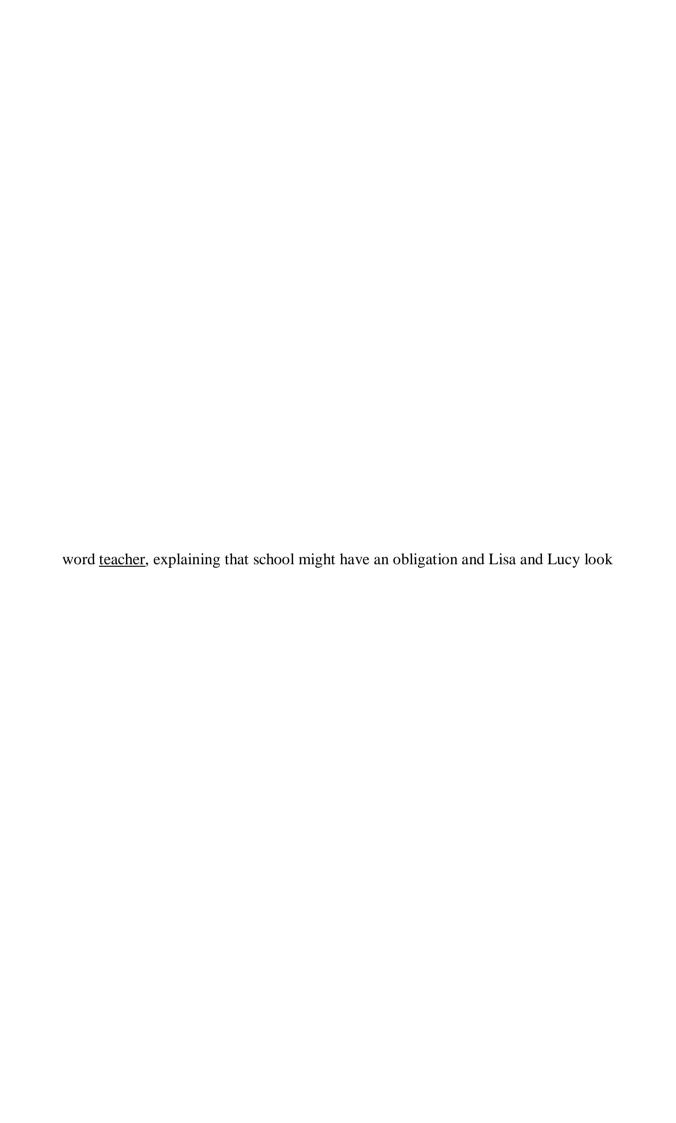








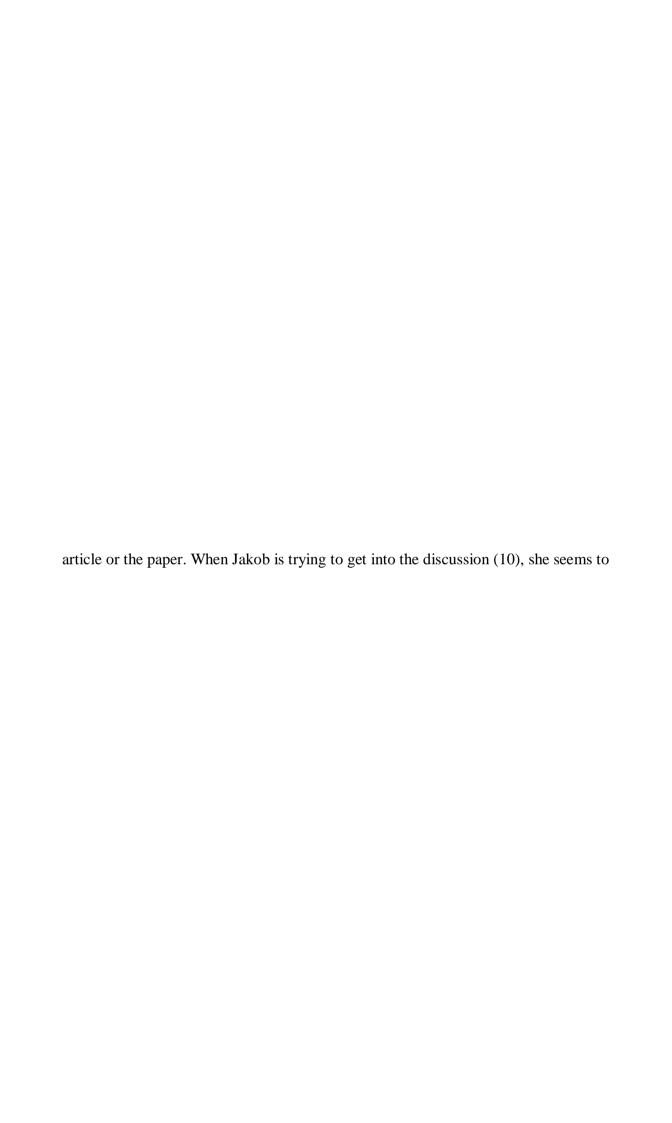


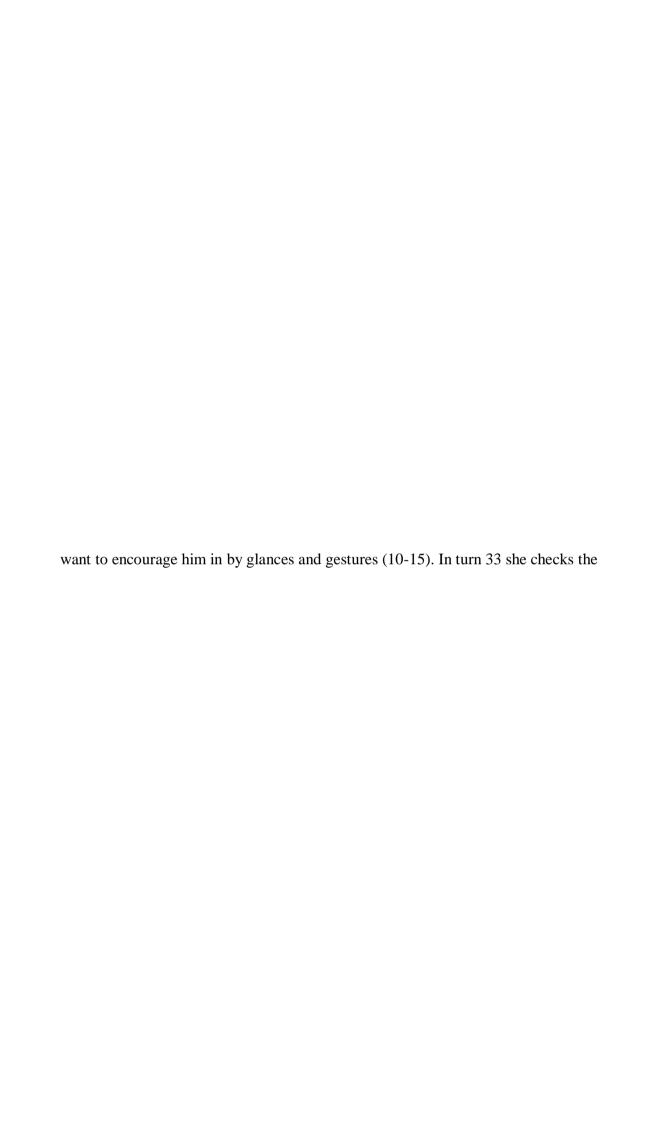
































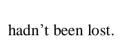
















Sequence 1a	Sequence 1b	Sequence 2	Sequence 3

Total talk	19 turns	23 turns	40 turns	36 turns
(Talk Turns	43 seconds	35 seconds	62 seconds	75 seconds
and time)				

Source (Talk				
Turns and				
%)	8	10	15	12
	42%	43%	37%	33%
Facilitator	11	13	25	24
Students	58%	57%	63%	67%

Form				
Statement	14	17	27	30
Question	5	6	13	6 (2
				by student)

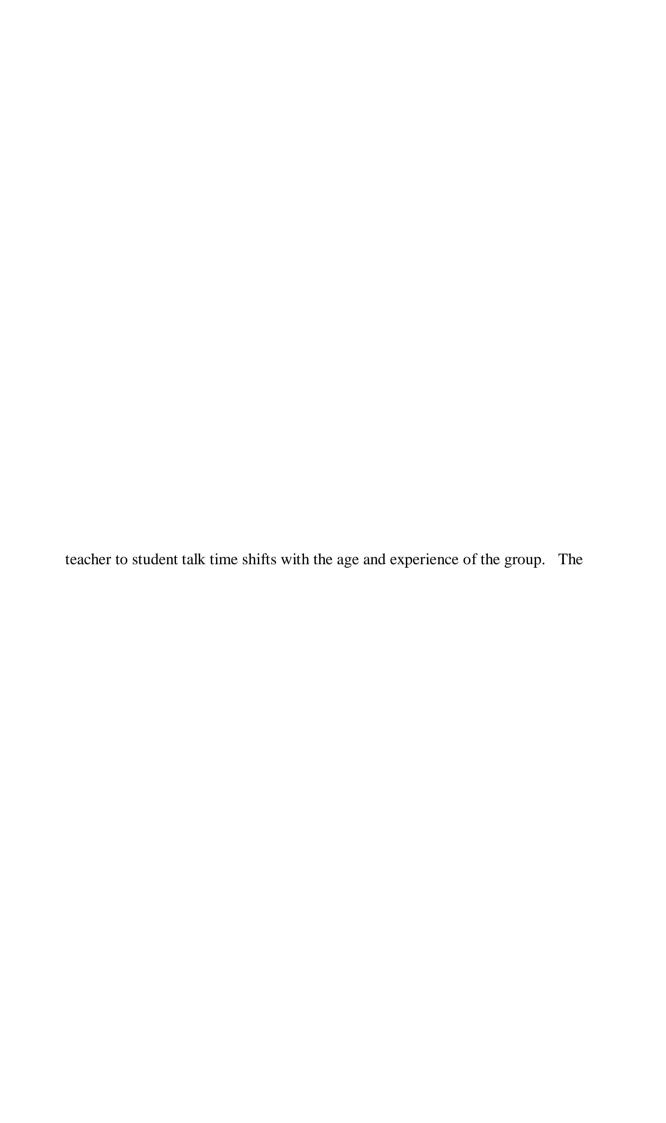
Relation				
Stick	17	22	36	33
Roll	2	1	4	4

Cognitive Process Clarify Analyze Speculate	Evaluate	Apply	Analyze	Evaluate
Synthesize Apply Evaluate	Apply	Evaluate	Apply Evaluate	Apply
Generalize Compare Affirm				

Cognitive Content Text Self Group Other topic Others/	Self Group	Self	Other Self Other	Others/ The World Text Process
Others/ the world				
Process				

Talk and Source: Turns, Time, Teacher and Students



























Relation: Stick and Roll



































interaction.

4. 2 Tow	vards an exten	ded theory of g	roup thinking a	and further rese	arch

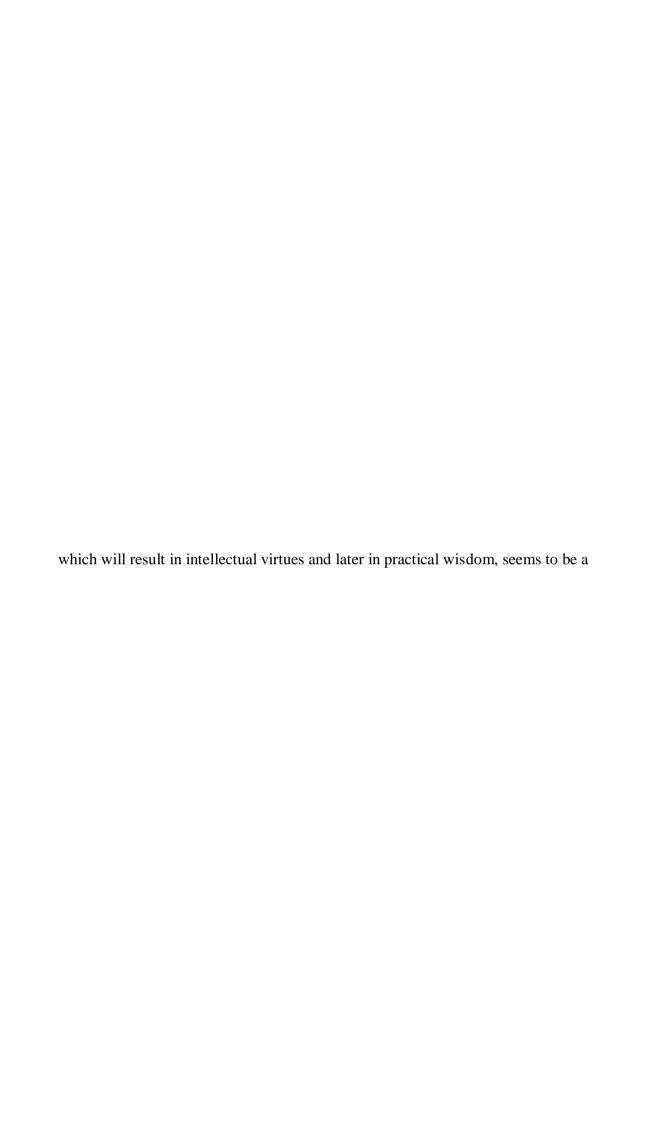




























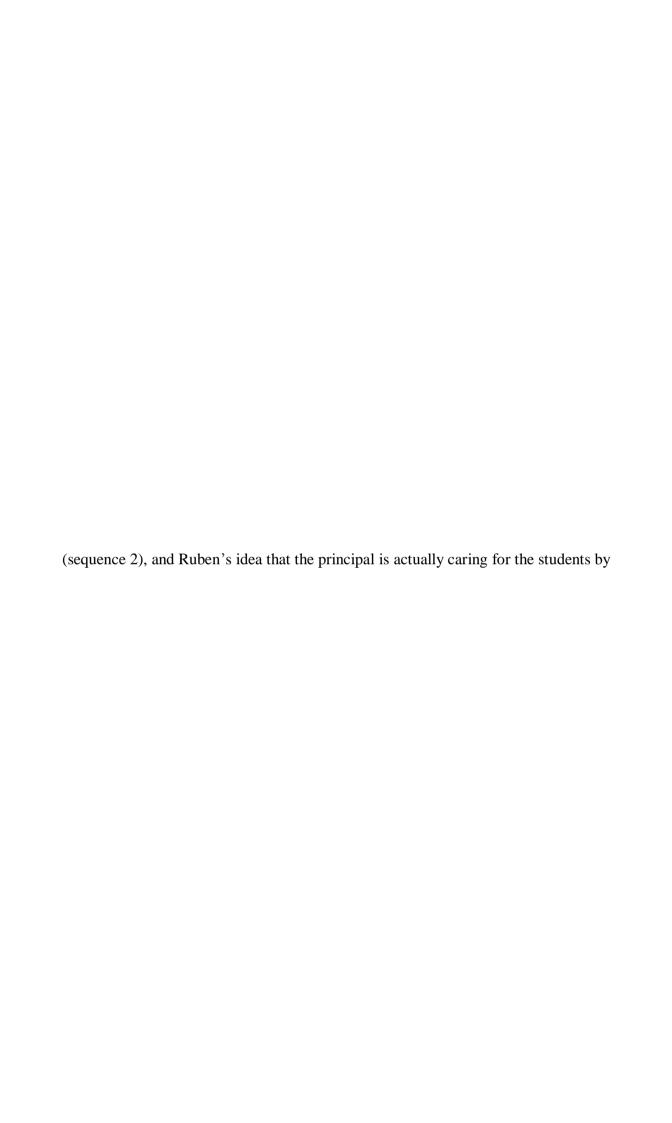












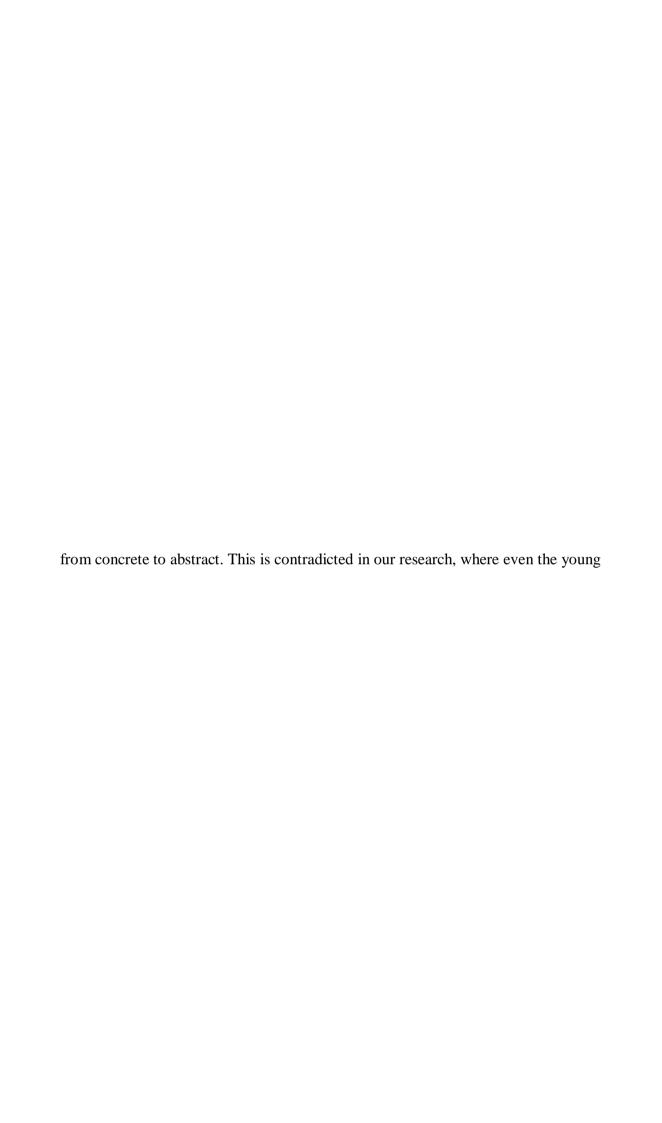






















































Danielewicz, J.M., Rogers, D., Noblit, G. (1996) Children's discourse patterns and



in Education, 9, 311-331.























och litteratur. Stockholm: Natur och kultur, pp. 75-89.



Publications.



























Popper, K. (2007). The Logic of Scientific Discovery. New York: Routledge.



National Paideia Center: North Carolina, U.S. A.









Vol. 57, 69-95.







processes. Massachusetts, USA: Harvard University Press.