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The Effect of Audience Type on Written Argumentation

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ABSTRACT (100-200 WORDS): Many students have difficulty constructing a written argument. It might be because they don't have a good argument schema or because they can't visualize their audience. We manipulated audience type (friendly, hostile, mixed) and tutor conditions (tutor, control tutor) to determine the effects on essay quality. 132 participants from an introductory psychology class in our sample. We found an effect of tutor, but not of audience.
The Effect of Audience Type on Written Arguments

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Abstract

Many students have difficulty constructing a quality written argument, especially when they must consider an audience. The difficulty may be that they do not possess an adequate schema for constructing an argument. In this study, we manipulated two conditions: audience type (friendly, hostile, mixed) and instructions (tutor, no tutor) in order to determine the effect they have on number of rebuttals, explanations, counters, reasons, adaptations, appeals, and pejoratives. We hypothesized that participants in the tutor condition will perform better than those in the no tutor condition at all levels of audience type. We also hypothesized that students with a hostile audience will perform better than those with a friendly audience regardless of tutor or no tutor, and that participants with a mixed audience will include a more even range of argument elements than will those with friendly or hostile audiences. Results indicated that the tutor had a main effect on number of reasons, responses, rebuttals, and counters; participants given the tutor produced a significantly higher number of these argument elements. The only effect of audience found was with a mixed audience; participants with a mixed audience used significantly more second person pronouns than those with a friendly or hostile audience. An implication for education is that rather than using the classic method of focusing on the audience, it may be better to give students the information needed to make an argument and then guide them through the process of argumentation, emphasizing the importance of why the elements should be used.
The Effect of Audience Type on Written Arguments

In today’s highly competitive job market and education system, it is a requirement that individuals be able to generate ideas of their own; ideas that can be thoroughly explained and defended. Often these ideas are in the form of writing. Increasingly, writing ability has been emphasized in schools and in the workplace as a way to gauge an individual’s abilities (Perkins, 1988). Despite this greater need for adequate writing skills, the NAEP has recently found that no more than 24 percent of high school seniors are able to write at grade level, and an even smaller percentage of high school seniors are able to skillfully write an argumentative essay (NAEP, 2007). Students seem to grasp the rudimentary basics of making an argument, such as having a claim and supporting that claim with evidence (Stein & Miller, 1993), but the ability to construct a quality argument is more challenging for them (Golder & Coirier, 1994). College students have been found to possess similar levels of difficulty with writing argumentatively (Wolfe, Britt & Butler, 2009).

Argumentative writing, also called persuasive writing, has the purpose of persuasion; that is, changing an audience’s views so that they resemble the writer’s views. As defined by Pagliieri and Castelfranchi (2005), argumentation is effort to create a change in the thoughts and beliefs of another person or group of people. To accomplish persuasion goals, writers have to be able to visualize their audience in terms of their knowledge, beliefs, and goals. However, students often have difficulty taking into account a perspective other than their own (Black, 1989; Roen & Willey, 1988; Redd-Boyd & Slater, 1989).

The goal of this paper is to better understand the type of intervention necessary to help students write better arguments, especially by taking into account an audience. One problem may be that students do not know how to appropriately address an audience. If this is the case, a
tutorial that guides students through the process and elements of argumentation should result in a great improvement in essay quality. If students struggle because they only consider a “friendly” audience that shares their views and beliefs, then assigning them a task that requires them to consider another perspective should help them write better arguments. In this study, we tested each of the potential causes of difficulty by providing the related tutorial intervention.

**Students’ Difficulty with Argumentative Writing**

Toulmin (1985) described the composition of an argument as consisting of six elements: claims, reasons, warrants, backing, qualifiers, counterargument and rebuttals. The claim is a position or an opinion that must be validated with supporting evidence or reasons. A warrant is an overarching assertion to bridge the claim and reasons, and it is reinforced by the backing when the legitimacy of the warrant is in doubt. A qualifier is a phrase or a word that conveys the writer’s confidence in the claim. A rebuttal takes into account the limitations of the claim, and often is used to disrepute them.

As an example of an argument, the claim that “using a cell phone while driving should not be illegal,” may be supported by reasons such as, “cell phones are useful when there is an emergency while driving.” The warrant might be, “banning a tool that is useful in an emergency is not good.” Backing for the warrant might be done by including statistics, incidences, or other related information about why the warrant is true. A qualifier of an argument might be, “There is no doubt that…” A counterargument is an argument or reason for the other side of the claim such as “Some argue that it is dangerous…” A rebuttal would address a more negative aspect about cell phone usage while driving, and then providing information that discredits that point.

Persuasive writing is difficult for many students, from those in high school to those in college (Black, 1989; Perkins, 1988; NAEP, 2007; Reznitskaya, Anderson, McNurien, Nguyen-
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Jahiel, Archodidou & Kim, 2001). Knudson (1992) found that students struggled more with persuasive writing than with any other form of writing. The symptoms of this struggle are often messy organization of the argument, pejoratives (words or phrases used in attempts to make the reader feel negatively about a hostile audience, such as using personal attacks against the audience as people rather than against the other side’s argument), and insufficient content in the essay (Knudson, 1992; Black, 1989; Redd-Boyd & Slater, 1989; Midgette, Haria & MacArthur).

Most students regardless of grade level struggle with producing certain aspects of an argument (McCann, 1989; Perkins, 1988; Knudson, 1992). Wolfe et al (2009) found that college students failed to maintain a stable claim statement and presented an unelaborated list of reasons. Knudson (1992) found that students have difficulty with including pro-side information, such as claims, warrant, propositions, and reasons, but that with increases in education level, this deficiency decreases slightly because of experience. This increase in experience may be due to simply engaging in more argumentative conversations (Kuhn & Udell, 2007).

Previous research has shown that when writing an argumentative essay, individuals tended to favor using explanations to support their claim rather than providing evidence, even when evidence is the better tactic to defend a point of view (Glassner, Weinstock & Neuman, 2005; Brem & Rips, 2000). A study by Glassner et al., (2005) suggested that even when evidence is made available, preferences still lean toward using more explanations, possible due to the ease with which explanations can be generated. Research has found that the differences between 6th and 12th graders in the use of supporting evidence did not differ significantly, suggesting that despite the difference in age and experience, difficulty with some aspects of argumentation are experienced at multiple education levels (Knudson, 1992; Kuhn & Udell, 2007; Perkins, 1988).
Students also generally fail to include counterarguments and rebuttals (Wolfe et al., 2009). This inability or inattention to address the other side (i.e., myside bias) can be problematic when writing argument essays. Research has suggested that including rebuttals leads to higher agreement with the writer, more favorable impression of the writer, and higher overall essay quality; arguments that did not acknowledge the opposing side information fared significantly less well (Wolfe et al., 2009; Wolfe & Britt, 2008; Wolfe & Britt, 2005). Many students have a myside bias because they do not understand the importance of including counters, rebuttals, and other information about the other side of the argument (Wolfe & Britt, 2008; Kalcic, 2010). A related problem is that college and grade school students do not consider the knowledge, goals, or beliefs of the audience in planning or writing their essays (Redd-Boyd & Slater, 1989).

These issues may result from inexperience with writing arguments, an inadequate argument schema, and an incomplete understanding of the importance of audience and how to appeal to an audience. For instance, Knudson (1992) noted that the skills learned from explanatory essays, typical of English classes, do not work as a substitute for a written argumentation schema, suggesting that argumentative skills must be emphasized. While there are many potential causes of these difficulties, the goal of this paper is to address two of these possible causes: lack of an appropriate argument schema and failure to visualize the audience.

The Effect of an Argument Schema in Essay Writing

Research has shown support for the hypothesis that the problems experienced when writing an argumentative essay may be because the writers do not possess an adequate argument schema. That is, they do not know what parts of an argument are important or how to use those parts (Kalcic, 2010; Wolfe et al., 2009). When writing an argumentative essay, the writer must know enough about the construction of an argument to be able to create a good argument. If the
writer has developed only a rudimentary argument schema, or even a faulty understanding of argument construction, then it is more than likely they will fail to fully address the issues of an argument (Flower & Hays, 1981). As an example, the writers will not know to include rebuttals for the other side's evidence along with the presentation of the support for their own view because they do not know that such a thing is even necessary.

The argument schema hypothesis notes that one reason for an inadequate argument is a deficient schema. The studies by Wolfe et al. (2009) looked at rebuttal, concession, and dismissal of opposing side information; claims and their affect on rater agreement; the effectiveness of an argument tutorial in helping students write better argument essays. The researchers found that when argument passages fill the expectations in a schema (the three are the theme, side, and predicate of a claim), or address the other side's view, the readers will likely not make the effort to come up with their own counterarguments. Also, that rebuttal of opposing information leads to higher agreement and higher strength or quality ratings of the arguments, as well as a better impression of the author. The arguments that had a myside bias showed less coherence between quality and agreement ratings and author impressions. Also, when given myside reasons to take opposing side claims, one will show more of a tendency to admit how strong an argument may be, though agreement ratings may not change much. In addition, the researchers found that a short text tutorial addressing the claims, counterargument generation and reasons would increase the quality of written arguments (Wolfe et al., 2009).

Kalcic (2010) tested whether providing college students with argument schema information would help them write better argumentative essays. She randomly assigned students to receive either argument tutor or a control tutor prior to writing. The argument tutor was a self-paced MS Power point presentation that explained the elements of an argument as well as how
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and when they were to be used. The participants in the control condition were given an unconnected literature tutor, also in MS Power point. Then all participants wrote to a pro-attitudinal, “friendly” audience that believed as they did. Then they wrote to a counter-attitudinal, “hostile” audience that believed the opposite viewpoint on the issue. Kalcic found that the essays to the “hostile” audience were shorter and included fewer reasons than the “friendly” audience essays. Essays to “hostile” audiences also had more rebuttals, second person pronouns and responses to counterarguments. In terms of the effect of the tutor, she found that participants exposed to the argument schema tutor had more responses, rebuttals and counterarguments. Thus, the tutor did reduce the myside bias.

Wolfe and Britt (2008) determined three possible reasons for the presence of the myside bias based on a survey of students. It may be that individuals have argument schemas that are incomplete, usually missing the component that rouses them to think about the argument from other sides as well as their own. Or it may be that individuals do not have an incomplete schema but rather that they believe incorporated opposing information into their argument will diminish the strength of their position. The last explanation is that the schema possessed by the individuals is based on facts, which leads to the individuals simply presenting the factual data without any element of persuasion that would make it an argument (Wolfe and Britt, 2008).

Consideration of Audience When Writing

There are other possible explanations for the struggles experienced by students when writing an argumentative essay. Black (1989) suggested that the quality of argumentative essays suffers when the writers do not consider the audience and its needs; that is, the writers do not visualize their audience. This can lead to omission of otherside information or even the omission of pro-side information. Further research suggests that considering the argumentative position


(such as "friendly" or "hostile") of an audience leads to better essays when the focus is on the knowledge the audience possesses; it can help direct the writer's argument in the most effective and relevant direction (Roen & Willey, 1988; Black, 1989; Redd-Boyd & Slater, 1989; Midgette et al., 2007).

Thus, a second reason the myside bias can occur is that the writer does not focus on the audience; this can result in the omission of important argument information. Hays, Brandt and Chantry (1988) conducted an experiment which showed that writing to an audience that is against the writer's point of view (i.e., a "hostile" audience) leads to an increase in rebuttals and counters, which increases the quality of the essay, but also in inappropriate appeals (such as information that is not relevant to the argument), personal pronouns and pejoratives. Midgette et al. (2007) found that drawing the attention of their participants to the audience and reminding the participants that the goal of argumentative writing is to change the views of an oppositional audience resulted in a higher use of opposing reasons and rebuttals. Hamzah, Samad, Abdullah, Politeknik, Tingg, & Priya (2009) also used an audience goal for their participants and found that it led the participants to give greater consideration to what would effectively change the views of their audience, thus minimizing the effect of a myside bias. The results showed that the overall quality of essays increased when audience was considered in the writing process. Focusing on the audience was found to help participants think about and analyze the opinions, thoughts, and oppositional arguments their audience may have (Hamzah et al., 2009).

Midgette et al. (2007) found that more opposing reasons and rebuttal were used when the attention of the participants was drawn to the audience and when the participants were reminded that the goal of argumentative writing is to change the views of an audience. Hamzah et al. (2009) also used an audience goal and found that it led participants to give greater consideration
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to what would effectively change the views of their audience. The results showed that the overall quality of essays increased when audience was considering during the writing process. Focusing on audience was found to create a scenario in which to think about and analyze the opinions, thoughts, and oppositional arguments their audience might have; visualizing the audience made it possible for participants to better address the needs of the audience.

Part of understanding an audience is being aware of what the audience believes and knows about the topic. Without such knowledge, writers tend to omit otherside information. Knowing the audience is important to constructing a good argument, but understanding that fact and knowing how to do it effectively have caused problems for students (Perkins, 1989; Redd-Boyd & Slater, 1989; Midgette et al., 2007). Black (1989) found that how much participants know about an audience can affect the quality of their essays. Knowing the views of an audience was found to increase the number of appeals, arguments and adaptations to the audience. Audience adaptations are conscious and strategic moves that tailor the argument to the known audience in order to better sway the opinions of the audience.

Additionally, Roen and Willey (1988) found that paying attention to the informational needs of an audience can benefit the overall quality of an essay. Knowing the orientation—whether "friendly," "hostile," or something in between—of the audience toward the topic has been shown to affect performance in argumentative writing. Hays et al. (1988) found that when the audience being written to is hostile toward the writer's view on the topic, participants included more rebuttals and counter arguments, which increased the quality of the argument being made. However, they also found that having a hostile audience was related to higher usage of inappropriate argument techniques, such as pejoratives, personal pronouns, and inappropriate appeals to the audience. Because of this, it may be beneficial to help a writer focus on the
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audience; this way, if they know the view of the audience whether it be “friendly,” “hostile,” or a mix of both, it is possible for the writer to anticipate informational and persuasive needs. For example, if the audience is “hostile,” a greater use of rebuttals may be needed to discredit the opposing argument. If the audience is “friendly,” there really is not a need for real persuasion, as the audience already agrees with the writer. However, if it is a mixed audience, a balance may be needed in order to address the audience in its entirety.

In the previously mentioned Kalcic (2010) study, she also manipulated the type of audience hostile participants wrote to. The specific hostile audience was an individual while the general hostile audience was a variety of individuals that disagreed with the writer. Thus, the design was a 2 x 2 with two audience levels (specific or general) and two levels of the argument tutor (tutor or no tutor). Recall that each participant wrote first to a friendly audience and then to a hostile audience. The only significant effect of type of audience was that the general audience condition resulted in more counter arguments than the specific audience condition. The only dependent variable that led to an interaction with the tutor condition was the number of pejorative statements. For the general audience prompt, the tutor led to a decrease in the number of pejorative statements. For the specific audience prompt, there was no difference between the tutor and control condition. Kalcic’s (2010) results suggest that the specificity of the audience may not be the most important aspect to focus on. Therefore, in the current study, the focus will be on having students think not about a general “hostile” audience but instead a more varied audience (i.e., mixed). The mixed audience should help students think about opposition without becoming oppositional.

Present Study
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The present study replicated and extended the research done by Kalcic (2010), who investigated the effect of providing an adequate argument schema and the type of audience on written argument quality. Our study focused specifically on the types of audiences to whom students may write. We gave each participant an essay prompt, information about whether their audience is friendly, hostile, or a mixed audience, and randomly assigned them to either the argument tutor or no argument tutor condition. Our independent variables are audience type (friendly, hostile or mixed) and tutor (argument tutor or filler tutor). Our dependent variable is the quality of the essays that includes things such as the number and elaboration of reasons, the number of counterarguments, the number and type of responses (e.g., rebuttals), the number of pejorative statements, and the number of personal pronouns (first and second person).

The first hypothesis, based on prior research (Kalcic, 2010; Wolfe et al., 2009; Wolf & Britt, 2008; Knudson 1992), is that argument quality suffers when students lack an adequate argument schema or possess an inaccurate argument schema. Following Kalcic (2010), the experiment includes the use of the argument tutor in order to test the idea that making students aware of when to argue and, crucially, how to argue, and that this increases the quality of argumentative essays. We predicted that the participants in the argument tutor condition will outperform participants on all aspects of argumentative essay writing.

The biases of the audience that students address may influence the amount and kinds of argument elements used in an essay as well as the mistakes that may be made due to problems such as the myside bias studied by Wolfe et al. (2009). Thus, the second hypothesis for this study is that, based on previous experiments (Black, 1989; Roen & Willey, 1988; Kalcic, 2010; Redd-Boyd & Slater, 1989; Midgette et al., 2007) one reason student have difficulty writing argumentative essays is because they have trouble visualizing the audience. We expected that
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participants with a mixed audience (an audience with hostile and friendly audience members) would write essays with more counterarguments and responses than those who have a friendly audience. We wanted to find out if participants were able to construct a good argument if they were prompted to remember that they themselves were not the audience, but that the audience was someone else. We also expected that the number of pejoratives and personal pronouns would be highest for participants in the hostile audience condition, and that the number of pejoratives and personal pronouns would be equal for participants in the mixed and friendly audience conditions. Therefore, overall we expected participants in the mixed audience would be more likely to appropriately address otherside information in their essays than either group.

The final hypothesis, proceeding from earlier studies (Kalcic 2010; Wolfe et al., 2009), is that the tutor condition would interact with type of audience. That is, the manipulation of audience type would only have an effect on the quality of the essays for the non-tutor condition.

Method

Participants

The sample used in this study consisted of 132 participants, all of whom are students taking an introductory psychology class at a large Midwestern university in the United States. They were given course credit for participating in the study. Ages of participants ranged from 18 to 51, with 82% of participants’ ages falling between 18 and 20. The gender of the participants was 62% female and 38% male. The ethnicities of the participants were 29% African American, 4% Asian American, 57% Caucasian, 1% Native American 6% Hispanic American, and 3% Other. We omitted 3 participants from the sample because they did not complete the task.

Materials
All participants were given demographics questionnaires that they filled out before beginning the tasks in the study. The questionnaire also addressed previous training in writing and in argumentation. The argument schema tutor consisted of a PowerPoint presentation that presented the key elements of an argument, explained the importance of considering the audience for each of the argument elements, and how to identify audiences and take them into account. At several points in the presentation, the tutor would instruct the participants to answer a question on the worksheet that accompanied the tutor. This allowed the researchers to make sure the participants were engaged in the task. The control tutor contained information about fictional writing, such as explaining certain genres and character types. It was also accompanied by a worksheet that had participants pause to answer questions.

**Design**

The design for this study is a 2 Tutor Condition (argument tutor, control tutor) x 3 Audience Type (friendly audience, hostile audience, mixed audience) between participants design. The dependent variables are the number of words used, reasons, counter arguments, responses, rebuttals, pejorative statements, first person pronouns, and second person pronouns.

**Procedure**

All participants were assigned to an audience condition of either a friendly, hostile, or mixed (an audience in which some people agree with the participant's perspective, disagree with the participant's perspective, or are unsure where they stand) audience. Participants were also provided with a prompt about which they were to argue their position. All participants were given a list of bullet point facts about the pro- and con-sides of the prompt's topic. Participants all used a computer to view the presentation and used Microsoft Office Word to write their argumentative essays.
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Each participant was randomly assigned to an audience and to either the argument tutor or control tutor condition. First they were given an informed consent sheet, and then a brief overview of the study. They were then instructed to fill out the demographics questionnaire. Following the questionnaire, they were given the worksheet for the appropriate PowerPoint presentation and told to turn on their computer monitor where the presentation was waiting for them. All participants were blind to their tutor condition. After completing the presentation and the worksheet, participants were given instructions for their argumentative essay and handed the prompt and audience to which they were assigned, and then the pro- and con-sheets. The experimenter opened a word document and asked the participants to write an essay that was one to two pages in length, double spaced, and 12-point font. After finishing their essay, the participants were debriefed and given credit for their class.

Results

Participants were assigned to write an argument essay to an audience that agreed (friendly) disagreed (hostile), or had members that agreed, disagreed and were unsure of their stance (mixed). Participants were given a list of pro and con facts so that any differences in content was not due to participants’ lack of knowledge. The argument essays were scored for the number of reasons, counter arguments, responses, rebuttals, pejoratives, first person pronouns and second person pronouns. Each instance of an argument element was scored only once even if repeated later in the essay.

The first step in scoring was to identify the main claim. The first pass through the essays identified the pro-side information. We only examined the number of reasons in this category. Any unique reasons that supported the main claim were identified and counted. The second pass through the essays, examined the other-side information. Counter arguments were identified and
then we looked for potential responses to these counter arguments. Responses can fall into four categories: Concessions, Outweigh judgments, Rebuttals, and Denials. See Table 1 for examples from each of these categories. The first category was simple concession of a point with no following remarks. There were no simple concessions that did not also include the second two types of responses. The second category, Outweigh judgments, stated that one side of the argument outweighed the counter side. This type of response often followed a concession and sometimes included an explanation as to why. The third category, rebuttal, presented specific evidence or reasons against the statement. The last category was straight denial with no further comments. Denials were rare (3 of 144) and were not counted as responses. A participant could include more than one response to counter argument so the number of responses could exceed the number of counter arguments. However, a response had to be in response to a counter argument so no response was counted without the presence of a counter argument.

Finally, some information about tone was scored. We counted the number of personal pronouns (i.e., first and second person) and pejorative statements (including inappropriate appeals). Third person pronouns were not counted, as that is considered to be a correct way of addressing an audience; we wanted to mark the less widely accepted use of first and second person pronouns and any affects found on them. Pejorative statements included any kind of inappropriate appeals. Examples of pejorative statements are shown in Table 1.

The mean ratings for number of words, reasons, counters, responses, rebuttals, pejoratives, first person and second person pronouns are shown in Table 2. Overall, participants wrote long and serious argument essays. On average, the essays were 439 words, with 7.2 reasons, 1.45 counterarguments, and 1.13 responses. To examine the impact of the two factors on the quality of the essays, we conducted separate 2 Tutor condition (Argument Tutor or Control
An analysis of the pro-side information found that there was a significant effect of Tutor condition on the number of reasons, $F(1,122) = 4.972$, $MSE = 1.58$, $p < .01$. The essays in the Argument Tutor had more reasons ($M = 7.97$) than the essays in the Control Tutor ($M = 6.41$). No other differences were significant.

An analysis of the other-side information found that there was a significant effect of Tutor condition for the number of counter arguments ($F(1,122) = 5.007$, $MSE = .984$, $p < .05$), responses ($F(1,122) = 10.322$, $MSE = 1.061$, $p < .01$) and rebuttals ($F(1,122) = 8.103$, $MSE = 9.747$, $p < .05$). The essays in the Argument Tutor had more counter arguments ($M = 1.69$), responses ($M = 1.42$), and rebuttals ($M = 1.06$) than the essays in the Control Tutor ($M = 1.19$, $M = 0.83$, $M = 1.06$ respectively). No other differences were significant.

Finally, an analysis of the tone of the essays found a significant effect of audience type for second person pronouns, $F(2,122) = 3.821$, $MSE = 3.384$, $p < .05$. For this result, a post hoc with Student-Newman-Keul’s test was conducted with alpha at .05. This test indicated that the second person pronouns for friendly ($M = 0.58$) and hostile ($M = 0.71$) audiences were statistically identical, and that for the mixed audience there were significantly more occurrences of second person pronouns ($M = 1.58$). No other differences were significant. There were no effects for first person or pejorative statements.

Discussion

The problem addressed by this study was that many students have difficulty constructing a quality written argument, especially when they must consider an audience. The first hypothesis, based on prior research (Kalcic, 2010; Wolfe et al., 2009; Wolf & Britt, 2008; Knudson 1992),
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was that argument quality suffers when students lack an adequate argument schema or possess an inaccurate argument schema. We predicted that the participants in the argument tutor condition would outperform participants on all aspects of argumentative essay writing. The results showed support for the first hypothesis. Participants who were assigned to the argument schema tutor condition produced significantly more reasons, counter arguments, responses and rebuttals than the participant who were assigned the control tutor condition.

The second hypothesis for this study is that, based on previous experiments (Black, 1989; Roen & Willey, 1988; Kalcic, 2010; Redd-Boyd & Slater, 1989; Midgette et al., 2007) one reason student have difficulty writing argumentative essays is because they have trouble visualizing the audience. We expected that participants with a mixed audience (an audience with hostile, friendly, and undecided audience members) would write essays with more counterarguments and responses than those who were given a friendly audience. We also expected that participants in the mixed audience would be more likely to address otherside information in their essays then either group. The second and third hypotheses were not supported. The results showed no statistically significant differences in essay quality between the friendly audience, hostile audience, and mixed audience conditions, with the exception that participants in the mixed audience condition used significantly more second person pronouns than participants in either the friendly or hostile audience conditions.

The final hypothesis, proceeding from earlier studies (Kalcic 2010; Wolfe et al., 2009), is that the manipulation of audience type would only have an effect on the quality of essays for the control tutor condition. The final hypothesis was not supported. No interactions were significant. The tutor affected the quality of essays regardless of audience type.
The argument schema hypothesis was supported. The argument schema tutor increased number of reasons, counters, responses, and rebuttals. This replicates the findings of previous research (Wolfe et al., 2009; Wolf & Britt, 2008). These findings indicate that with many students, it is a lack of knowledge about how to construct and argument, or the importance of the different elements of an argument, that leads to inadequate written argumentation.

No support was found to support the opposing audience hypothesis. The only effect of audience was on second person pronouns. The study did not replicate the beneficial effects of hostile audience as found in previous research (Midgette et al., 2007; Kalcic, 2010). This may suggest that it is not a problem with visualizing an audience that hinders many students, but rather that they do not possess the knowledge to properly use written argumentation.

Some of the implications of these findings may suggest a more beneficial way to instruct students when teaching argumentation. Instead of the classic method of focusing on the audience to whom one is writing, perhaps a better method would be to provide the students with the information they need to make an argument and then guide them through the elements of argumentation as well as stress the importance of why the elements should be used. This study seems to suggest that this would be a better way to help students learn how to write an argument. It appears that specific instructions fill in the gaps of knowledge that students have about argumentation better than simply trying to visualize and attend to the needs of their audience. If they do not understand that convincing an audience requires certain argumentative elements, such as counter arguments and rebuttals, they seem to be disinclined to naturally include them.

We also found that 11% of the essays had at least one pejorative statement. This was not significantly reduced by either manipulation. That may be because the participants were given
information on both sides of the argument, and with that information they were able to provide adequate methods of addressing the issue without using pejoratives.

The higher use of second person pronouns in the mixed audience condition may be due to the participants trying to think about, differentiate, and address three different kinds of people in their audience. To do this, they may have referred more directly to each kind of audience member by using second person pronouns. This may mean that they were trying to speak more directly to their audience, or it may mean that they were attempting to keep the different perspectives from becoming confused in their argument. A deeper analysis of the essays may help in understanding this effect better.

The results of our study also showed that the inclusion of other side information was much higher (M=1.19 in matching situation) than other studies (M=.70). This could be due to the topic, which addressed global warming and CO2 emissions into the atmosphere. This topic is very relevant at this time, but so was the prompt on banning cell phone usage while driving, as used in the Kalcic (2010) study. More likely is that this increased amount of other side information was due to the provision of a pro- and con-facts sheet for the participants. This provided them with a kind of visual reminder that there was more than one side of the argument, which may have prompted them to include some information from the other side. Also, having the information in bulleted lists made it much easier to extract information than it would have been if the information was imbedded in paragraphs.

This study replicated some of the results as found in the study conducted by Kalcic (2010). The effect of the instructional tutor increased the number of rebuttals, responses and counters, as found by the previous study. In this study, we also found that the tutor increased the number of reasons, which was not found by Kalcic (2010). We did not find the same effect of
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audience as the previous study. One possible reason the lack of effect of audience type in this study may be that other studies that have looked at similar topics have had within-subjects designs that had participants write at least two essays to at least two different types of audiences, usually friendly and hostile (Hays, Brandt & Chantry, 1988; Kalcic, 2010), or revise an essay that they had written (Midgette et al., 2007). The latter may have prompted students to think more carefully about the audience to whom they were writing. For the former, it may also be that when students have to write to two audiences in a short period of time, the audience is more salient to them than if they do not have to change audiences and consider two different sets of possible presuppositions that their audiences may have. Future research may want to look more closely at this.

We included the ordered lists of pro- and con-points so that the participants would not leave out other side information simply because they did not know any information about the opposing side of the argument. Nevertheless, a possible investigation for future research may be to explore the effects of the kinds of information provided to students writing an argumentative essay. For example, the effects of being given several essays in paragraph form containing information about both sides of the argument rather than a bullet list of facts. It may be that the relative ease provided to the participants with the bullet points makes it more likely that they will include more other side information. It may also be that this pro- and con-list may function similarly to having a knowledge of audience. As found by Black (1989), how much students know about their audience can affect the quality of their essays and may increase the number of arguments and appeals to the audience. By providing these lists, the students may have assumed that the statements on the lists were part of the knowledge possessed by their audience, and so may have included more arguments.
Though this study suggests that it is not a problem of visualizing an audience that causes problems for college students, but rather an issue of an incomplete or missing argument schema, it may be that in very young students, visualization may be a real problem. Egocentrism or simple lack of experience in visualizing another perspective may make audience visualization a bigger issue for younger students than for the population of the current study. This may be a good area for future research.

Another possible direction for future study may be to look at the effects of providing a tutor for just audience salience, perhaps an instructional version of the reminder given to students in the Midgette et al. (2007) study, in which students with an audience goal for their essay were reminded of the audience's importance in an argument. In this study, the argument schema tutor emphasized audience as well as argument structure. But future studies could use an "audience only" tutor of sorts as an alternative to the control tutor used in this study. It may be that if participants' attentions were drawn to audience with a tutor, and not to the argument structure or the importance of other argument elements, that audience type may have a greater effect on the quality of their arguments. Perhaps something similar to Midgette et al. (2007), who found that drawing the attention of their participants to the audience and reminding the participants that the goal of argumentative writing is to change the views of an oppositional audience resulted in a higher use of opposing reasons and rebuttals.

Future research may also want to look at different age groups and the effects of argument schema and audience visualization have on participants. It may be that different ages and levels of experience lead to differing problems when trying to argue a point. Perhaps in younger students, egocentrism may impede their ability to think about a perspective other than their own and may be the primary problem. Whereas in older students who may be more adept at thinking
about a topic from another point of view, a lack of knowledge is causing most of the problems in written argumentation. Further research may want to test a range of ages in order to address this question.

Providing students with a short tutorial that guides them through the process of argumentation and emphasizes the importance of using different argument elements seems to improve student ability to write an argumentative essay. For a problem the affects so many students, this is a practical and simple solution that can easily be utilized in the classroom.
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References


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Appendix A

Background Questionnaire

Please answer the following questions:

1. What is your age? ______________________

2. What is your gender (Circle one)? Male Female

3. What is your class (Circle one)? Freshman Sophomore Junior Senior Post-college

4. What is your major? ______________________

5. What is your ethnicity (Circle one)? Caucasian/White Hispanic/Latino African American Asian Native American Other ______________________

6. What level of writer are you? (a) Novice, (b) Intermediate, (c) Expert in training, (d) Expert

7. What was the first writing class that you took/are taking at this university?

8. List any writing classes that you’ve taken since your first class at NIU:

Please each of the following, please circle one number:

9. How interested are you in science?
   No Interest 1 2 3 4 5 6 7 8 9 10 Very Interested

10. What level of science knowledge would you say you have?
    Low Knowledge 1 2 3 4 5 6 7 8 9 10 High Knowledge

11. How interested are you in environmental issues?
    No Interest 1 2 3 4 5 6 7 8 9 10 Very Interested

12. What level of knowledge would you say you have about environmental issues?
    Low Knowledge 1 2 3 4 5 6 7 8 9 10 High Knowledge

13. How much formal instruction on argumentation or logic have you had?
    None Some Instruction Entire Course

14. What is your opinion about the U.S. government requiring the private and public sectors to take actions to reduce carbon dioxide (CO2)?
    Strongly disagree 1 2 3 4 5 6 7 Strongly agree
Appendix B

List of facts: Con

- According to Heskestad's nature studies textbook, all animals, including humans, emit CO2 into the atmosphere through the process of respiration. Mankind's discharges of CO2 amount to only a small part of the quantity of climate gases released into the atmosphere. The author later reports a strong correlation between the Sun's output and Earth's average temperature.

- A study published in a Russian Environmental Geology journal suggests that industrial emissions have declined since 1980 as the country has moved away from energy-intensive manufacturing and toward a service and knowledge economy.

- Atmospheric science professor William Gray contends that the current plans for reducing energy emissions will not work for the long term and may even cause harm.

- An article in the Wall Street Journal claimed that the changes that are proposed would do minimal good and be incredibly expensive to use and maintain.

- Limiting CO2 emissions may slow the economic growth of the United States according to Chief Economist Margo Thorning (American Council for Capital Formation).

- A recent report from the United Nations Environment Program predicts an enormous 6.3 degrees Fahrenheit increase by the end of the century even if nations fulfill their most ambitious pledges concerning reduction of carbon emissions (Center for the Study of Carbon Dioxide and Global Change).

- According to the U.S. Department of Commerce 2006 Climate Review, since the industrial age started the average global temperature rise has been a little over 1°F. An article in the Washington Post concludes that amount of temperature rise has not caused any noticeable problems.

- A senior researcher at the Royal Netherlands Meteorological Institute argues that the computer models used to predict the catastrophic effects of increased CO2 emissions are significantly inconsistent with actual measured global temperatures. Current computer models are simply too unreliable to be used to justify a costly CO2 reduction policy.

- A recent article in the Energy Journal claims that contrary to the computer predictions, actual records of tornados and hurricanes do not show a pattern of increased activity. The author cites records from the U.S. National Climatic Data Center showing that between 1950 and 2006 world CO2 use increased 6-fold, while violent tornado frequency decreased by 43%.

- In their climate article, Robinson, Robinson and Spate note that CO2 is a minor greenhouse gas compared to the much more prevalent water vapor. They further note that some scientists doubt the effects of CO2 will be nearly as bad as predicted.

- Data by NASA shows that the ice caps on Mars are also shrinking.
Studies by the National Oceanic and Atmospheric Administration that suggest there is a significant relationship between glacial periods and periods of reduced solar radiation on the upper northern hemisphere, which can cause natural, cyclical climate changes.

According to the Economic Development Research Group, the cost of the remedies recommended would cause our standard of living to drop dramatically without any definite benefits.

List of facts: Pro

According to data on the NASA website, Atmospheric levels of carbon dioxide (CO2) have increased steadily since the beginning of the industrial revolution. Based on their date, the site argues that these levels are projected to increase even more rapidly as the global economy grows.

The Environmental Protection Agency’s computer models predict that there will be significant increases in severe storms, more droughts and the melting of glaciers leading to coastal flooding if mankind does not stop the rise in CO2.

Rising concentrations of CO2 and other greenhouse gases, which result from the burning of fossil fuels, are gradually warming the Earth’s climate, causing damage to the planet (Columbia Climate Center at Columbia University).

According to a report from the Brookings Institute information, Washington think tank, carbon dioxide is the most prevalent greenhouse gas emitted in the United States and it primarily comes from the energy used in buildings and transportation.

Carbon emissions in the United States have increased by almost 1 percent each year since 1980 (American Society of Mechanical Engineers).

According to an article in the New York Times, that promoting clean energies will create new jobs, especially skilled and semi-skilled jobs that our economy is in most need of creating.

The Energy Information Administration (EIA) has found that total U.S. carbon emissions are projected to grow by 16 percent between 2006 and 2030.

According to the Energy Information Administration (EIA), global warming has been occurring since 1910. Many of the most recent years have been the warmest on record.

According to a 2010 report from the U.S. Congressional Budget Office, many clean energy changes proposed for CO2 will not harm the economy and will more than pay for themselves.

During the past 50 years, atmospheric CO2 has increased by 22%. Much of that CO2 increase is attributable to the 6-fold increase in human use of energy (U.S. Environmental Protection Agency).
- Historical data stored in ice samples taken from glaciers, show a strong relationship between rising CO2 and rising earth temperatures (NASA).

- According to the Center for International Climate and Environmental Research, the computer models used by NASA predict that we may have only seen a 1/3 of the full warming effects that even our current elevated CO2 levels will eventually produce, and that further elevation of CO2 levels may cause damage.

- The United Nations Environment Programme (UNEP) found that there is no compelling evidence that the observed overall warming in the earth's atmosphere is not caused by man.

- Resources for the Future, an economically based independent research organization, found that CO2 emissions from the residential, commercial, and transportation sectors each increased by more than 25 percent over the past 25 years.
President Barack Obama has announced the launch of the Major Economies Forum on Energy and Climate, which will facilitate candid dialogue among key developed and developing countries regarding efforts to advance clean energy and reduce greenhouse gas emissions, most notably carbon dioxide (CO2) in private and public sectors.

Please write an argumentative essay taking a stand on a policy of restricting the use of fossil fuels to reduce the emissions of CO2 into the atmosphere. You may write the essay from either a pro- or a con- perspective. We want you to present your position on reducing CO2 emissions to an audience who **agree** with your opinion. Try to write an argument ranging from 400-600 words (1-2 pages).

**Writing Instructions**

President Barack Obama has announced the launch of the Major Economies Forum on Energy and Climate, which will facilitate candid dialogue among key developed and developing countries regarding efforts to advance clean energy and reduce greenhouse gas emissions, most notably carbon dioxide (CO2) in private and public sectors.

Please write an argumentative essay taking a stand on a policy of restricting the use of fossil fuels to reduce the emissions of CO2 into the atmosphere. You may write the essay from either a pro- or a con- perspective. We want you to present your position on reducing CO2 emissions to an audience who **disagree** with your opinion. Try to write an argument ranging from 400-600 words (1-2 pages).

**Writing Instructions**

President Barack Obama has announced the launch of the Major Economies Forum on Energy and Climate, which will facilitate candid dialogue among key developed and developing countries regarding efforts to advance clean energy and reduce greenhouse gas emissions, most notably carbon dioxide (CO2) in private and public sectors.

Please write an argumentative essay taking a stand on a policy of restricting the use of fossil fuels to reduce the emissions of CO2 into the atmosphere. You may write the essay from either a pro- or a con- perspective. We want you to present your position on reducing CO2 emissions to a **mixed** audience in which some people **agree** with your perspective, **disagree** with your perspective, or are **unsure** where they stand on the issue of reducing CO2 emissions. Try to write an argument ranging from 400-600 words (1-2 pages).
Table 1

*Examples of actual student responses to counter arguments and pejorative statements.* Note. The counter argument is in italics and the responses are underlined.

<table>
<thead>
<tr>
<th>Type of response</th>
<th>Student examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concessions</td>
<td>None found in these essays that were not followed by an Outweigh judgments or Rebuttal.</td>
</tr>
<tr>
<td>Outweigh judgments</td>
<td>P15. <em>Some may argue that the new forum may be very expensive to use and maintain,</em> but what people may not understand is that the forum is giving us a better environment to live in and will only benefit us in the long run. If we do not fix the problem in the first place then it may cause problems then if we fix it now.</td>
</tr>
<tr>
<td></td>
<td>P63. <em>Although, some may argue that even if we reduce such emissions that it will never reduce the effects,</em> I say that the benefit of preserving the resources for future generations and having us live a cleaner and less dirty environment, outweighs the negatives.</td>
</tr>
<tr>
<td>Rebuttals</td>
<td>E23. <em>Some people believe that this will be an expensive process but</em> according to the U.S. Congressional Budget Office, “many clean energy changes proposed for CO2 will not harm the economy and will more than pay for themselves.”</td>
</tr>
<tr>
<td></td>
<td>E57. <em>One might think that the emission of CO2 is a non-harmful act and is not affecting our earth.</em> However, historical data stored in ice samples taken from glaciers, show a strong relationship between rising</td>
</tr>
</tbody>
</table>
Denials

P48. Though the government has claimed that the clean energy changes would practically pay for itself, it is impossible to believe this. Where would the money for this program come from then?

Pejorative statements

Student examples

P78. In this way it is completely asinine for the government to try and propel this logical progression.

P48. This so-called "global warming scare" that has managed to sweep the uninformed people of our nation is a slap in the face to Mother Nature if you ask me. The fact that people are letting a room full of environmentalists on computers scare them is very troubling.

P58. Obviously there is a reason to why we use fossil fuels, it obviously makes our lives easier/better, and so to ban use of them is completely insane.
Table 2

For each tutor condition and audience type, the mean of each dependent measure. Note.
Standard deviations in parentheses.

<table>
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<tr>
<th>Audience Type</th>
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## EFFECT OF AUDIENCE TYPE

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