
Turn-usurping in dialogic collaborative problem solving

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Introduction

Bakhtinian (1895-1975) dialogic framework

Truth is not born nor is it to be found inside the head of an individual person, it is born between people collectively searching for truth, in the process of their dialogic interaction. (Bakhtin, 1929/1984, p.110).

Introduction

Definition of dialogic collaborative problem solving (D-CPS):

A complex dynamic process whereby two or more consciousnesses, with **equal rights** and each with its own world, combine but are not merged in the unity of solving a shared problem.

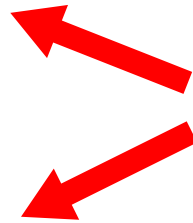
Introduction

The participation shift framework

“the way in which people move themselves and one another onto and off the floor” (Gibson, 2005, p.1,566).

Strengthen the diversity of the participation structure

Individual characteristics?



Participation shift	Formula	Illustration	Description
▪ Turn-receiving	AB-BX		A <u>talks</u> to B, then B talks to X (X could be A or the group).
▪ Turn-claiming	A0-BX		A <u>talks</u> to the group, then B talks to X (X could be A or the group).
▪ Turn-usurping	AB-XY		A <u>talks</u> to B, then to X (X is not B or A) talks to Y (Y could be A, B or the group).
▪ Turn-continuing	AB-AX		A <u>talks</u> to X (X could be the group), then A continues to talk to Y (Y could be the group).

a. The formula denotes the following: (speaker) (target) – (third party) (target of third party). The group is denoted as 0. X and Y represent people other than the neighbouring speaker and target.

Research question

- 1. How does turn-usurping affect the social structure of D-CPS?
- 2. Who is likely to usurp a turn in D-CPS?
- 3. What are the intentions for students to usurp a turn?
- 4. How does turn-usurping shape the flow of group discussion?

Introduction

Factors affecting individual participation rate

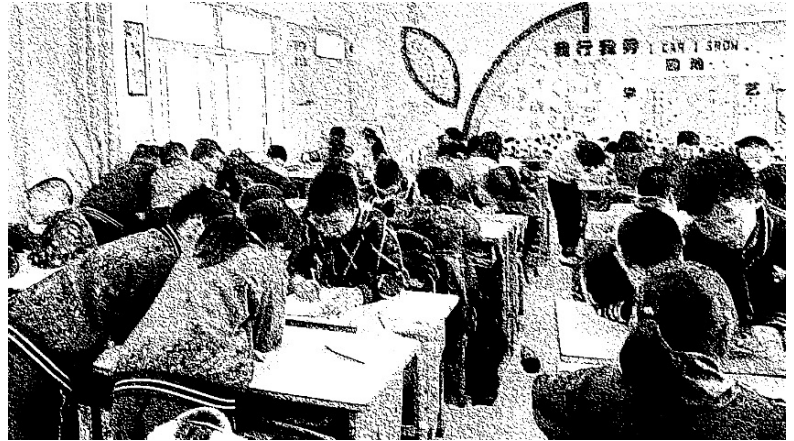
- Academic status (Cohen & Lotan, 2014).
- Students' sense of respect for each member (Boaler, 2008).
- Identity, motivation, confidence, intent (Blue et al., 1998; Fassinger, 1995; Jackson, 2005; Jin, 2017) .
- Task structure (Chizhik, 2001) .
- Collaborative roles (Esmonde, 2009; Shah & Lewis, 2019) .

Method

- RQ1: ANOVA analysis
 - Statistical difference among students with various levels of participation
- RQ2: content analysis, coding and counting approach
 - Intentions of their participation
 - An open coding process based on existing coding schemes on talk moves (Hennessy et al., 2016; Michaels et al., 2010).

Method

- **Participants and procedures**
 - 168 fourth graders from five classes (41% females, 59% males) in a primary school in mainland China.
 - Grouped in four with balanced gender and prior mathematics grades
 - Solve three structured, open-process math problems.



Method

- **Measures**

- Before task: Willingness to collaborate
- After task:
 - demographic information
 - mathematics learning enjoyment
 - mathematics self-concept, and
 - social anxiety
 - Subjective assessment on self and group performance

Method

- **Identification of students of few words**

- Step 1: Exclude groups whose participation inequity (the standard deviation of individual participation rates) was in the fourth quantile.
- Step 2, the least speaking student in each of the left groups was labeled as “Least”; the most speaking one as “most”; and the left two students as “moderate”.



Method

• Identification of turn-taking approaches

- The participation-shift (P-shift) framework (Gibson, 2005)

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Results

Characteristics of students of few words (RQ1)

The present study identified 32 students speaking least from 42 groups.

Variable	Least	Most	Moderate	F-Test	Significant pairwise post hoc tests ^c
percentage	12.40% (4.38%)	37.56% (4.19%)	24.95% (6.75%)	157.89***	Least < Moderate < Most
Claim	27.32% (12.04%)	23.75% (6.92%)	28.29% (9.47%)	2.4	
Receive	27.44% (13.53%)	55.85% (11.34%)	37.93% (14.20%)	37.33***	Least < Moderate < Most
Usurp	44.92% (14.57%)	19.89% (8.66%)	33.40% (13.08%)	31.92***	Least > Moderate > Most
Recent Chinese grade ^a	98.54 (9.68)	107.59 (6.68)	100.83 (11.16)	6.391**	Least < Most; Moderate < Most
Recent mathematics grade ^a	93.13 (12.25)	106.26 (7.73)	100.32 (11.65)	9.075***	Least < Moderate < Most
Mother's education level ^b	2.91 (1.48)	2.68 (1.09)	3.23 (1.35)	1.27	
Father's education level ^b	3.55 (1.57)	3.41 (1.18)	3.51 (1.34)	0.062	
Mathematics self-concept	2.68 (0.74)	3.32 (0.55)	3.15 (0.51)	8.84***	Least < Moderate; Least < Most
Mathematics enjoyment	3.33 (0.66)	3.63 (0.38)	3.58 (0.56)	2.43	
Social anxiety	1.64 (0.45)	1.37 (0.37)	1.53 (0.40)	2.98	Least > Most
Female	0.53 (0.51)	0.56 (0.50)	0.33 (0.47)	3.23*	
Willingness to collaborate	7.01 (1.80)	7.08 (2.07)	6.92 (2.27)	0.054	
Subjective self-assessment	5.96 (2.88)	7.63 (2.12)	6.34 (2.59)	3.26*	Least < Most
Subjective group assessment	6.92 (2.74)	7.56 (1.83)	8.00 (2.25)	1.93	

Results

Contributions of students of few words (RQ2)

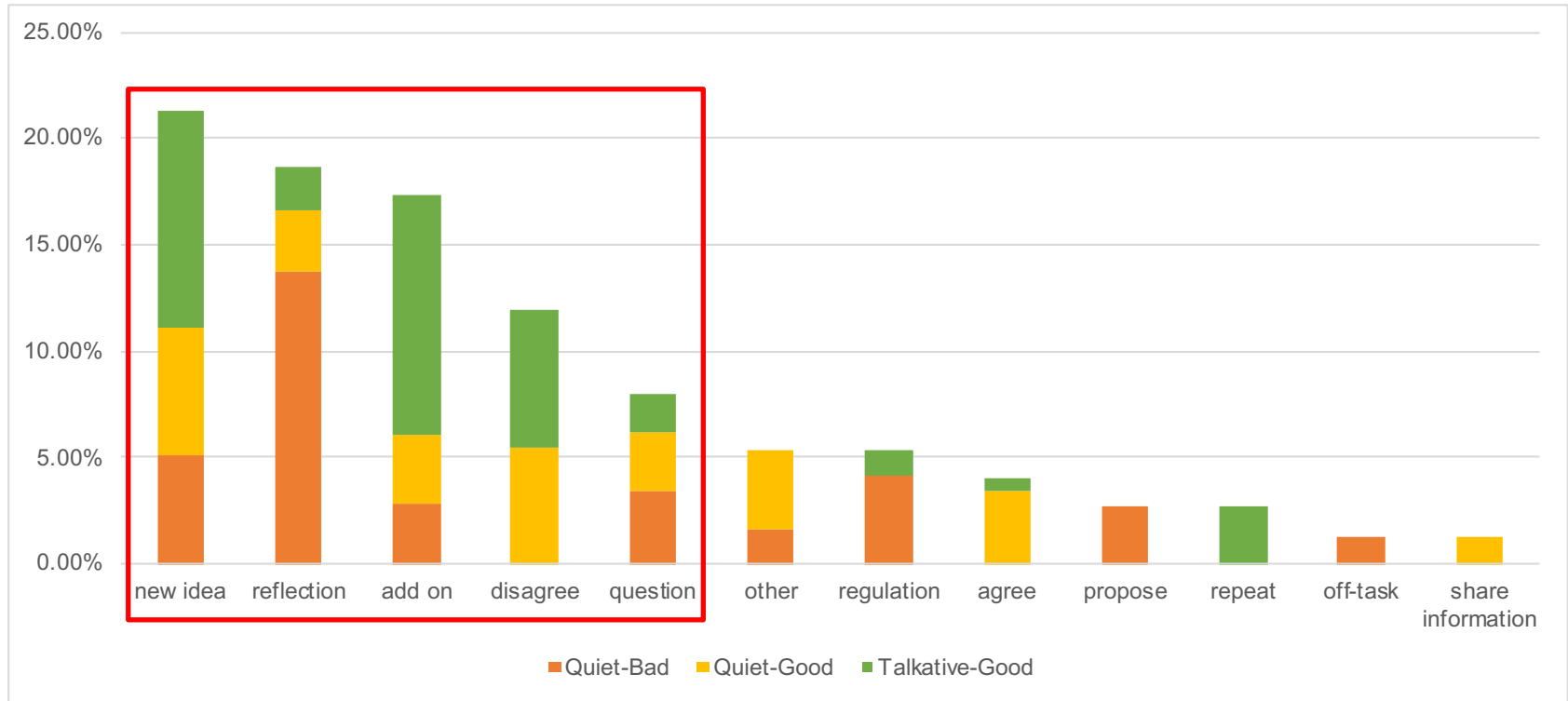
Group	Talkative-Good	Quiet-Good	Quiet-Bad
Number of turns	361	173	126
Group score	7.67	8.33	3.00
Number of turn-usurping	122	56	33
Average prior mathematics grade	105.50	94.75	107.33
(Average) prior mathematics grade of the student speaking least	98.5	96	NA
(Average) prior mathematics grade of the student speaking most	111	106	112

Results

Contributions of students of few words (RQ2)

Students of few words produced productive contributions in group discussion: new idea, reflection, add on, disagree, and question.

Results



Distribution of major intentions of students of few words in three representative groups.

Discussion and conclusion

1. Students of few words in small group discussion tend to be those who are intellectually disadvantaged, socially anxious, and less confident (Blue et al., 1998; Cohen & Lotan, 2014; Fassinger, 1995; Jackson, 2005; Jin, 2017) .
2. This is against the spirit of authentic dialogue described by Bakhtin. Students of few words could not be viewed as equal consciousnesses as their group members by themselves as well as their peers.

Discussion and conclusion

1. Participation equity describes “a condition where **opportunities to participate-and participation itself**-are fairly distributed among all students involved in a learning interaction.” (Shah & Lewis, 2019).
2. Students of few words access the conversation floor mainly through usurping turns from peers.
3. The issue of unequal individual participation rates also deeply connected with the unequal distribution of participation opportunities.
4. Explicit instruction on sense of respect and equity (Boaler, 2008; Cohen & Lotan, 1995)

Discussion and conclusion

1. Students of few words could produce high-quality contributions.
2. Silence does not necessarily indicate lack of learning (Remedios et al., 2008) (Jin, 2017) (O'Connor et al., 2017).
3. Participation inequity may lead to information loss, to dominance by a majority of the team members or to limitations on a team's potential to perform various tasks (Borge & Carroll, 2014; Woolley, Chabris, Pentland, Hashmi & Malone, 2010).

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