# Developing Argumentation Skills in Elementary Students

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**Abstract:** Collaborative Reasoning (CR) discussions have been shown to support elementary student development of argumentation skills. Prior studies have found improved argumentation skill in transfer tasks from collaborative group work in CR discussions to individual written argumentation. However, little prior research on CR interventions has examined individual student's growth in writing prior to and post CR. This paper explored this area and found that students with relatively lower argumentation skills may benefit more significantly from CR.

## Introduction

The process of learning argumentation skills empowers students to think critically and communicate their ideas in a democratic society. Argument schema theory (AST) posits that engaging in dialogic interactions develops competency in student argumentation (Reznitskaya et al., 2009). Within this field, Collaborative Reasoning (CR) discussions have been shown to promote cognitive and social learning in student groups (Reznitskaya, Anderson, & Kuo, 2007). Further, past research has found learning within oral group argumentative discussions transfers to individual student argumentative writing (e.g., Zhang et al., 2016). However, prior studies have not examined the variation in individual students' shifts in argumentation as a result of CR discussions.

We believe this study was the first to look at within-subject changes in student argumentation skills as a result of engaging in CR discussions. Specifically, our study asked how individual student argumentative writing changes as a result of experiencing CR discussions. This study expands on prior research by illustrating the effects of CR discussions on those that do not possess the targeted argumentation skills prior to the intervention. Prior researchers have identified recognizing alternative perspectives and providing breadth of reasoning as likely transferable argumentation skills when moving from oral CR discussions to individual student writing (Kim, Anderson, Miller, Jeong, & Swim, 2011). In this present study, we further refined and expanded on the consideration of what it entails to recognize alternative perspectives and present a breadth of reasons.

## Methods

Seventy-six students from three fourth grade public school classrooms in a northwestern state participated in this study. A sample of twenty students from one classroom that completed both the pretest and posttest writing task and had participated in all or nearly all of the CR discussions were included in the present analysis.

Pretest and posttest essays were coded for evidence of students taking perspective in their writing and the breadth of their reasoning in their argumentation. Two aspects of taking perspective were measured. First, essays were analyzed to determine whether students presented both sides of an argument to the reader (external perspective), indicated primarily by whether counterarguments were included. Essays were coded as presenting both sides (robust) or presenting only one side (limited). Novel to this study, we further examined the number of possible perspectives from within the scenario that students considered (internal perspective), such as the perspectives of main or secondary characters in the scenario as well as societal norms. Students considered between as few as one (limited) and up to five (robust) perspectives from the scenario in their writing. Finally, essays were analyzed based on the breadth of reasoning students used. Essays were broken first into idea units (Mayer, 1985), and then grouped into lines of reasoning which contained one or more related idea chunks presented in sequence. Each separate and unique line of reasoning was counted to examine breadth of reasoning. Essays ranged in breadth from citing few (only one or two) reasons (limited) to many (three to nine) lines of reasoning (robust) to support their stated position(s).

The following student example, which contains two positions, three scenario perspectives, and four lines of reasoning, shows how the coding scheme was utilized to assess argumentation skill. Note that while all essays are written from Jack's perspective (as per the essay prompt), this essay and many others showed that the student authors considered the internal perspectives of various roles within the scenario while standing in Jack's shoes.

> No, I think that Jack **should not tell** on Thomas because / *[position 1: DON'T TELL]*
> like Jack said Thomas always he **wore clothes that were dirty and smelled funny** /

 

*[perspective 1: THOMAS; reasoning 1: THOMAS IS UNFORTUNATE]*

and Jack **felt sorry** for Thomas / *[perspective 2: JACK; reasoning 2: JACK'S CHARACTER]*

**even though** Thomas' brother **helped** / *[pos. 2: TELL; persp. 3: NORMS; reasoning 3: CHEATING]*

like Jack said Thomas **probably never won something** in his entire life /

*[pos. 1 rpt: DON'T TELL; persp. 1 rpt: THOMAS; reasoning 4: T IS UNFORTUNATE (new)]*

## Findings

Our analysis of the pretest essays showed that, in general, these students already had strong argumentation skill prior to the introduction of CR discussions (see Table 1). Most students independently presented both sides of the argument, considered more than one perspective in the story, and/or cited at least three reasons to support their argument before experiencing any part of the intervention. In examining the overall posttest results, class performance was improved, with gains in all three skills. When examining the minority of students that demonstrated relatively lower skill in the pretest, the gains showed in the posttest were particularly pronounced: nearly all of them produced writing with improved argumentation in all three dimensions.

Table 1: Shifts in posttest performance in argumentation competency

| Evidence of argumentation | Pretest competency rate (robust argumentation) | Posttest competency rate (robust argumentation) | Posttest growth in writers initially demonstrating limited competency | Posttest regression in students initially demonstrating robust competency |
|---|---|---|---|---|
| External perspective: presented both sides | 11/20 (55%) | 12/20 (60%) | 5/9 (56%) | 4/11 (36%) |
| Internal perspective: considered multiple roles | 17/20 (85%) | 20/20 (100%) | 3/3 (100%) | 0/17 (0%) |
| Reasoning: cited 3 or more reasons | 17/20 (85%) | 20/20 (90%) | 3/3 (100%) | 0/17 (0%) |

## Conclusion

Small changes in group results from pretest to posttest may mask the individual student growth that CR imparts, particularly for students with initially low argumentation skills. Nearly all low performing pretest writers improved their argumentation after the CR discussions. This is a notable outcome and worth further exploration to determine if it is replicated in the other two classes in this study and in future studies. The preliminary results of this study suggest that the social learning of argumentation in CR may be of particular benefit to lower skilled learners.

## References


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