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Place of Dialogue in Argumentative Writing: A Study

Dr Bhavdip Chavda

Assistant Professor,

Bhakta Kavi Ala Khachar Government College, Gadhada

Abstract:

An essential part of our approach to developing argumentative writing is to use a dialogic approach, in which students actively participate in a conversation with peers, which offers both an audience and a purpose for the activity. It took place over the course of a school year in which sixth graders debated a variety of themes on the internet with their peers and wrote individual essays on each of them. To put it another way, as compared to a non-participating group, they showed far greater coordination ability. In particular, they displayed a stronger ability to use evidence to both support and undermine their claims. Additionally, they showed modest meta-level gain in their understanding of the importance and role of evidence in reasoning. They were able to rule out the idea that this improvement was due to superior memory of the specific evidence that had been made accessible to them rather than a wider meta-level understanding of the subject matter. To help students improve their argumentative writing skills, some believe that they should be given more opportunities to converse about the topics that interest them personally.

Keywords: Dialogue, argumentation, evidence, writing

Many academic fields rely heavily on non-narrative argumentative writing to help students succeed. Claim-evidence coordination, as well as the use of evidence-based assertions to improve one's own position and weaken the position of an opponent, are crucial components of argumentative writing. The concepts needed aren't all at hand right away, thus they need to be organised in a more complex way than a simple linear one. As a result, argumentative writing is more difficult for students of all ages to master than narrative writing. Student struggles to do so at all educational levels have been extensively documented and investigated, as have the many methods employed to assist them in doing so (Graham, &Perin, 2007; Newell, Beach, Smith, &VanDerHeide, 2011; Ferretti & Lewis, 2013). Students' ability to write and revise is the primary goal of the bulk of these strategies. Students' argumentative writing skills are aided by the method outlined here, which builds on the approach's developmental foundations, or, to put it another way, by employing dialogue as a bridge between children's natural conversational interactions and their own unnatural written work. Here, we'll lay out the evidence that it works.

A sociocultural framework and its basic principle of collaborative cognition, or thinking as social practise, is at the heart of modern empirical research, and the dialogic technique portrayed in this book most nearly resembles it (Cole, 1998; Tomasello, 1999). There are two philosophers, Walton (2014) and van Eemeren and Grootendorst (1992), who share the opinion that it is critical to examine arguments in a dialogic setting.

Dialogic methods, according to Graff (2003), have the advantage of providing an interlocutor who would otherwise be missing. Even as they stare blankly at a blank page, the aspiring writer tries to somehow fill it with bland comments at least slightly pertinent to the specified topic, but aimed at no one in particular, without saying anything that anybody would find offensive. When speaking, the student is conscious of who he or she is speaking to and what they hope to accomplish. Having a clear target audience and a compelling aim are essential components of successful writing. As a result, without them, student writers are at risk of being unable to write anything that may be perceived as possibly compromising the subject matter without resorting to "what the teacher wants" (Graff, 2003).

Resnick and Mercer, along with other colleagues (Resnick, Michaels, and O'Connor, 2010; Resnick, Asterhan, and Clarke, 2015; Mercer and Littleton, 2007), have advocated for the pedagogical power of discourse in modern education theory. Most prominent are Resnick and Mercer, as well as their respective colleagues. They emphasise the importance of discourse interaction in and of itself with the consequences for individual writing often being neglected or implied. The bulk of scholars who have followed the dialogic model of Reznitskaya et al. (2001) and colleagues have focussed their investigations on the whole-classroom level of discourse, but Reznitskaya et al. Dyadic discourse refers to communication between two people who speak or write directly to one another and are both directly accountable for maintaining the flow of information. This is the method that is reflected in the current study. When it comes to cognitive engagement, one of its primary advantages is that the individual is always on call to respond to the other and keep a discussion continuing. The instructor no longer serves as the central point of contact for all of the students.

1. Discourse as a means of developing argumentative writing

When writing in groups, it might be difficult to adapt to writing on your own. conversation, rather than direct writing instruction, is based on Vygotsky's (1978) idea of information transmission from an inter-individual to an intra-individual level that supports dialogue. If you're looking for a way to strengthen and improve the link between these two kinds of writing, try using an intermediate reflective writing strategy like Nussbaum's Vee-diagrams from 2008. Rather than emphasising one mode over the others, we believe that a rotation between individual and social modes, rather than a focus on one to the exclusion of the others, is the most promising strategy.

Additionally, dialogic argument has the additional benefit of supporting the development of what Nussbaum and Asterhan (2016) refer to as proactive executive control tactics (NECS). To what aim am I putting my efforts? "meta-strategic awareness," is the term for this, and we'll detail our efforts to analyse it in a later part, but the most essential thing to emphasise here is that it is equally vital when you're writing as it is when you're talking. As opposed to group writing, when an external third party can help with executive control tasks, this is especially true while writing alone (Zillmer& Kuhn, 2018). Argumentative writing may be a bridge to dialogue since dialogue involves two essential elements: an audience clearly

identified and a compelling purpose for the writing. As a means of achieving this objective, participants choose the position they will occupy. Dialogue methods utilised in this study are characterised by their emphasis on student-to-student interaction, rather than teacher involvement. This method is based on the idea that higher-order thinking abilities, such as reasoning, are important enough to merit a place in the curriculum on their own.

We also believe that developing argumentation skills, as well as the principles that drive them, needs constant and extensive practise in a variety of contexts that necessitate such growth. Both the formation of a supporting community and the development of individual capacities and understandings are necessary for participation. As a result, it takes time to complete. For a long length of time, students in the projects described below deal closely with a wide range of challenging arguing topics. Both verbal and nonverbal conversations are held by the participants in order to prepare them for the dialogues they would have later with peers on opposing sides. Participation in rational discourse increases significantly as a result of this; both kinds of discourse help assist metacognitive preparation and cognition.

As a result, the current strategy includes both verbal and technological communication with a partner on the other side (between a same-side pair and a sequence of opposing couples). This is a key component of the current strategy. Unlike verbal discourse, which vanishes as soon as it is said, writing preserves knowledge by making it available in a concrete form. Since electronic media allows for reflection on the information being communicated, dialogue can be temporarily "disconnected" (Olson & Oatley, 2014). As well as providing a foundation for debate, the transcripts serve as the focus of a range of reflective exercises that students do throughout the course of the semester.

2. The Importance of Evidence in a Deliberative Process

When making an evidence-based claim, as previously said, the claim must be accompanied with appropriate evidence to support it. To assess students' ability to write persuasively, we will utilise this basic unit, which we have used in the past (Kunn, Hemberger, &Khait, 2016a,b). For scientists and educators working in the fields of scientific education and reasoning in general, the use of evidence has become increasingly vital (Asterhan& Schwarz, 2016; Chen et al., 2016; Kuhn, 2018; Kuhn & Moore, 2015; Manz&Renga, 2017; McNeill & Berland, 2016). In order to coordinate claims and evidence, many conditions must be met. It

appears that drawing on evidence to discredit a claim is more difficult than drawing on evidence to support a claim, based on the evidence available (Kuhn & Moore, 2015).

The evidence that students need in order to coordinate their claims and evidence and therefore successfully argue will have to be obtained by them somehow. To begin with, pupils may not comprehend why they are reading about a topic in the first place, which is a potential drawback of the traditional approach of teaching. Answers to questions that haven't even been asked yet are what this book is about. Therefore, they are unable to appreciate its significance. Resultantly, The result is that such reading is often treated as if it were just another task to be finished with a lack of passion. Aside from factual material we present in a quick Q&A style, we have created an alternate way that helps students to realise how such information may be valuable by providing them the option to submit their own questions. They are better able to defend or reject arguments when they have a thorough understanding of the subject matter.

3. Analysis of the Development of Argumentative Writing

The method employed here has been extremely beneficial in both instances for increasing ability (Kuhn & Crowell, 2011; Crowell & Kuhn, 2014; Kuhn & Moore, 2015; Kuhn, Hemberber&Khait, 2016a,b). Using this technique, we can trace the development of new abilities in a linked manner across both dialogic and individual writing situations, which is advantageous for research purposes.

We've been keeping a careful eye on the students' final essays after they've worked through a number of different topics, and we've seen a tendency in the evidence authors use to back up their claims (Kuhn et al., 2016a,b).

Although students have access to a wealth of material, they tend to utilise it just to support their own opinions at the outset (upper left box in Figure 1). Later on in the course, most students start using evidence to disprove the opposing position (lower right box in Figure 1). As seen by the diagonal connecting line in Figure 1, a dual argumentation technique can be supported by these various sorts of evidence. "Here's everything that's good about my position and everything that's terrible about yours." At some point in the process, a few students will begin to present evidence from Figure 1 (usually labelled "Support Other" and "Weaken My"), evidence that cannot be used to support their own perspective as readily as it

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can be used to support another's position and must be reconciled with it in some manner. It's true that, but anyway"– before trying an integration in a real "However" structure that connected two neighbouring kinds of the four types indicated in Figure 1. This is because it is difficult to execute.

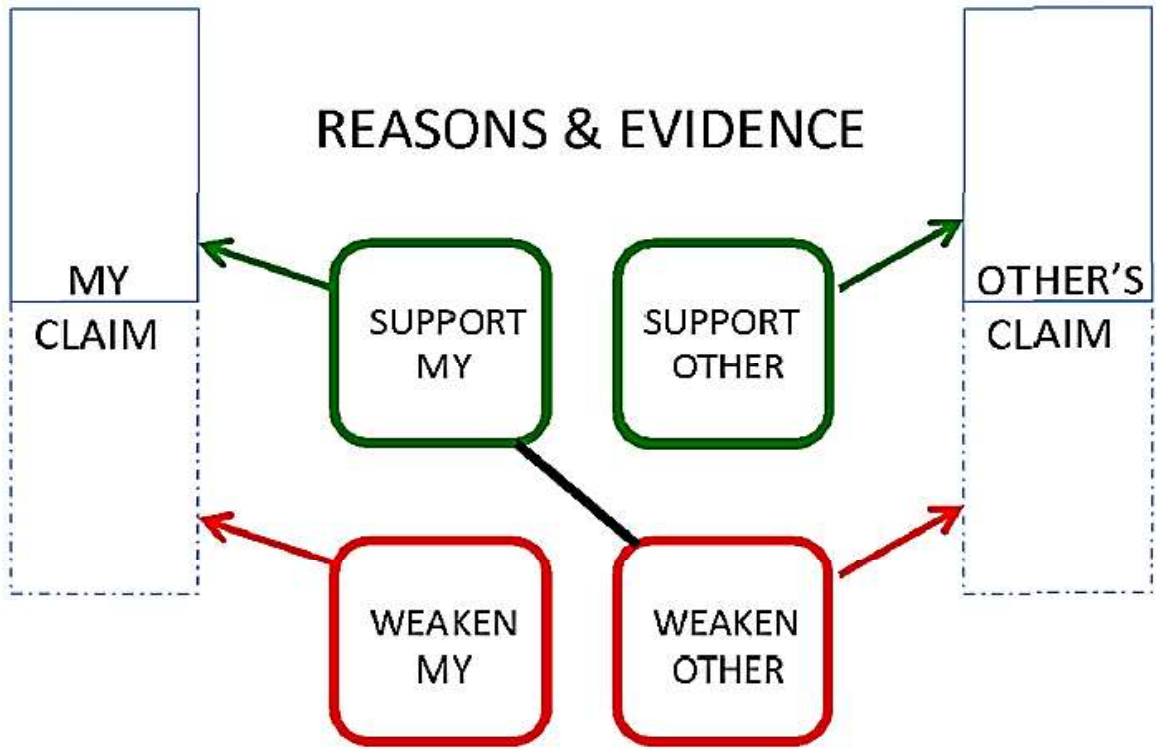

Figure 1. Forms of coordination of claims and evidence.

Although knowing that progress may be made is heartening, the process is slow, labor-intensive, and incomplete. Because of this, we decided to see whether we could speed up the procedure in our most recent study (Hemberger et al., 2017). As part of our commitment to students, we agreed to help them increase their capacity to use evidence of all kinds to support their assertions. We kept the brief Q&A format, encouraging students to ask their own questions, and then providing them with answers; however, we also provided students with one carefully selected piece of evidence (also in Q&A format) during each of their dialogue sessions, with the prompt "try to say something about this evidence in your dialogue today."

Based on the observed order of emergence in the previous work, we provided evidence of different categories to an experimental sample of sixth graders in what we judged to be the best sequence. An experimental group of sixth-graders received evidence of various kinds (Kuhn et al., 2016a). A common feature of the course was that students were able to hear directly from their opponents why they were wrong. As a result, we investigated whether it would be beneficial to provide a prompt to respond a piece of information supporting the opposing perspective.

Experimenters used evidence-based claims more frequently than those in the control group throughout a year-long intervention, compared to those who received no extra evidence or simply information supporting their stance, according to a study. Experimental students had more evidence in their essays than either the comparison or control groups, indicating that they had successfully transferred their newly learned expertise from one topic into another..83 pieces at first topic essay to 3.16 pieces at the end of the year (Hemberger et al., 2017). In accordance with the cognitive demands they placed on the participants, several types of evidence were applied in a sequential way. In the beginning, the students used their own proof to back up their arguments. The usage of Weaken-other evidence rose with time, but the two types of evidence that were inconsistent with their perspective (Support-other and Weaken-own) displayed lower and later gains. The fact that the experimental group beat both comparison groups shows that participants aren't only getting an advantage because evidence is readily available. It was found that evidence was used most frequently in conversations; it appeared less frequently in individual writing on the same topic, and to a lesser extent, in articles on a new, unstudied topic.

4. The Subject of the Present Investigation

Hemberger et al. utilised a similar procedure with a fresh group of sixth-graders in a prior investigation, which was replicated in this study (2017). It was essential for students to participate in electronic talks with a series of opposing-side spouses in the course. Our e-dialogues allowed students to ask questions about the topic they wanted to learn more about, and the responses were provided in subsequent class sessions; we also provided more evidence in a Q&A manner. It was established that the order in which students were presented with evidence for each argumentation function was the most effective: support own

position, undermine opposition position, support opposite stance, and undermine own position.

In order to investigate students' understandings of evidence linked with a claim as playing a vital part in an argument, we introduce some additional measures to this study. We intended to see if students who participated in the study gained a better understanding of the essential role evidence plays in argumentative speech and writing by applying these measures to both experimental and comparison groups. In addition to skill improvement, is it feasible that long-term participation in the intervention might assist students get a better understanding of the purpose and purposes of evidence in argumentative writing?

This study hypothesises that students' meta-strategic awareness in this area will be enhanced by repeated practise of finding and utilising evidence to support and weaken arguments on both their own and the other side, and that this will lead to a greater appreciation of evidence's significance. Students' meta-level claims were traced back to one another as they participated in the dialogic intervention, and we were eager to see if the same meta-level grasp of argumentative discourse would be reflected in their writing (Kuhn et al., 2013). Students' previous selection and later recall of evidence, as well as their use of that evidence in their compositions, are assessed as a means of achieving this goal. A meta-level understanding of the purpose of evidence is shown by the fact that they are examining evidence rather than merely using it (Kuhn, 2001). Specifically, we expect to see progress made in this area by students participating in the intervention compared to a control group that did not. As a more precise question, would students be able to better describe and thus retain the value of different sorts of evidence before they begin pondering their writing task? A rise in students' usage of various sorts of evidence-based statements in their argumentative writing may also be predicted based on previous findings (Hemberger et al., 2017).

5. Method

5.1 Participants

An urban public middle school in a low-income neighbourhood in a major northeastern American metropolis recruited 54 sixth-graders (all of whom were 11 or 12 years old) for the research. The participants shared a common ethnic, socioeconomic, and intellectual background, which was evenly split between men and women. The bulk of attendees were

Hispanic or African-American, and 96% of them were eligible for a free lunch. At or below grade level, the great majority of these students were regarded to be in danger of losing their educations

All incoming students were placed in one of three sixth-grade classrooms chosen at random from those who applied by the school administration. Children who were all new to the middle school were randomly assigned to classes that were deemed to be equal groupings by the administration. The students' demographic equivalence was validated, as well as their ability to perform at a comparable level in academics.

5.2 Design

For the purposes of the study, two classes were randomly selected. The comparison group only participated in a final assessment that was identical to and delivered at the same time as the final assessment given to the experimental group. This year's final evaluation included an experimental condition in which one class engaged twice weekly in curriculum activities throughout the school year. There were no debates or arguments in the comparison group's Social Studies lectures, nor did they write a detailed essay during the experimental group's sessions.

The final sample consisted of 49 students who were in 6th grade when the study began and were chosen from the original sample of 54. From a total of 27 students who started the intervention, a final sample of 22 students (13 females) was kept in the experimental condition. Five students from the experimental group were dropped from the research because of excessive absences (more than 50 percent of intervention sessions). 27 students (13 of whom were female) completed a single examination at the end of the school year that was identical to that of the experimental group on a separate day.

5.3 Intervention Procedures and Strategies

The intervention strategy was a year-long dialog-focused argument curriculum that closely mimicked the intervention reported by Hemberger et al. in prior research (Hemberger et al., 2003). (2017). Detailed descriptions of the intervention procedure may be found in Kuhn et al (2016) b. It was decided to split the intervention into four cycles, with each cycle beginning with a new topic and including 13 classes held twice weekly for 40 minutes each. The

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treatment was broken up into four separate phases. From a pool of 10 subjects that had been surveyed before to the start of the intervention, four themes were selected. These four issues were chosen because students' views on them were most evenly divided between those who supported and those who opposed them. The first issue to be addressed was whether or not soft drink purchases should be subject to a tax. There was also a debate about whether or not a parent who has migrated to the United States may home-school their child. Whether or if the United States should help an invaded South American country was the third point of debate. We also discussed whether or not high school students should immediately enrol in college, or if they should first work for some time before doing so. Pregame sessions were held for each topic cycle after a series of opposing-side pairings engaged in paired electronic talks with a number of same-side pairs (Game sessions). A Showdown debate in front of the entire class follows the last same-side group work (Endgame sessions). A debriefing session and the submission of a final personal essay assignment brought the subject cycle to an end. A comparable intervention was created and implemented by the authors in a similar situation with low-achieving middle-school kids.

Constructing a winning strategy (Sessions 1 and 2)

Students formed small groups of three to five on one side of the classroom after settling on an opinion on the subject. A professional adult coach, if required, mediated the conversation. As part of Our Reasons, students argued that their perspective was the best. One justification per card, these supporting arguments were then discussed with peers, and any clarifications that were needed were rewritten on the cards themselves. Student groups worked together to sort the reasons into three categories: excellent, good, and so-so, during the second session's Evaluating Reasons activity.

Having fun with a toy or game (Sessions 3 to 8)

During this phase, students formed pairs on the same side of the room and stayed together. Each session, a separate pair of opposing sides engaged in an electronic conversation using basic word-processing software. Together with their companion, they worked on an own-side or other-side Reflection Sheet while they awaited the electronic reaction of their opponents. They also participated in the dialogue input selection. There, they were tasked with

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considering the most effective counterargument and rebuttal to one of their own or their opponent's arguments.

Additionally, students were encouraged to come up with evidence questions that they thought would be relevant in supporting their assertions throughout Topics 1 to 3. During a future class, students' questions like these were addressed individually before being shared with the full class. Additionally, students were given between two and five pieces of evidence in the form of Q&As at the end of the Game section, depending on the questions' content. This guaranteed that students have encountered evidence that fit all four of the argumentation goals outlined above by the time they ended their study on the problem (support own, weaken other, support other, weaken own).

A few minutes before its conclusion (Sessions 9 to 13)

For the Showdown in front of the full class, students returned to their same-side groups and prepared. Students were able to more readily examine the opposing side's arguments and their counterarguments against them after completing a Summary Reflection Sheet during one session. As a group, they drafted a second summary sheet that detailed their own arguments, anticipated counterarguments and rebuttals, as well as their plan for the Showdown.

As part of the Showdown activity, students from both sides decided to engage in a verbal debate with a classmate from the other side in front of the entire class.. Anyone participating in the debate or one of their teammates may call a one-minute Huddle during this three-minute intermission to allow the speaker to solicit help from the rest of the team. In order to develop an argument map for use in the Debrief session that followed the event, these voice exchanges were recorded and transcribed. As soon as students had finished the argument map (which included counterarguments, rebuttals, and evidence utilisation), they were granted points for effective argument movements and points were subtracted for bad argument moves (e.g., unwarranted assumptions, unsupported claims, and misuse of evidence). A winning team was selected based on these criteria.

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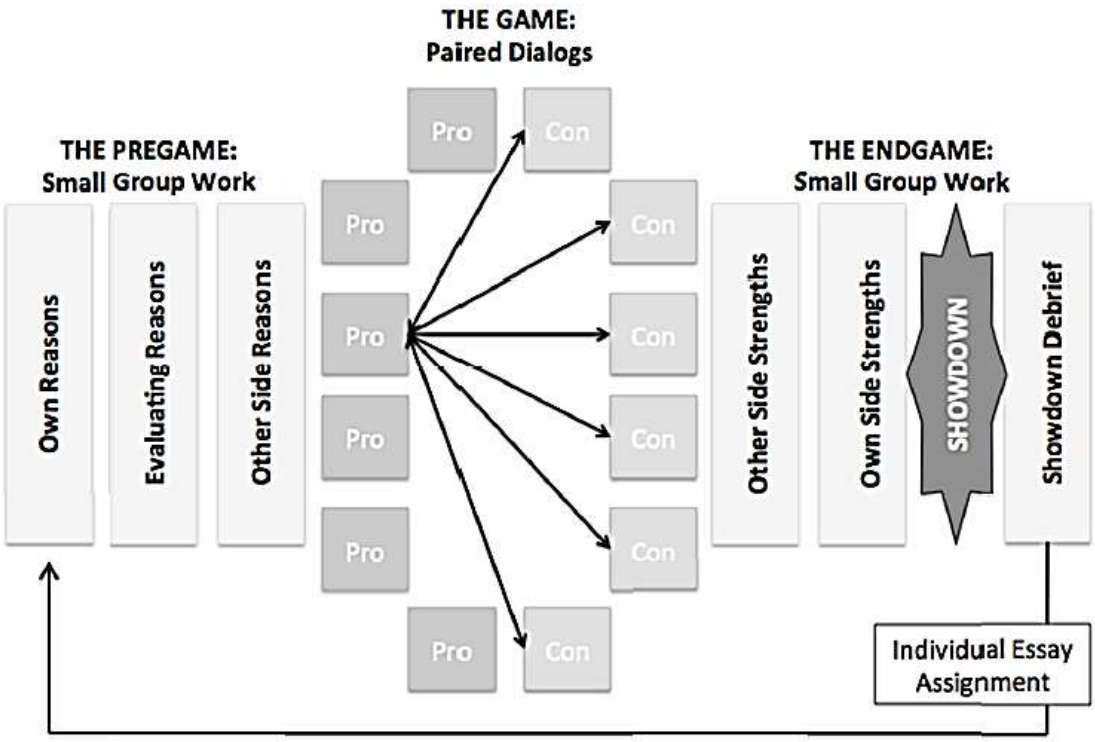

Figure 2. Topic workflow from pre-game to final essay (From Kuhn et al., 2013).

For this final project, students wrote a Letter to the Editor-style article arguing for or against a viewpoint on the subject matter. A 40-minute class time with no breaks allowed pupils to complete these assignments. For the most part, they completed it within 30 minutes, however some took as long as 40 minutes. To help students with their essays, they were given a copy of the Q&A-format collection of evidence on the topic that had previously been made accessible to them. This material is relevant to the issue, but keep in mind that not all of the facts will support your preferred viewpoint. Students were all given the identical verbal stimulus. Whatever happens, consider if you can handle the circumstance. "You are under no obligation to do so." Whenever a basic explanation of a word's definition or task instruction was requested, it was immediately given. Because there was no set duration for an essay, students were notified.

The next session began a new topic, and the tasks were completed in the same order as the previous one. Fig. 2 displays a chronological flowchart of the subject cycle.

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5.4 Evaluation of the Intervention Topic

Pre and post-essay components were included in the evaluation in addition to the major essay component. Evidence selection and memory were also assessed. Because we wanted intervention students to write on a topic they had been deeply immersed in during the trial (college vs. work), we related the assessment to the experimental group's fourth topic (college vs. work) (a condition central to the intervention method). To guarantee that all participants in the experimental and comparison groups were exposed to the same evidence items during this last session, we postponed the compilation of evidence for Topic 4 until this final session. Afterwards, the experimental group performed an essay on a new topic in order to examine the transfer of abilities to a previously unstudied subject.

All participants were asked to produce individual essays on the topic of college vs. work, along with a variety of additional assignments related to the subject. Writing was graded on its capacity to produce functional, evidence-based assertions—declarations that show a clear link between claim and supporting evidence—which is described in further detail in the results report. For this reason, we chose to include additional activities to evaluate our predictions concerning students' understanding of evidence and its importance.

Selection of relevant evidence

Students were given a list of four possible sources of evidence to draw from while composing their first essay. Among them were:

1. “Demonstration of positive outcomes from attending college immediately after high school”

2. “Demonstration of positive outcomes as a result of working prior to attending college”

3. “Demonstration of negative outcomes associated with immediately enrolling in college”

4. “Evidence of negative outcomes associated with working prior to attending college.”

It was recommended that students circle the forms of evidence they were most interested in seeing before beginning their essay. Afterwards, students were instructed to mark the vehicle type that came in second on their list by placing a check next to it.

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Afterwards, students were tasked with coming up with a list of evidence questions they want to have addressed before beginning the essay portion of the assignment. List of Q&A evidence with 12 questions and responses, however they didn't have an answer for any of them (see Appendix). A list of possible questions was provided to students, and they were free to choose as many questions as they liked.

It is possible to learn how to write an essay.

That was followed by an essay for the kids. This year's high school seniors were required to submit a letter to their peers, advising them on whether or not they should go straight to college or gain some job experience first. Teachers explained to the kids that the letter's goal was to influence as many pupils as possible to see things from their perspective.

The coach gave the students a list of 12 pieces of evidence in the form of a Q&A session before they could begin writing (see Appendix). In order to support one's own position, weaken the position of another, strengthen the position of another, and weaken one's own stance, these were carefully weighed. It was made clear to students that they may use the evidence presented, but they were not compelled to do so. Essays were due in 20 minutes, although students were allowed to take the whole 40-minute class session if they wanted.

Recollection of the facts

Students had to submit their essays and evidence sheets before going on to the next activity. No answers were provided to the 12 evidence-related questions they were presented (see Appendix). They were then asked to recall the answers they had provided to the questions they had previously been given. Students were told that if they couldn't remember the particular answer, they may write down the general idea. The majority of students were able to finish the activity in less than 10 minutes.

The Transfer Topic's 5.5 Evaluation

During a subsequent class session, intervention students were required to produce an individual essay on the following topic: whether juveniles who commit major crimes should be prosecuted in an adult court system or a juvenile court system. For this topic, the exam's instructions were similar to those for the main examination topic. For their essays, each of

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them was given a comparable list with 12 examples of Q&A evidence that they may choose to use.

5.6 Essay Formatting and Scheduling

Initially, each essay was separated into concept units, which were described as a claim and any supporting evidence or justifications in support of that assertion. The next step was to divide each item into one of two categories: evidence-based or non-evidence-based. Due to the focus on evidence in argumentation in this study, only evidence-based units were studied in further depth. Functional and non-functional subcategories were identified by Hemberger et al. (2017). In order to call a claim "evidence-based," the evidence must be clearly established to serve a specific purpose in support of the claim. It was considered non-functional if the evidence was not connected to the claim (for example, when evidence was merely presented with no implication made) or when the evidence was mischaracterized. Evidence-based statements with functional evidence were further classified into four groups based on their distinct roles: supporting one's own side, weakening the opposition, supporting the opposition, and weakening one's own side.

At random, two researchers picked 20% of the data and divided it into individual thought units, which resulted in a 93% inter-rater agreement. After resolving their differences in segmentation through discussion and debate, they assigned each unit to one of six categories (non-evidence-based category, non-functional evidence-based category, four functional evidence-based categories), achieving an agreement of 83% (Cohen's kappa = 0.736, P = 0.001) and a Cohen's kappa of 0.73. Despite differences, the remaining essays were coded by one of the authors once they had been completed. A piece of evidence is referred to in Table 1 for each level, and each level is defined and illustrated.

Q: Is a college degree required for the majority of well-paying jobs?

A resounding yes. A bachelor's degree is expected to be necessary for 35 percent of all jobs by 2020. A bachelor's degree from a reputable institution or university is always required for well-paying jobs in the sciences and engineering.

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Table 1. Levels and Examples of Coding of Evidence-based Essay Units

Level	Category	Example	Writer's position
Functional evidence-based claims	*Support-own*: an evidence statement serving to functionally support one's own position.	It can help you get a better job, more pay, and you will learn stuff along the way. By 2020, 35% of jobs will require at least a college degree to get it.	College
	Weaken-other: an evidence statement serving to functionally weakens the opponent's position.	Good jobs like in fields of science and engineering require at least a college degree. This means that if you have a passion for science or engineering you won't be able to pursue your dream without a college degree.	College
	Support-other: an evidence statement serving to functionally support the opponent's position.	However, some people say that you should go to college first because with a college diploma you get more money.	Work
	Weaken-own: an evidence statement serving to functionally weaken one's own position.	However, if you work for one year before going to college you and your parents don't have to worry about the expenses. You might wonder if you can get a great job while being in high school.	Work
Non-functional evidence-based claims	Attempted use of evidence to justify a claim without a discernible connection between evidence and claim.	I want to change because what if you don't have a high school diploma you have to get a job. Like by year 2020, 35% of all jobs will require at least college education.	College
	Simple re-statement of evidence unconnected to any claim. [Can be a full or partial verbatim copy of evidence or a reasonably accurate paraphrase of evidence]	And also yes, it is estimated that by year 2020, 35% of all jobs will require at least college education. High paying jobs such as those in science and engineering always require at least a college degree.	College
	Evidence is mischaracterized and cited in a way that substantially misrepresents its meaning.	No most jobs don't require college because they need people who work hard and have special skills.	Work

6. Results

6.1 Intervention Topic Assessment Essay Writing Intervention Topic Assessment

We initially compared the length of the essays based on the number of concept units in each article to see whether there was a significant difference. Experimental condition had 6.09 units, whereas comparison condition had 4.93 units (standard deviation = 3.31). The length of experimental essays was found to be 1.237 times greater than the length of comparison essays after fitting the Poisson distribution to a Generalized Linear Model (GLM). Wald X2(1, N = 49) = 3.008 and the significance level was 0.083 were determined to be non-significant differences. It is our primary goal to examine evidence-based modules, hence we will focus our following studies on these modules solely. To begin, we compare the two situations to see if the average number of evidence-based units differs. Experimental and comparator conditions both had mean values of 3.00 and 2.67, respectively, with a standard deviation of 1.66% and 2.34, respectively. WX2(1, N = 49) = 0.478 indicates that there is no statistically significant difference between the experimental and comparison circumstances, despite the fact that the two groups differ statistically significantly.

On the other hand, there was a statistically significant difference in the number of claims based on functional evidence. Standard deviation was 1.89 for the experimental group, while it was 1.30 for the comparison group (standard deviation was 1.46) to make functional evidence-based assertions. There was a statistically significant difference between the experimental and comparison conditions with Wald X2(1, N = 49) = 11.610, p = 0.001, in terms of the number of evidence-based claims made by the experimental condition. When it came to evidence-based writing, the experimental students outperformed the control students.

Evidence-based arguments supporting and undermining each other were presented far more effectively by the experimental group. The Wald X2(1, N = 49) = 8.063, p = 0.005. When comparing the experimental and comparative conditions, the experimental condition generated 2.455 times more support-own functional evidence-based claims. According to the generalised linear model (GLM) utilising a Poisson distribution, this difference was statistically significant. While the experimental group had a mean score of 1.18 (standard deviation = 1.14), the comparison group had a mean score of 0.59 (standard deviation = 1.12) — a difference that was statistically significant. There were 1.994 times more weaken-other

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evidence-based comments made by the experimental group than the comparison group, according to Wald X2(1, N = 49) = 4.720, p = 0.030.

A more difficult skill that is frequently overlooked by first-time writers was strengthened as a result of these findings: students' ability to successfully use evidence to support claims in favour of their own side as well as their ability to use evidence to counter claims in favour of the opposition's side.

Table 2. Means (and Standard Deviations) of Four Types of Functional Evidence-based Claims in Essays by Condition

Types of evidence-based claims	Experimental condition (n=22)	Comparison condition (n= 27)	Exp(B)
Support-own	1.36 (1.36)	.56 (.70)	2.455**
Weaken-other	1.18(1.14)	.59(1.12)	1.994*
Support-other	.091 (.29)	.15 (.46)	.614
Weaken-own	.05(.21)	.00(.00)	.001
Total	2.68 (1.89)	1.30 (1.46)	2.069**

Note. *$p < 0.05$, **$p < 0.01$

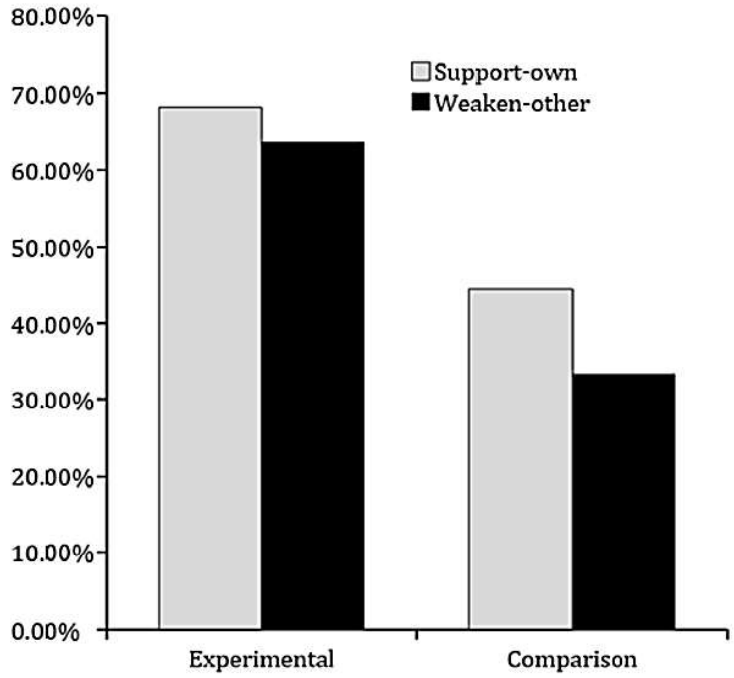

Figure 3. Percentage of students making support-own or weaken-other evidence-based claims at least once by condition

Both groups used evidence effectively in these two roles, although as we expected, the writings of both groups were primarily constrained to these two functions. The students in both sides of the debate rarely alluded to evidence that may support or undermine their own positions. These two sorts of evidence utilisation are the most cognitively demanding for students because of their discrepancy with their own opinions. There was no statistically significant difference in the use of either of these kinds of evidence-based claims, according to Table 2.

Student performance with the two less demanding categories of evidence lacked consistency, with a mean of one successful use in the experimental condition and zero successful uses in the comparative condition due to the limited evidence they had accessible. As a result, we looked at the percentage of students who were able to make strong evidence claims in their essays in order to determine whether or not the curriculum was beneficial to all kids, rather than just a chosen few. See Figure 3, which shows that nearly two-thirds of the experimental group made statements that either supported their own claims or damaged the claims of those who made functional evidence-based assertions at least once. A third of claims were weaken-other claims, and fewer than half of claims were compared to another condition of comparison. This is contrary to the typical trend. This is statistically significant, but the difference between the weakest and other evidence-based assertions isn't. The p value for Fisher's exact test is only 0.047, but it's still statistically significant. Consequently, the intervention was a success, since it allowed the majority of experimental participants to make evidence-based assertions that were weaker than others at least once.

Relevant evidence is selected.

Are there any indications of meta-level understanding of evidence-based argument by the participants' preference for access to one type of evidence over another in their essay? A majority of respondents said yes, but only when asked if they were interested in having access to material that was conflicting with their position (i.e., support-other or weaken-own). Ninety-five percent of participants in the experiment and eighty-five percent of those in the comparison group said they preferred to examine evidence that supported their own claims first and foremost (a non-significant difference between groups).

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Group differences were evident when it came to the sort of evidence people wanted to see second most. Over three-quarters of those taking part in the experiment picked this style, compared to just over one-third of those in the comparison group, a highly significant difference between the two groups (p =.004, Fisher's exact test). In contrast, when participants were given the choice of which questions they wanted answered, no significant differences were found in the questions they chose across groups (students were told that odd-numbered questions were about the work option and even-numbered questions were about the college option; only the 12 pieces of experimenter-presented evidence were included, to equalise across groups). Students in the experimental and comparison groups were not significantly different in their preference for evidence about the two options (in the experimental group, 48.7 percent of selected questions were about their favoured option and 51.3 percent were about the contrasting option, with no statistically significant difference; in the comparison group, 52.6 percent of selected questions were about their favoured option and 47.4 percent about the contrasting option, with no statistically significant difference.) Student selection of an average of 5.27 questions did not differ significantly across students in the experimental and comparison conditions (out of a total of 12).

How well did students anticipate which of the answers to the essay questions they would use? Here, neither group did especially well — an average of 31.5 percent of chosen evidence appeared in writings of students in the experimental group and 23.5 percent appeared in essays of comparison students, a non-significant difference yet again. This evidence was accessible to me while I was writing the essays.)

Take stock of the facts.

Most of the evidence questions were tried by participants, with 78.5 percent attempted by the experimental group and 71.8 percent attempted by the comparison group, on average. There was no statistically significant difference between the two sorts of replies among those who properly answered the question. Among the comparison group, only 9.9% (9.9%) failed because they failed to recall evidence in a biassed manner that favoured their own side, whereas only 7.6% (7.6%) failed because they failed to recollect evidence in a biassed manner that favoured their own side among the experimental group. (As an example of evidence indicating the shrinking work options for youths, research has indicated that

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unemployment among recent high school grads is substantial.) Only the first statement was remembered by participants who supported the college perspective, whereas both participants who supported the college side remembered only the first sentence. For the reasons stated above, the similar evidence recall scores of the two groups rule out any possibility that whatever advantages the experimental group may have had in their essay may be attributable to better memory of particular evidence.

Analyzing the Transferable Subjects

Examining student writings on the transfer subject will let us determine whether or not students' learning has been expanded beyond the specific issue on which they engaged in dialogue. Some pupils were absent due to an unexpected field trip, and because the school year was nearing its end, it was impossible to gather their data for this work. Consequently, results were compromised. These results should be treated with caution due to the tiny N. However, comparing this group's performance on a new issue with their performance on a topic they had previously participated in is similarly intriguing because the comparison group was engaged in a topic they had previously worked on as well. However, care should be used when evaluating the latter comparison due to the fact that the themes on which both groups wrote were not identical in both situations (as they were in the case of the main group comparison already reported on).

There was no statistically significant difference between those in the experimental group and those in the control group in terms of the percentage of participants who made support-own or weaken-other functional evidence claims, despite the fact that there was only a small and statistically nonsignificant difference between those in the experimental group and those who did not. Mean frequency of usage of these kinds reduced from 0.82 and 1.09 (to support own and weaken other) to 0.69 and 0.54 (for support and weaken correspondingly) (for support own and weaken other). As a result, their inability to properly use the evidence was hampered by their lack of familiarity with both the evidence and the issue in general. As a result, there was no statistically significant difference in comparison groups' performance when compared to the control group (although, note again, the comparison is an imperfect one, as the topic differed across groups).

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7. Discussion

As predicted given that the two samples originated from the same demographic, school, and grade level, and were gathered just one year apart in time, the results obtained by Hemberger et al. (2017) are comparable when it comes to essay performance. There are numerous studies that support the use of a dialogic approach to developing students' argumentative writing, particularly in the population of academically low-performing students who have little or no experience in non-narrative writing (Kuhn & Crowell, 2011; Kuhn & Moore, 2015, Kuhn et al., 2016a; Papathomas& Kuhn, 2017). An ongoing experience of dialogue with a succession of peers who hold the opposing position, we argue, makes this opposing position and its accompanying arguments clear and vivid in the student's mind, so that they can represent and address them in an essay, and understand the significance of doing so.

Specifically, the findings of Hemberger et al. (2017) show that prompts that demonstrate the need of evidence in support of a claim can help students improve their argumentative writing skills. An argumentative essay relies heavily on supporting evidence to bolster its assertions. Students confront unique challenges when it comes to using evidence to disprove rather than support a claim. According to (Kuhn and Moore, 2015). Many students may not be able to recognise specific pieces of evidence that might undermine a particular argument, despite the vital importance of such evidence. It was possible for us to demonstrate this role to them by providing them with examples of other-minus evidence, which also served to encourage its inclusion. Student writings that are balanced and two-sided must demonstrate the capacity to conceive the evidence that would support both the option they do not endorse and the alternative they do champion. According to our findings, students who begin using this type of evidence in their conversations will come to appreciate its value and begin include it in their written work.

There was a correlation between students who received evidence prompts and those who did not, according to Hemberger et al. (2017), who wrote more evidence-based essays on a new topic. Students who did not get the evidence prompts improved their writings on the same topic, as did those who received them. A meta-level analysis of students' understandings of evidence in argumentative writing is presented in this work, in addition to the findings we previously published on their performance increases when compared to a control group. The

experimental group outperformed the comparison group in their essays when it came to utilising evidence to undercut their opponents' arguments as well as when it came to using evidence to support their own statements, which is a less difficult position to play. Despite the fact that they had access to instances of the most challenging material, such as proof that supports or undermines their opponents' allegations, their performance did not improve. Writing about something that's already been proven isn't the best strategy. In addition, a shift to a new topic without the deep involvement provided by the programme had a major impact on performance. As a result, there is still room for improvement in terms of performance aspects.

An initial small sample size is compounded by attrition due to the poor attendance of inner-city public-school students evaluated in this study. A larger and more diversified sample size is needed to confirm the current findings. Despite this, the study's posttest-only control group design helped to answer an important issue. Researchers have found that the experimental group's increases were not due to stronger memory for the particular evidence available for the issue, potentially as a result of the participants' involvement in and familiarity with the topic. This conclusion is based on the results of the recall task. The evidence was similarly well remembered by the comparison group, which saw the subject as novel and unstudied. When asked to recollect evidence that supported their beliefs, they showed similar tendencies in terms of belief bias.

Instead, the findings reveal that the extensive dialogic and written engagement with consecutive topics left the intervention group with an enhanced meta-level awareness of the role of evidence in argument. The results show this. These students were more adept at recognising the importance of evidence that undermined the opposing viewpoint than their counterparts in the comparison group. They, on the other hand, did not show higher expertise in picking particular evidence or in predicting what evidence they would use. There is still room for improvement, so to speak.

According to a new study by Papathomas and Kuhn (2017), dialogic involvement with more capable people, as well as with peers of equivalent ability, improves reasoning competence. These two kinds of dialogic experiences are not yet defined, but their examination shows that they both play a role. In addition, the numerous components of this multifaceted and

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multiphase intervention have yet to be established. On the other hand, how did the "Others might say" structure make its way into students' writings compared to their profound involvement with the subject matter itself. The two components of the dialogic technique we've outlined in this work are crucial at this point in time. Many examinations of students' ability to compose non-narrative essays require students to write about a topic that has just been given to them. Students, on the other hand, are more likely to write about topics they care about and have already discussed with people outside of the classroom, which is another reason to study writing growth in these contexts.

When it comes to bridging the gap between oral and written expression, dialogue has the benefit of having its roots in children's early conversations. Peer-to-peer conversation, of course, provides students with vital discourse skills that they may use on their own. Similar to the information students get when arguing to learn, the benefits of arguing to learn do not end with the knowledge itself (Asterhan& Schwarz, 2016). The ability to write well-reasoned arguments is built on a foundation of disciplined thought, which may be developed via the practise of argumentation. Recently, we've been looking at how a single set of activities might help people meet both skill and knowledge goals. Both are necessary if we want to inspire students to produce argumentative writing that matters, both to them and to others. This, of course, does not imply that the only or even the best way to get outstanding writing is excellent conversation. To achieve our educational goal, we must examine every possible avenue, not just the one we've identified here.

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Appendix A: Questions and Answers about Juvenile and Adult Court

1. Q: What are public opinions on the juvenile court issue? (A+)

A: People hold different opinions on this issue. However, a “get tough” policy has become more popular in recent decades, with almost every state passing laws in the 1990s making it easier to try juveniles in adult courts.

2. Q: At what age is the brain fully developed? (J+)

A: The prefrontal cortex, which is responsible for abstract thinking and the ability to exercise good judgment, is not fully developed until about the age of 25.

3. Q: Do adult jails provide job training? (A+)

A: Yes, most adult jails teach job skills to help prisoners earn a living when they are released.

4. Q: Can teens continue their education while at a Juvenile Detention Center? (J+)

A: Juvenile centers provide some schooling, but it may not be a full day or every day. But teens are likely to get better general education at a juvenile center than an adult prison.

5. Q: Are teens at risk of being assaulted in adult prisons? (A-)

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A: Yes. Teens in adult jails are 50% more likely to be attacked by another inmate and twice as likely by prison staff, compared to adult prisoners.

6. Q: Do all courts give the right to a trial by jury? (J-)

A: No. Juvenile courts don't allow trial by jury. A judge hears evidence and rules.

7. Q: How many murders are committed by teens? (J-)

A: In 2008, 9% of murders in the US were committed by juveniles.

8. Q: Do prisoners have counsellors to talk to?

A: They may have a counsellor to talk to. However, this is more common in juvenile than adult prison.

9. Q: Are teens likely to repeat their crimes?

A: For teens convicted of a felony, the rate of recidivism (repeat crime) is 90% over 10 years. For crimes overall, it is about 50%.

10. Q: Are the sentences given for crimes less harsh in juvenile than adult court?

A: Compared to adult court sentences, juvenile court sentences tend to be less harsh, with probation and parole more likely.

11. Q: What proportion of violent crimes are committed by juveniles?

A: Juveniles were involved in one-quarter of violent crimes over the last 25 years.

12. Q: Do teens that go to jail get jail records?

A: They do not if sentences are served in a juvenile detention center; their records are sealed on release.