

# Effects of Perspective-Taking Through Tangible Puppetry in Microteaching Role-Play

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**Abstract:** Perspective-taking of a wide variety of pupils or students is fundamental in designing a dialogic classroom. As a vehicle of perspective-taking, tangible puppetry CSCL can create a learning environment that reduces the participants' anxiety or apprehension toward evaluation and draw out various types of pupils or students, allowing them to learn various perspectives. A classroom study revealed that the effect of tangible puppetry role-play remained in the immediate transfer task; the participants could elicit a variety of voices from possible pupils even in the self-performed role-play, and as well as on their essay. However, the mutual feedback discussions in the third session changed significantly- as similar to the first trial. This paper discusses necessary future directions to promote better reflection and to deepen perspective-taking through the tangible puppetry.

## Introduction

Designing an effective lesson leveraging dialogic pedagogy is an essential skill for schoolteachers (Mutton, Hagger, & Burn, 2011)—but even for experienced teachers, it is difficult to operationalize in a classroom. In the dialogic classroom, teachers and students address learning tasks, listen to each other, share ideas and consider alternative viewpoints together. Students articulate their ideas freely—without fear of embarrassment over wrong answers— and help each other reach a shared understanding (Alexander, 2008). The teachers need to design a dialogue to stimulate the students' thinking and advance their learning and understanding through structured and cumulative questioning and discussion, without monologic knowledge transmission. To prepare in designing a dialogue which ensures various students' participation, the teachers need to imagine a wide variety of voices of their students and possible reactions and questions (Bahktin, 1981).

Microteaching is one of the ways to practice how to implement dialogic pedagogy in teaching; however, it is not easy to achieve. One of the reasons discussed in the “apprenticeship of observation” framework (Lortie, 1975) is that student teachers and novices experienced monologic teaching as students themselves. However, we argue that there is another difficulty – excessive self-consciousness (Ladrousse, 1989) or evaluation apprehension (Cottrell et al., 1968) during microteaching. The role-play requires (student) teachers to act out young pupils in a realistic way which they may feel difficulty in, creating a tendency to play honest students who follow the teacher's instruction without questioning.

The past study discussed that tangible puppetry can serve as a powerful device for allowing people to overcome emotional or interpersonal obstacles in face-to-face role-play, and for eliciting reactions including inner emotions or unconscious experiences that they have had in a problematic situation (Mochizuki, et al., 2015). Puppetry allows each participant to obtain participant-observer balance by creating a clear separation between self (puppeteer) and non-self (puppet) as well as character (puppet) and observer (puppeteer) while playing a puppetry story, so that participants can use informal/irregular discourse more in the puppetry than in the case of normal self-performed role-plays where they rarely used informal/irregular one (Aronoff, 2005).

We argued that puppetry can be a catalyst material to elicit and learn more realistic students' reactions to foster perspective-taking of a wide variety of students, and developed a tangible puppetry CSCL system to help microteaching role-play in a puppetry format (Mochizuki et al., 2015). The system records the actions and conversations of the participants (hereinafter, the “character”) on top of a transparent table (Figure 1 (a)). In Figure 1, photo (a) shows the system ready to be implemented. Each puppet or prop is attached to a transparent box with an AR marker on the bottom. Each character can express his or her puppet's condition by manipulating a switch to change the color of the LED in the box to either red or blue (Figure 1 (b)). A red LED may represent a sleeping/careless student, and blue an attentive/note-taking student. A web camera and microphone under the table record the puppets' movements and conversations (i.e., the behavior of the characters), by detecting the

AR markers. After the role-play (Figure 1 (c)), the participants can view the recorded puppetry to inspire reflection (Figure 1 (d)). The webpage displays the role-play in animated form from a bird's-eye view.

The present study aims to examine the effectiveness of puppetry microteaching role-play, especially on perspective-taking. We demonstrated the preliminary evaluation of the CSCL system by comparison with self-performed role play. This study examines an immediate transfer of perspective-taking training using the system so that we can discuss further promising ways to nurture the dialogic teaching skills.

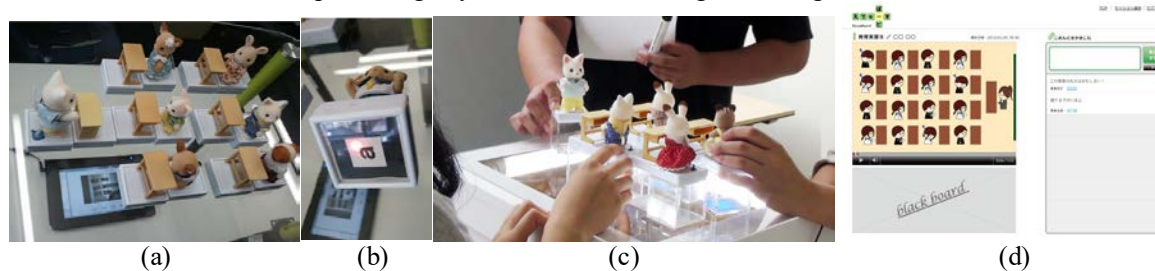


Figure 1. The CSCL system for tangible puppetry.

## Method

### Participants and design

Participants were 36 undergraduate students (Female 66.7%) in a private university Japan, studying to become elementary school teachers and taking a pedagogy course. Students were randomly assigned to groups of three, forming 12 triads. They each conducted self-performed microteaching role-play or puppetry microteaching for 10 minutes. The system described above was used to record the puppetry microteaching, and all the students in each group were video-recorded during the self-performed microteaching, both which were reviewed before the mutual feedback session. This session was conducted in the form of a discussion, lasting for 20 minutes.

To examine the effectiveness of perspective taking in the puppetry role-play, each participant enrolled in one puppetry microteaching and two self-performed microteachings; the first and third participants played the teacher in the self-performed role-plays, and the second participant played the teacher in the puppetry role-play. The rest of the participants played the pupil's role in every session in the same way (i.e., puppetry or self-performance) as the student teacher. Students playing the pupil's role were asked to act realistically, as though they were in an actual classroom. Thus, the first session was designed as the pretest, the second as the intervention, and the third as the posttest to examine the immediate transfer of the puppetry microteaching.

Each microteaching included a role-play and a reflection. Students would watch a video or an animation of the role-play for 10 minutes, and hold a discussion for 20 minutes as mutual feedback. The animation was provided by the system described above, and all the students in each group were video recorded during the self-performed role-play session. After watching the video or animation and mutual feedback by replaying the video/animation, the students wrote a short essay about what they learned through the session.

### Assessment

All the microteaching role-plays and mutual feedback discussions were video-recorded and transcribed (except for one first session in a group due to lack of clear voice recording). Adapting Fujie (2000)'s coding scheme for teacher-student discourse (Table 1), we coded all of the utterances in the puppetry and self-performed role-plays to examine how the students performed ( $\kappa = .827$ ). This scheme was designed to study how classroom discourse is organized, especially focusing on formal academic utterances versus informal or everyday utterances. We aimed to identify any differences in role-play discourse that were due to puppet use. We also analyzed the student discussions for mutual feedback, adapting slightly modified Rosaen et al. (2008)'s coding scheme (Table 2) in order to examine how the students reflected on their role-playing in both conditions ( $\kappa = .723$ ).

Furthermore, the students' essays (except one student's essay due to lack of data) were coded from the viewpoint that each essay included student-centered viewpoints, or/and images of a variety of possible pupils' presence and reactions in an actual classroom ( $\kappa = .866$ ). Two of the authors independently coded all the data, and coding discrepancies were reconciled by mutual agreement.

## Results

The discourse analysis of the microteaching role-play shows that there are various significant associations (Table 3). The categories "Teacher-Informal," "Teacher-Double barreled," and "Student-Informal" are found to have significant increase, and "Student-Formal" decreased significantly in the puppetry. The tendency of

Table 1: Definition of codes for utterances in the role-play simulation of microteaching (Fujie,2000)

Utterances	Definition
Teacher-Formal	A teacher's utterance that follows his/her lesson plan or is academic related
Teacher-Informal	A teacher's utterance based on his or her individual experience and reaction to the students
Teacher-Double barreled	A teacher's utterance reflecting the features of both "formal" and "informal" types
Student-Formal	A student's utterance that follows the teacher's instructions or is academic related
Student-Informal	A student's utterance based on his or her individual experience and intention (not academic)
Student-Double barreled	A student's utterance reflecting the features of both "formal" and "informal" types

Table 2: Definition of codes for utterances in the mutual feedback discussions (Rosaen et al., 2008)

Comments	Definition
Focus on Teacher-Management	Managing students' behavior, role in organization for a smooth lesson flow
Focus on Teacher-Instruction	Instructional strategy that facilitates the cognitive and social interaction around the goals of the lesson; focuses on the teacher's role
Focus on Teacher-Double barreled	Reflecting both "Teacher-Management" and "Teacher-Instruction"; focuses on the teacher's role or behavior
Focus on Student-Management	Managing students' behavior, organization for a smooth lesson flow; focuses on the children's behavior or attitudes
Focus on Student-Instruction	Instructional strategy that facilitates the cognitive and social interaction around the goals of the lesson; focuses on how the students responded to the instruction
Focus on Student-Double barreled	Reflecting both "Student-Management" and "Student-Instruction"; focuses on the students' behavior and their response to the instruction
Student Achievement	Preservice teacher indicates attention to student learning and achievement or assesses student learning
Other	Other comments or utterances to maintain the conversation

discourse in "Student-Informal" remains significantly in the 3rd session (self-performance), and "Student-Double barreled" increased significantly, while "Teacher-Informal" and "Teacher-Double barreled" did not decrease significantly but "Teacher-Formal" decreased significantly. This result indicates that puppetry can allow improvisational role-play that includes a variety of voices from pupils, and the effect remains in the role-play in the immediate transfer session in self-performance.

Analysis of the mutual feedback discussions (Table 4) found that perspectives of the participants tended to return to the similar state as the first session, while we can see a slight increase in "Student

Table 3: Total number of categorized sentences in utterances in the discourse in the microteaching role-play

	1st (Self)	2nd (Puppetry)	3rd (Self)
Teacher-Formal	741 (+)	988	817(-)
Teacher-Informal	21 (-)	101 (+)	48
Teacher-Double barreled	45 (-)	182 (+)	108
Student-Formal	450 (+)	436 (-)	456
Student-Informal	98 (-)	219 (+)	193 (+)
Student-Double barreled	26	43 (-)	106 (+)

Note:  $\chi^2(10) = 168.712$ ,  $p < .01$ , Cramer's  $V = .128$ . (+)(-) are the results based on the residual analysis ( $p < .05$ ). The group which had data missing was excluded.

Table 4: Total number of categorized sentences in utterances in the discussion

	1st (Self)	2nd (Puppetry)	3rd (Self)
Focus on Teacher-Management	468	331 (-)	420 (+)
Focus on Teacher-Instruction	1131 (+)	755 (-)	1073 (+)
Focus on Teacher-Double barreled	37 (+)	33 (+)	5 (-)
Focus on Student-Management	90 (-)	329 (+)	117 (-)
Focus on Student-Instruction	304	340 (+)	177 (-)
Focus on Student-Double barreled*			
Student Achievement	28	20	35 (+)

Note:  $\chi^2(10) = 368.277$ ,  $p < .01$ , Cramer's  $V = .180$ . (+)(-) are the results based on the residual analysis ( $p < .05$ ).

\*Student-Double barreled is merged to Student-Instruction due to few amount of data classified.

**Table 5: Total number of categorized essays written after each session**

	1st (Self)	2nd (Puppetry)	3rd (Self)
1. Student-centered viewpoint(s) included	31	32	29
2. Images of a variety of students' presence & reactions included	6	23	16

Note: A Chi-Square test was conducted for each item separately because the item 1 can include the item 2 as a theoretical construct. For the item 1,  $\chi^2(2) = .182, n.s.$ ; for the item 2,  $\chi^2(2) = 9.73, p < .01$ . Ryan's multiple comparison test on proportions showed a significant difference between the first and the second sessions.

Achievement" in the third session, even though the self-performance role-play in the third session focused on a variety of students' reactions. The analysis of the comprehensive essays (Table 5) shows that there is a significant increase regarding images of a variety of students' presence and reactions, and no significant decrease from the second to the third sessions.

## Discussion and implications

This study shows how the use of puppets - as transitional objects that elicit a projection of self (puppeteer) to non-self (puppet) - elicited a variety of informal discourse that is rarely used in self-performance. Those positive effects were also seen in the self-performance when made just after the tangible puppetry. However, the effects were lost in the mutual feedback discussions in the third session. This suggests that the participants could not take in the multiple perspectives of possible pupils in the self-performed role-play very well.

One possible reason is a lack of diverse perspectives in reflection by the participants; they reviewed the role-plays from a full view (video) or a bird-eye's view (animation) every time. Although the participants were able to provide mutual feedback with diverse perspectives in the second session, that perspective was lost when reviewing the role-plays using video/animation, and no other interventions were provided in the third session. One promising intervention would be a first-person view in the video or the animation. This will allow the participant to review the role-play from each pupil's perspective, and generate a person-centered learning stance and perspective-taking (Lindgren, 2012). Further research on fostering a much deeper perspective-taking is necessary for improving the tangible puppetry CSCL, in order to ensure proper learning through this method.

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## Acknowledgments

This work was supported by JSPS KAKENHI Grants-in-Aid for Scientific Research (B) (Nos. JP26282060, JP26282045, JP26282058, JP15H02937, & JP17H02001) from the Japan Society for the Promotion of Science.