

Chapter 23

Examining the Effects of Philosophy Classes on the Early Development of Argumentation Skills

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Introduction

Theories of learning have long emphasized the essential role of social factors in the development of early reasoning abilities (Vygotsky 1962). More recently, it has been proposed that the presentation of conflicting perspectives may facilitate children's understanding of knowledge claims as potentially subjective—one of many possible representations of the world (e.g., Cook & Schulz 2008; Felton 2004). Understanding the inherent subjectivity of knowledge claims is an important determinant of intellectual performance and is central to the development of reasoning abilities that are critical for academic success (Kuhn & Udell 2006). Despite these claims, there has been a surprising lack of empirical research that explores the effects of exposure to conflicting perspectives in the classroom on the development of children's early ideas about subjectivity and the subsequent development of argumentation skills. This chapter describes the methods and results of a research program that was designed to explore whether the dialogue-based pedagogical model that lies at the heart of the Philosophy for Children programs influences early epistemology and the development of argumentation skills in early childhood.

Understanding Subjectivity and the Development of Argumentation Skills

Coming to understand that the mind actively influences the representation of knowledge and contributes to the formation of beliefs is a major cognitive milestone in early childhood (e.g., Astington, Harris, & Olson 1988; Perner 1991). By age seven, children begin to show explicit understanding that reality itself may be open to a variety of interpretations—that a given knowledge claim is not a direct reflection of reality, but rather a representation of the world that is generated by human minds in a social context (Kuhn, Cheney, & Weinstock 2000). For example, children discover that knowledgeable people—even experts—often disagree, and that people’s varying exposure to different experiences may lead to differences in their knowledge or the unique perspectives about the same scenario. Children therefore develop an appreciation that it is possible for people to hold conflicting beliefs about the same event (Taylor, Cartright, & Bowden 1991) and that knowledge claims are open to interpretation and evaluation.

One cognitive skill that appears to be highly correlated with this developing understanding of the nature of knowledge is the ability to understand and produce sound argumentation (Kuhn 1991; Mason & Boscolo 2004; Weinstock & Cronin 2003). Because good argumentation skills require that one be able to engage with the view that one intends to argue against, successful argumentation hinges upon the ability to consider the possibility of multiple perspectives. In other words, claims must be understood to be open to evaluation in order to be a candidate for productive argumentation.

In support of this proposal, Felton and Kuhn (2001) demonstrated that when social and verbal production demands are factored out, the failure to consider the opposing view remains the

critical weakness in students' performance in argument tasks. According to Graff (2003), students who simulate an imaginary opponent when producing written arguments produce more authentic and meaningful content and structure in their work. Further, previous research on the development of argumentation abilities has suggested that unskilled arguers tend to focus too heavily on providing sufficient support for their own claims, and therefore repeatedly ignore the claims of their opponent (Kuhn & Udell 2007). This is characterized by the novice's failure to consider the dual objectives in argumentation: (1) to evaluate incoming information from an interlocutor, and (2) to formulate a response that effectively clarifies the merits of one's own position. This process of coordinating opposing perspectives involves embracing the potential subjectivity of knowledge claims—a skill that develops over the course of early childhood.

The Benefits of Dialogue

One type of experience that may be essential to coordinating objective and subjective elements of knowing is the opportunity to engage in dialogue in both formal classroom settings and in everyday social contexts with peers. Dialogue exposes the learner to the presence of conflicting views about a particular topic, and thereby encourages evaluation of the relative merits of each of these views. Dialogue-based pedagogy has therefore been proposed to encourage the development of students' knowledge about *how* to think critically, as well as *what* to think critically about (Reznitskaya et al. 2009).

In a review of 19 studies on dialogic interaction in adolescents, Webb (1989) reports a strong correlation between student achievement and group interaction when students were asked to produce explanations or elaborations during class discussion. In reviewing the literature on the educational importance of these types of interactions, Glachan and Light (1982) concluded that

cognitive benefits are most pronounced when students offer support for their own opinion and offer counterarguments against a conflicting claim through dialogue, and that differences in student perspectives that promote socio-cognitive conflict lead to greater learning. More recently, a variety of studies examining adolescents and adults have shown that participation in dialogue in the classroom leads to measurable improvements in written argumentation skills (e.g., Kuhn et al., 1997; Kuhn & Crowell 2011). For example, Kuhn et al. (1997) traced the appearance of argument elements in a writing task to the presence of those same elements during informal exchanges that had taken place among study participants prior to the task.

Despite this growing body of research that supports the benefits of engaging in dialogical interaction, few studies have examined how this may be successfully incorporated in the classroom (Kuhn & Crowell 2011; Nussbaum 2008). A recent multiyear study conducted by Kuhn and Crowell (2011) examined the effect of a novel educational method that explored the role of dialogic interaction on developing the maturity of written arguments in middle school students. Students who were encouraged to engage deeply with the discussion topics over the course of multiple semesters and produce relevant evidence for both sides of each topic showed significant improvements in their subsequent use of evidence in written essays. While this educational program demonstrated that argumentative reasoning skills can be successfully assessed and developed in the classroom, this method requires a large time investment in “non-curriculum-embedded” material and is specifically designed to be applicable to older students.

The study reported here assessed the effects of a short-term, dialogue-based pedagogical program that is accessible to much younger students (aged seven–eight), and easily embedded within a typical elementary school curriculum without special teaching materials or training. Unlike in previous work, the current program does not directly teach argumentation skills or expose

students to novel content in the classroom. Instead, the goal of this educational program was to explore the potential effects of early, informal exposure to the presence of multiple, potentially conflicting perspectives in a familiar, naturalistic context.

Pedagogical Method: Philosophy for Children

The educational method investigated was based upon the Philosophy for Children (P4C) program developed by Matthew Lipman in the 1970s that introduces dialogic inquiry in elementary school classrooms (Lipman 1981). There is now a growing body of research examining the educational benefits of this program. Lipman's method is based on reading and discussing philosophical novels in elementary school classrooms, and is typically introduced to children at about the age of six. During each P4C session, children listen to a chapter from one of the novels, and then engage in collaborative dialogue about the philosophical content and themes. Using this method, P4C creates a "community of inquiry" in the classroom, in which the teacher facilitates student discussion in a supportive environment. The stated goal of the program is to "improve children's reasoning abilities and judgment by having them thinking about thinking as they discuss concepts of importance to them" (Lipman 1981, p.37).

While there is a large literature reporting the various benefits of the P4C program, there are a limited number of controlled experimental designs investigating its effects (Trickey & Topping 2004). In one longitudinal study examining the short- and long-term benefits of P4C on elementary school students, Topping & Trickey (2007a) demonstrated significant improvement on student performance on verbal and nonverbal aspects of the Cognitive Abilities Test (CAT3) following 16 months of weekly instruction. This benefit was maintained over the subsequent 2 years, even after students had transferred to secondary school with no further philosophical training. Using

longitudinal data from this same study, the authors investigated the quantity and quality of teacher-student and student-student dialogue in the classroom to assess the impact of P4C on promoting participation in dialogic inquiry (Topping & Trickey 2007b). Results demonstrated increases in teacher use of open-ended questioning, proportion of student engagement in dialogue, number of student's reasoned responses to another's view, and amount of support provided for the student's own views.

The Current Study

Across the diverse set of research paradigms exploring the benefits of P4C and related philosophy programs, the strength of this pedagogical model has been largely attributed to its use of the dialogic process. Here, we report the procedures and results from a recent study exploring the benefits of this model on the development of argumentation skills in young children (Walker, Wartenberg, & Winner, 2012). The particular philosophy program that we assessed is a method called "Teaching Children Philosophy" (Wartenberg 2009), which largely shares the theoretical orientation and educational goals of the original P4C program from which it evolved. Unlike P4C however, Wartenberg's (2009) curriculum does not require special training or materials, and is based upon well-known works of children's literature that are broadly accessible. The stated goal of the program is to assist children to engage in productive dialogue with one another and help them to "discover, express, and support their own answers to questions that concern them" (Wartenberg 2009, p. 17). Previous research in educational psychology has shown that collaborative discourse is fostered when teachers solicit explanations of students (with some prompting for elaborative thinking), rather than provide explanations of material (Webb et al. 2008). This type of student-

focused model is the central pedagogical technique utilized by the Teaching Children Philosophy program. At the beginning of each philosophy class session, children are introduced to six rules for discussion: (1) state your position, (2) figure out if you agree or disagree, (3) present a real example of the abstract issue being discussed, (4) present a counterexample to a claim that has been proposed, (5) offer a revised version of the claim, and (6) support your position. This program therefore creates a supportive environment that explicitly introduces the concept of the subjectivity of ideas through collaborative discourse in a naturalistic setting.

Experimental Design and Procedure

The experiment assessed the effects of a 12-week semester of philosophy classes on the development of argumentation skills in seven-year-old second grade students. This study sought to confirm claims regarding the impact of dialogic interaction on argumentation across a variety of knowledge domains, and to extend this work to assess much younger children. It was hypothesized that participation in philosophy classes would lead to general improvement in even very young students' ability to both support their own perspective and consider the opposing perspective when confronted with conflicting claims.

Twenty-three second grade students participated in the study. Children were recruited from a single second grade class at an international public charter school in Massachusetts, and most children were bilingual in English and Chinese. None of the children had been exposed to a philosophy program prior to enrolling in the study. Research was conducted over the course of one academic year. Children were randomly assigned to either the philosophy or control program (art history) for the first semester, and received the alternate program in the second semester. Eleven

children received the philosophy class in the first semester; 12 children received the philosophy class in the second semester.

Each philosophy session occurred once a week for a 12-week semester and was taught by a trained undergraduate instructor who read a preselected picture book aloud to the children. Books were chosen based on their philosophical content, and all of the standard fields of philosophy, from epistemology and metaphysics to ethics and aesthetics, were covered by the various picture books. This read-aloud activity served to initiate a child-centered discussion about the issues raised by the book, during which children were encouraged to engage in dialogue with one another, with the instructor acting as facilitator. The instructor asked open-ended questions to initiate the discussion in order to get the children to reflect on the philosophical issues in the books. The children were asked to respond, to support their ideas with explanations, and to say whether and why they agreed or disagreed with one another (for a detailed description of the method, see Wartenberg 2009).

An art history program served as the control for the philosophy program. Because we were particularly interested in assessing the role of dialogue, the art history class was designed to be as similar as possible to the philosophy class, but without any dialogical interaction. Both groups read a picture book each week, with the philosophy group reading a book with philosophical content, and the art history group reading a book about a well-known artist (e.g., Leonardo da Vinci, Henri Matisse). Those in the philosophy group engaged in group dialogue after the reading, while those in the art group created an art project inspired by the artist of the week. The same teacher taught both the philosophy and the art history classes for each group, and art history and philosophy classes were identical in length and frequency.

Three individual assessments of argumentation skills were administered over three time points and served as pre- and post-program measures for both semesters: a pretest one week prior to

the first semester (time 1); posttest 1 one week after the first semester (time 2); and posttest 2 one week after the second semester (time 3). Testing took place in 20-minute, one-on-one sessions with the experimenter, and all testing sessions were audio recorded for later analysis.

The argumentation skills task was adapted from an assessment originally designed by Valle, Tighe, and Hale (2009). The task presents children with a four-page illustrated book depicting conflicting claims chosen to be relevant to children. Each page represented a conflicting claim from one of four domains of knowledge: (1) aesthetic (e.g., rock music is better/classical music is better), (2) value (e.g., children should/should not be allowed to have candy in school), (3) social (e.g., children learn more from family/friends), and (4) physical (e.g., there is/is not life on other planets). On each page, children were presented with both sides of the conflicting claim. The following is an example from the value domain: *“Some school lunchrooms offer soda and candy to students. Some people say that soda and candy should be sold in the lunchroom at school. They think that kids should decide what they eat and drink. Other people say that soda and candy should not be sold in the lunchroom at school. They think that parents should decide what kids eat and drink.”*

Children were asked to report which side they agreed with. Children were then asked the following four questions: (1) “Why do you agree with that side?” (*own argument*), (2) “Can you be sure that you are right?” (*certainty*), (3) “Is it possible you could learn something new that would make you change your mind?” (*falsifiability*), and (4) “What would someone from the other side say if he/she were trying to convince you that he/she was right?” (*opposing argument*). The order of presentation of the four kinds of claims was randomized, and three versions of each book were created, one with each order. One third of the children received each version at each time point to avoid practice effects. Pilot testing determined that the three versions of the task were highly correlated and yielded no difference in performance.

Responses were scored for each conflicting claim, based upon the maturity of participant answers. Questions assessing *own* and *opposing arguments* were scored from zero to four. Zero points were awarded in cases where no answer was provided (e.g., “I don’t know.”). One point was awarded for simply choosing a side or repeating the claim provided in the book (e.g., “Children should not have candy in school because parents should decide what they eat.”). Two points were awarded for citing the word “evidence” or “proof,” or for recognizing the need for evidence by some form of irrelevant supporting information (e.g., “Children should not have candy in school because there is proof that parents should decide what they eat,” or “Children should not have candy in school because school is for learning math.”). Three points were awarded for providing relevant but anecdotal evidence from personal experience (e.g., “Children should not have candy in school because once I got a tummy ache from too much candy.”). The full four points were provided for supporting their chosen side with relevant, non-anecdotal evidence (e.g., “Children should not be allowed to have candy in school because parents know what is good for their kids, and they know that sugar will make kids crazy and they won’t be able to sit still in class.”). Because there were a total of four claims, participants could receive up to 16 points for the *own argument* questions and 16 points for the *opposing argument* questions, yielding a total of 32 possible points. Two trained raters who were blind to the child’s assigned group independently scored responses. Inter-rater reliability was high with a mean of 95 percent agreement.

Questions assessing children’s *certainty* and their beliefs about *falsifiability* were scored from zero to two. One point was awarded when responses indicated lack of absolute certainty, and one point was awarded when children endorsed the potential falsifiability of their chosen claim. Participants could therefore receive up to two points for each of the four knowledge claims, yielding a total of eight possible points for these items.

Results

Results of the questions assessing children's *own* and *opposing arguments* appear in Figure 23.1 below (reprinted from Walker et al., 2012). Time 1 was the pretest for both groups; time 2 was the a posttest for the first semester philosophy group and the pretest for the philosophy 2nd semester group; time 3 was the long-term posttest for the first semester philosophy group and the posttest for the second semester philosophy group.

There was no difference in argumentation skills between the philosophy and control group at time 1 (pretest). At time 2 (posttest for the first semester program), the philosophy group significantly outperformed the control group. Additional analyses of children's scores at times 1 and 2 revealed that the scores of the philosophy group increased from pretest to posttest, while the scores of the control group remained stable. At time 3 (long-term posttest for the first semester philosophy group and posttest for the second semester philosophy group), there was no difference between groups. Results from time 3 therefore replicate results from time 2 with the second semester philosophy group, who demonstrated improvement equal to that of the first semester philosophy group. These results also demonstrate that the first semester philosophy group improvements in argumentation skills did not decline following a subsequent semester without further philosophy training (See [Figure 23.1](#)).

[INSERT FIG. 23.1 HERE]

We next analyzed children's responses to each of the questions individually. Because the *own argument* and *opposing argument* questions assess performance on distinct argumentative skills—producing arguments that support one's own views and producing arguments that support

alternative perspectives to one's own views (see Mercier 2011)—we were particularly interested in assessing whether the philosophy program targeted one skill over the other. Responses to both types of questions paralleled the overall pattern of performance on the task. While scores on responses supporting the child's own argument were generally higher than scores on responses supporting the opposing argument at both pre- and posttests, performance on both types of responses showed similar patterns of improvement following the program: there was an effect of the philosophy program on children's arguments that were consistent with their own view and those consistent for the opposing view. However, there was no effect of the philosophy intervention on children's *certainty* or beliefs about the *falsifiability* of their views.

This study demonstrates that when young children are asked to consider conflicting claims, their argumentation skills improve. This program led to improvements in generating an argument, and this improvement was maintained following a subsequent semester without further philosophy training. These results provide support for the impact of exposure to dialogic interaction in a pedagogical context on argumentation skills in very young children.

Conclusion

There are few pedagogical models that have been shown to support the development of critical thinking skills in very young children. The experiment presented here shows that children as young as seven years old improve their argumentation skills when they are encouraged to ask questions, justify their own reasoning, and evaluate the reasoning of other individuals in the classroom. Children who received the philosophy program demonstrated greater skill in their capacity to attend to the subjective element in generating a novel argument. These findings contribute to our

understanding of how dialogic inquiry and naturalistic exposure to conflicting beliefs fosters the development of argumentation skills and awareness of subjectivity (Duschl & Osborne 2002; Lehrer, Schauble, & Lucas 2008). This style of inquiry has been shown to support learning and promote maturation of metacognition in the development of scientific thinking (e.g., Kelly & Crawford 1997; Polman & Pea 2001; Wertsch 1991), and the current studies extend the potential benefits of these cognitive gains to very young children's beliefs about the subjectivity of knowledge in other domains as well. More generally, these findings support claims regarding the role of social factors in learning and reasoning, and show that exposure to contrastive beliefs in the context of collaborative discourse has important effects on the development of early reasoning.

This research has implications for classroom practices, in which teacher-fronted, monological, and traditional methods have remained the dominant pedagogical strategies for elementary education (Alexander 2003). Educators' resistance to embracing dialogic interaction in the classroom is most commonly attributed to the complexity and potential inconsistency associated with its implementation (Reznitskaya et al., 2009). Introducing a Philosophy for Children program in elementary school classrooms may help teachers to use effective dialogical processes. Additional longitudinal research examining the benefits of introducing dialogic inquiry to elementary education is necessary to explore the potential long-term benefits for critical thinking skills and academic achievement.

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References

- Alexander, R. J. (2003). *Talk for learning: The first year*. Northallerton, UK: North Yorkshire County Council.
- Astington, Janet W., Harris, Paul L., & Olson, David R. (1988). *Developing theories of mind*. Cambridge: Cambridge University Press.
- Cook, C., & Schulz, L. (2009). *Bob thinks this but Emily thinks that: Contrastive beliefs improve kindergartners' scientific reasoning*. 31st Annual Proceedings of the Cognitive Science Society Conference in Amsterdam, Netherlands.
- Duschl, R., & Osborne, J. (2002). Supporting and promoting argumentation discourse in science education. *Studies in Science Education*, 38: 39–72.
- Felton, M. K. (2004). The development of discourse strategies in adolescent argumentation. *Cognitive Development*, 19: 35–52.
- Felton, M. K., & Kuhn, D. (2001). The development of discourse strategies in adolescent argumentation. *Cognitive Development*, 19, 35–52.
- Galchan, M., & Light, P. (1982). Peer interaction and learning: Can two wrongs make a right? In G. Butterworth & P. Light (Eds.), *Social cognition: Studies of the development of*

- understanding* (pp. 238–262). Chicago, IL: University of Chicago Press.
- Graff, G. (2003). *Clueless in academe: How schooling obscures the life of the mind*. New Haven, CT: Yale University Press.
- Kelly, G. J., & Crawford, T. (1997). An ethnographic investigation of the discourse processes of school science. *Science Education*, *81*(5): 533–560.
- Kuhn, D. (1991). *The skills of argument*. Cambridge: Cambridge University Press.
- Kuhn, D., Cheney, R., & Weinstock, M. (2000). The development of epistemological understanding. *Cognitive Development*, *15*, 309–328.
- Kuhn, D., & Crowell, A. (2011). Dialogic argumentation as a vehicle for developing young adolescents' thinking. *Psychological Science*, *22*(4): 545–552.
- Kuhn, D., Shaw, V., & Felton, M. (1997). Effects of dyadic interaction on argumentative reasoning. *Cognition and Instruction*, *15*, 287–315.
- Kuhn, D., & Udell, W. (2007). Coordinating own and other perspectives in argument. *Thinking and Reasoning*, *13*, 90–104.
- Lehrer, R., Schauble, L., & Lucas, D. (2008). Supporting development of the epistemology of inquiry. *Cognitive Development*, *23*(4): 512–529.
- Lipman, M. (1981). Philosophy for Children. In A. L. Costa (Ed.), *Developing minds: Programs for teaching thinking* (pp. 35–38). Alexandria, VA: Association for Supervision and Curricular Development.
- Mason, L., & Boscolo, P. (2004). Role of epistemological understanding and interest in interpreting a controversy and in topic-specific belief change. *Contemporary Educational Psychology*, *29*: 103–128.

- Mercier, H. (2011). Reasoning serves argumentation in children. *Cognitive Development*, 26(3): 177-191.
- Nussbaum, E. M. (2008). Collaborative discourse, argumentation, and learning: Preface and literature review. *Contemporary Educational Psychology*, 33(3): 345–359.
- Perner, J. (1991). *Understanding the representational mind*. Cambridge, MA: MIT Press.
- Polman, J., & Pea, R. (2001). Transformative communication as a cultural tool for guiding inquiry science. *Science Education*, 85(3): 223–238.
- Reznitskaya, A., Kuo, L., Clark, A., Miller, B., Jadallah, M., Anderson, R. C., & Nguyen-Jahiel, K. (2009). Collaborative reasoning: a dialogic approach to group discussions. *Cambridge Journal of Education*, 39(1): 29–48.
- Taylor, M., Cartwright, B., & Bowden, T. (1991). Perspective taking and theory of mind: Do children predict interpretive diversity as a function of differences in observers' knowledge? *Child Development*, 62: 1334–1351.
- Topping, K. J., & Trickey, S. (2007a). Collaborative philosophical inquiry for schoolchildren: Cognitive gains at 2-year follow-up. *British Journal of Educational Psychology*, 77: 787–796.
- Topping, K. J. & Trickey, S. (2007b). Impact of philosophical enquiry on school students' interactive behavior. *Thinking Skills and Creativity*, 2: 73–84.
- Trickey, S., & Topping, K. J. (2004). Philosophy for children: A systematic review. *Research Papers in Education*, 19(3): 365–380.

Valle, A., Tighe, E., & Hale, J. (2009). Domain-related patterns in epistemological understanding: Evidence from questionnaire and parent-child conversation data. Poster presented at *Society for Research in Child Development*.

Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

Walker, C.M., Wartenberg, T., & Winner, E. (2012). Engagement in philosophical dialogue facilitates children's reasoning about subjectivity. *Developmental Psychology*, appeared in online first publication, September 3, 2012. doi: 10.1037/a0029870

Wartenberg, T. (2009). *Big Ideas for Little Kids: Teaching Philosophy Through Children's Literature*. Maryland: Rowman & Littlefield Education

Webb, N.M. (1989). Peer interaction and learning in small groups. *International Journal of Educational Research*, 13: 21–40.

Webb, N. M., Franke, M. L., Ing, M., Chan, A., De, T., Freund, D., & Battey, D. (2008). The role of teacher instructional practices in student collaboration. *Contemporary Educational Psychology*, 33(4): 360–381

Weinstock, M. & Cronin, M.A. (2003). The everyday production of knowledge: Individual differences in epistemological understanding and juror-reasoning skill. *Applied Cognitive Psychology*, 17: 161–181.

Wertsch, J. (1991). *Voices of the mind*. New York: Harvester.

Figure 23.1. Mean score (out of a possible 32) for first and second semester philosophy students on the argumentation skills assessment. Mean score includes the combined score for *own argument* and *opposing argument* questions for each of the four domains. Time 1 served as a pretest for both

groups, time 2 served as a posttest for the first semester philosophy group and a pretest for the philosophy second semester group, and time 3 served as a long-term posttest for the first semester philosophy group and a posttest for the second semester philosophy group. (Reprinted with permission from Walker et al., 2012)