THE EFFECTS OF CRITICAL QUESTIONS ON UNDERGRADUATE
STUDENTS’ ARGUMENTATIVE WRITING

by

Yueyue Fan

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education

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ABSTRACT

Despite the established importance of writing, many students have difficulty writing proficiently (Ann Rogers & Graham, 2008; Graham & Perin, 2007). This study was designed to assess whether the provision of argumentative writing goals focusing on revision affected the quality of college students’ first drafts and revised essays. In addition, I investigated whether participants’ keyboarding fluency was related to essay quality. Participants first completed a typing-speed test and wrote argumentative essays. Then, they were asked to revise and write another essay on a different topic after receiving either a general goal, a genre-specific elaborated goal, a goal that included critical questions about two argumentation strategies, or a goal that incorporated the elaborated goal and critical questions. College students’ keyboarding fluency was found to be positively correlated with the quality of their argumentative essays. Compared to students who were given a general goal, those who received the elaborated goal, critical questions, or the incorporation of the elaborated goal and critical questions wrote revised essays of higher quality. Additionally, students who received the elaborated goal and the incorporation of the elaborated goal and critical conditions wrote essays that included more rebuttals, alternative standpoints, and reasons for alternative standpoints. Argumentation structural elements and keyboarding fluency together accounted for 60% of the variance in essay quality. Finally, all students frequently used the argument from consequences and argument from example schemes. The provision of critical questions on argument from consequences resulted in the increased use of this particular argument scheme. The results of the current study suggested that providing students with either an elaborated goal or the incorporation of
the elaborated goal and critical questions is an effective and resource-efficient way of improving college students’ written arguments.

Keywords: argumentation structure, critical questions, goal-setting, keyboarding fluency, revision
Chapter 1

STATEMENT OF PROBLEM

Writing is a communication skill that connects people beyond the constraints of time and distance. Written text can serve different purposes including disseminating information and ideas, documenting knowledge, and contributing to social development (Song, 2012). Additionally, writing affects individual success at school and in the workplace (Preiss, Castillo, Grigorenko, & Manzi, 2013). In schools, writing is not only used to measure learning outcomes but also as a tool to facilitate students’ learning of content knowledge (Graham & Harris, 2016; MacArthur, Graham, & Fitzgerald, 2006). Students who are less advanced in writing have difficulty fully meeting the demands of college (Graham & Perin, 2007). At work, writing is considered a “threshold skill” that determines opportunities for employment and promotion (The National Commission on Writing, 2004).

Despite the established importance of writing, many students have difficulty writing proficiently (Ann Rogers & Graham, 2008; Graham & Perin, 2007). The most recent 2011 National Assessment of Education Progress (NAEP) writing report (National Center for Educational Statistics, 2012) shows that less than a third of 8th and 12th grade students’ writing was at or above the proficient level (i.e., writing that is logical, coherent, elaborated, and effective in accomplishing their communicative purposes). Additionally, there was also no significant improvement in the proportion of eighth- and
twelveth-grade students who performed at the proficient and advanced levels over time. Poor writing performance is also found at the college level, especially for argumentative writing (Ferretti & Fan, 2016; Song, 2012). For example, college students’ argumentative essays often lack basic components of argumentation and focus on their own perspective of the controversial topic without considering counter perspectives (Nussbaum & Kardash, 2005; Perkins, Faraday, & Bushey, 1991).

Argumentative writing is a fundamental means of communicating about controversial issues (van Eemeren & Grootendorst, 2004; van Eemeren, Grootendorst, & Henkemans, 1996) and has long been a goal for American education (Hillocks, 2010). It can accomplish various purposes, including debating an issue, negotiating a difference of opinion, researching a deliberation, or resolving conflicts (Walton, 2008; Song, 2012). Argumentative writing is also an important component of critical thinking and has been shown to be positively associated with student academic achievement (Halpern, 1998; Preiss et al., 2013). In light of its significance, argumentative writing has been an integral component of recent school curriculum reforms (Ferretti & Fan, 2016; Wissinger & De La Paz, 2015). For example, the Common Core State Standards Initiative (2010) emphasized argumentative writing across the curriculum.

Evidence shows that students’ performance in argumentative writing is disappointing (Ferretti & Fan, 2016; Ferretti & Lewis, 2018; Wissinger & De La Paz, 2015). In primary and secondary education, national assessments show that only a small percentage of students can write proficient arguments (National Center for Educational Statistics, 2012). Students’ argumentative essays are poorly developed and lack critical
elements (Ferretti & Lewis, 2018; Ferretti & Fan, 2016; Song, 2012). For example, “my-side” bias is widely found in students’ argumentative essays that focus on their own perspectives of the controversial topic without consideration of alternative perspectives (Ferretti, MacArthur, & Dowdy, 2000; Ferretti, Lewis, & Andrews-Weckerly, 2009; Nussbaum & Kardash, 2005; Song & Ferretti, 2013). The disparity between the high expectations associated with curriculum standards and students’ writing performance has given impetus to the development of argumentative writing interventions.

Various approaches have been shown to improve student argumentative writing performance including goal-setting, self-regulated strategy instruction (SRSD), dialogical support, and critical questions (De La Paz & Graham, 1997; Crowell & Kuhn, 2014; Ferretti et al., 2000; Ferretti & Lewis, 2018; Graham, Harris, & McKeown, 2013; Nussbaum & Kardash, 2005; Song & Ferretti, 2013). This dissertation will focus on goal-setting interventions. In goal-setting research, argumentative writing is viewed as a complex, goal-directed, problem-solving process that requires writers to use limited cognitive resources to manage the writing process (Ferretti & Fan, 2016). Explicit and specific writing goals provide directions about the genre-specific elements that should be included in argumentative essays (Ferretti & Fan, 2016; Page-Voth & Graham, 1999). The provision of goals also helps students coordinate and manage their writing processes and produce essays of higher quality (Ferretti et al., 2000; Ferretti et al., 2009; Midgette, Haria, & MacArthur, 2008; Nussbaum & Kardash, 2005; Page-Voth & Graham, 1999).
Writing as a Goal-directed, Problem-solving Process

Writing is a cognitively demanding, goal-directed, problem-solving process that requires individuals to allocate limited cognitive resources to control and manage various sub-processes, such as planning, composing, and revising (Bereiter & Scardamalia, 1987; Flower & Hayes, 1980; Hayes & Flower, 1980; Hayes, 1996). For example, in the process of revising, writers need to coordinate attention and effort to perform various tasks (Hayes, 1996). These include critically reading the produced text, evaluating and reflecting on the goals they are trying to achieve, and composing and reorganizing the text (Hayes, 1996). Given the complexity of the writing process, students often experience considerable difficulty writing effectively (Bereiter & Scardamalia, 1987).

There are apparent differences between the writing processes of expert and novice writers (Scardamalia & Bereiter, 1986; Bereiter & Scardamalia, 1987, Deane et al., 2008). Expert writers tend to compose essays using the “knowledge-transforming” approach, which takes into consideration their knowledge of the essay topic, as well as the rhetorical and communicative goals of the writing genre (Bereiter & Scardamalia, 1987). When experienced writers compose, they use knowledge of the writing topic and the writing genre to set specific goals, anticipate potential audiences, and regulate their writing process (Scardamalia & Bereiter, 1986; Bereiter & Scardamalia, 1987, Deane et al., 2008).

In contrast to expert writers, novice writers use the “knowledge-telling” approach and consider writing to be a task of telling what they know (Bereiter & Scardamalia, 1987; Harris et al., 2011; McCutcheon, 2011; Scardamalia & Bereiter, 1986). For example, novice writers often first develop a representation of the writing assignment that includes the topic area and the genre, retrieve knowledge about the content topic as well as the writing genre, and then generate the text, which then serves as a cue for the
retrieval of additional content (Bereiter & Scardamalia, 1987). For the novice, writing does not involve the use of deliberate self-regulation strategies (Bereiter & Scardamalia, 1987; Graham & Harris, 2000; McCutchen, 1988). Additionally, they pay little attention to their rhetorical goals, are unaware of their audience, and do not consciously apply their knowledge of literary genres (Graham & Harris, 2000; Harris et al., 2011; Hayes et al., 1987; McCutcheon, 2011; Scardamalia & Bereiter, 1987).

**Transcription Skills and Writing Quality**

Transcription involves a number of cognitive and physical tasks involved in creating written representations of writing (Connelly, Campbell, MacLean, Barnes, 2006; McCutchen, 2011, Peverly, 2006). Research suggests that children begin with limited transcription skills and then gradually gain fluency with age (Berninger & Graham, 1998; Berninger & Swanson, 1994). The lack of transcription fluency often constrains the writing quality of these developing writers (Berninger & Swanson, 1994; Berninger, 1999). However, the importance of transcription may extend into adulthood (Graham, 1990; Berninger, 1999; Peverly, 2006). According to Peverly (2006), transcription skills may affect adults because they compete for the writer’s limited cognitive resources. However, there is limited empirical evidence about whether transcription skills contribute to the quality of adult writing.

The heavy reliance on computers in the workplace and higher education has made the use of digital writing prevalent and increased the importance of keyboarding skills for adult writers. Connelly, Gee, and Walsh (2007) have argued that writers need to develop keyboarding fluency as a stepping stone to generate high quality writing through computer word processors. Again, there is a dearth of research about the relationship between keyboarding fluency and writing quality. This dissertation aims to address the
gap in the literature by assessing the effects of keyboarding fluency on college students’ written arguments.

The Pragma-dialectical Approach to Argumentation

Although argument has been studied for over 2000 years (Aristotle, 1991), different theoretical perspectives have been brought to bear on the interpretation and analysis of argumentative discourse (Newell, Beach, Smith, & VanDerHeride, 2011). This dissertation is informed by the pragma-dialectical theory of argumentation. According to this perspective, argumentation is defined as

“a verbal, social, and rational activity aimed at convincing a reasonable critic of the acceptability of a standpoint by putting forward a constellation of propositions justifying or refuting the proposition expressed in the standpoint” (van Eemeren & Grootendorst, 2004, p.1).

This dissertation attends to three aspects of this definition (Ferretti & Fan, 2016; Ferretti & Lewis, 2018). First, argumentation is viewed as a verbal and social activity that interlocutors with different opinions use to communicate and exchange views with each other. They have an overarching goal of resolving difference of opinion (Ferretti & Lewis, 2018). Second, it emphasizes that interlocutors use a set of interrelated and structured argumentative statements (“a constellation of propositions”) to increase the acceptability of their standpoints and to achieve their rhetorical goals (Ferretti & Lewis, 2018). Third, this definition considers argumentation as a discursive activity that requires interlocutors to act as reasonable critics to evaluate arguments (Ferretti & Lewis, 2018). Interlocutors engage in discussion and use critical standards to systematically test the acceptability of the standpoints. One of the critical standards that van Eemeren and colleagues (2002, 2014) proposed is the reasonableness of argument, which is the focus of this dissertation.
Reasonable Argument

In the pragma-dialectical approach, arguments appeal to standards of reasonableness (van Eemeren, Grootendorst, & Henkemans, 2002; van Eemeren et al., 2014). According to van Eemeren and colleagues (2002; 2014), reasonable arguments follow rules that satisfy the interlocutors’ communicative obligations at each stage of the argument, and therefore help resolve difference of opinion (van Eemeren et al., 2002; van Eemeren et al., 2014).

Van Eemeren and colleagues (2002; 2014) have proposed a series of rules that help interlocutors generate reasonable arguments by providing regulations for the argumentative process. For example, they proposed that, in order to produce reasonable arguments, interlocutors need to follow the freedom rule of reasonable arguments, which requires them not to hinder each other from expressing opinions and providing criticisms. Of all the established rules for reasonable arguments, this dissertation will focus on the argumentation scheme rule, which requires that individuals use argument schemes correctly in order to produce reasonable arguments (van Eemeren et al., 1996; van Eemeren et al., 2002).

An argumentation scheme refers to the common reasoning pattern interlocutors use to draw inferences from premises to a conclusion (Walton, Reed, & Macagno, 2008). For instance, argument from example is a scheme in which interlocutors use individual examples to support or reject a standpoint (Song & Ferretti, 2013). The following argument used in Song and Ferretti’s (2013) analysis of written argumentation illustrates the argument from example scheme:

I believe that university students should be required to take classes outside their field of study. Our professor shared an instance with the class where a student who specialized in Math or Social Studies was thrown into teaching Science after graduation. (p.6)
In this argument, the author’s standpoint is “university students should be required to take classes outside their field of study.” In order to support his or her standpoint, the author used an individual example of a student who works outside her major area after graduation as evidence. Therefore, the author used the “argument from example” scheme to support his or her standpoint.

Interlocutors are able to evaluate the reasonableness of the argument by asking a set of critical questions about the use of each argumentation scheme (van Eemeren & Grootendorst, 1992; van Eemeren et al., 2014; van Eemeren et al., 1996; van Eemeren et al., 2002; Song, 2012). For instance, to measure the reasonableness of the use of argument from example scheme discussed above, writers can ask and answer critical questions associated with this scheme, such as “is the example typical of the kinds of examples that could be used to support the opinion?” By asking and answering these critical questions, interlocutors can effectively evaluate the reasonableness of their arguments by determining whether they have satisfied their communicative obligations.

There is limited empirical evidence about whether responsiveness to critical questions improves students’ argumentative writing performance. Few instructional studies have provided evidence about the effects of incorporating critical standards into writing intervention. Song and Ferretti’s study (2013) demonstrated the effects of incorporating critical questions into SRSD instruction. Wissinger and De La Paz (2015) showed the positive effects of incorporating argument schemes and critical questions into debates about historical controversies. Nussbaum and Edwards (2011) and Nussbaum et al. (2018) suggested that the incorporation of critical questions in instructional interventions encourage middle school and college students’ consideration of alternative perspectives. In addition to instructional interventions, it is reasonable to expect that the
inclusion of critical questions into a conventional goal-setting intervention would augment the effects of those goals on the quality of argumentative writing. An elaborated goal includes a list of sub-goals that writers need to achieve in order to write a convincing argument, including alternative perspectives, counterarguments, and rebuttals. However, the elaborated goal provides no information about how to operationalize these sub-goals. The inclusion of critical questions provides writers with explicit evaluative information on how to achieve the sub-goals of including counterarguments and rebuttals. Therefore, it is expected that the incorporation of critical questions into goal-setting research would further promote students’ argumentative writing performance.

In summary, according to the pragma-dialectical approach, reasonable arguments help interlocutors achieve the resolution of difference of opinion (van Eemeren & Grootendorst, 2004; van Eemeren et al., 2014). Interlocutors must follow the rules for a reasonable argument to regulate the argumentation processes (van Eemeren & Grootendorst, 1992; van Eemeren et al., 2014). One relevant rule for this dissertation is that interlocutors should use argumentation schemes appropriately, which can be achieved by asking and answering critical questions (van Eemeren & Grootendorst, 1992; van Eemeren et al., 2014; Ferretti & Fan, 2016; Walton et al., 2008). The answers to critical questions support students to consider alternative perspectives by generating counterarguments and rebuttals, which are commonly excluded in written argumentation. It is expected that the provision of an elaborated goal that focus attention on critical questions for argumentation schemes will have a positive impact on students’ argumentative writing quality.
Effects of Writing Goals on Argumentative Writing Performance

Providing students with an elaborated goal can help them write argumentative essays of higher quality (Ferretti et al., 2000; Ferretti et al., 2009; Ferretti & Fan, 2016; Graham et al., 2016; Graham, MacArthur, & Schwartz, 1995; Midgette et al., 2008). In most cases of goal-setting research in argumentative writing, students are provided an elaborated goal that includes genre-specific sub-goals of argumentation (Graham & Perin, 2007; Ferretti et al., 2000; Ferretti et al., 2009). Specifically, the genre-specific goals have included sub-goals such as the inclusion of standpoints, alternative standpoints, reasons, counterarguments, and rebuttals. These genre-specific sub-goals provide students with clear direction about what needs to be included in a composition and enable them to better monitor and regulate their writing process (Graham & MacArthur, 2016; Ferretti et al., 2000; Ferretti et al., 2009; Ferretti & Fan, 2016).

Ferretti et al. (2000) investigated the effects of an elaborated goal on argumentative writing of fourth-and sixth-grade students with and without learning disabilities (LD). Participants were assigned to either the general goal condition or the elaborated goal condition. Students in the general goal condition received a general goal of persuading an audience to agree with them. Students in the elaborated goal conditions received the general goal as well as an elaborated goal consisting of a list of genre-specific sub-goals. These sub-goals directed students to include elements of argumentation such as standpoint, reasons, counterarguments, and rebuttals. Ferretti and his colleagues found that compared to students who did not receive the elaborated, sixth-grade students who received the elaborated goal wrote essays that were of higher quality and were more sensitive to the alternative standpoint. However, the fourth-grade students were not affected by the elaborated goal.
Ferretti and colleagues’ study demonstrated the positive impact of an elaborated goal on sixth-grade student argumentative writing. Ferretti and Lewis (2013) argue that this conclusion is based on the presence of elements of argument. However, according to the pragma-dialectical approach to argumentation (van Eemeren & Grootendorst, 2004), argument cannot be simply reduced to isolated elements (Ferretti, Andrews-Weckerly, and Lewis 2007; Song & Ferretti, 2013). In addition, the quality of an argument is determined critical standards that include its reasonableness, which can be assessed by the appropriate use of argumentation schemes (van Eemeren & Grootendorst, 2004; van Eemeren et al., 2014).

Ferretti, Andrews-Weckerly, and Lewis (2009) addressed these issues by investigating the impact of an elaborated goal and a general goal on students’ argumentative essays’ quality, essay structure, and use of argumentation schemes. Fourth and 6th graders with and without LD participated in this study and wrote essays after receiving the elaborated goal or the general goal. Like Ferretti et al. (2000), the elaborated goal included genre-specific sub-goals. Overall, Ferretti and colleagues found that students in the elaborated goal condition wrote arguments that were more persuasive than those in the general goal condition. After analyzing the argumentative structures of participants’ essays, Ferretti et al. found that students who received the elaborated goal wrote essays that were more elaborate that included more alternative perspectives, reasons directly supporting the alternative standpoints, and rebuttals.

Additionally, the measures derived from the argumentative structure accounted for 70% of the variance in essay persuasiveness. Regarding the argumentation schemes, Ferretti et al. found that students in the elaborated goal condition produced more argumentative strategies than those in the general goal condition but did not differ with
respect to the types of strategies or their relative distribution across strategy types.
Argumentation from consequences was the most frequently used scheme when students responded to the policy prompt. These two studies demonstrated that providing primary and secondary school students an elaborated goal prior to writing improves their writing quality. Empirical evidence also supports the conclusion that the provision of goals during revision can improve the quality of the revised essay (Graham et al., 1995; Midgette et al., 2008).

**Revision and Effects of Goals on Argumentative Writing Performance**

Revision is a fundamental component of the writing process during which authors critically read the text, reflect on its intended meanings, and make changes with the goal of improving overall writing quality (Hayes & Flower, 1980; MacArthur, 2012; MacArthur, 2016; Scardamalia & Bereiter, 1986). Despite its importance, the research shows that novice writers struggle to revise effectively (Hayes, 2004; MacArthur, 2012; MacArthur, 2016). While expert writers devote a significant amount of time revising their essays to reach their rhetorical goals, novice writers tend to make surface changes to correct grammar, change word choice, and correct punctuation and spelling errors (Faigley & Witte, 1981; Sommers, 1980).

One possible explanation for novices’ difficulties with revision is the absence of genre-specific, rhetorically relevant revision goals (Fitzgerald, 1987; Hayes, 1996). According to the cognitive view of writing, revision is a goal-directed process that aims to improve the overall essay quality (MacArthur, 2016). Without clear revision goals, writers often consider revision a process of making surface-level changes rather than conceptual changes (Butterfield, Hacker, & Plumb, 1994; Hayes, 1996; MacArthur, 2015). Empirical evidence has demonstrated that the positive effects of genre-specific
goals on students’ revised drafts of argumentative writing (Midgette et al., 2008; Philippakos, 2012).

Midgette and colleagues (2008) studied the effects of an elaborated goal on 5th and 8th graders’ revision. In their study, participants were randomly assigned to receive one of three revision goals: a general goal (a general goal to improve paper quality), a content goal (an elaborated goal aimed at increasing the justification of the writer’s standpoint), and a content plus audience awareness goal (an elaborated goal aimed at increasing the justification of the writer’s perspective and audience awareness). Students were asked to use the assigned goal when revising their essays. The authors found that students who received the elaborated goal wrote more persuasive essays than students in the general goal condition. Another study by Philippakos (2012) demonstrated that the elaborated goal can also support the revisions and argumentative writing quality of 4th and 5th graders. In Philippakos’ study, students were randomly assigned to one of the three groups: the reader, the reviewer, and the control group. Students in the reviewer group used the genre-specific goals to evaluate essays and provide feedback. Students in the reader group read the same essays without providing any feedback. Students in the control group read non-argumentative books. After analyzing students’ writing, Philippakos (2012) found that students who received the genre-specific goals outperformed their peers writing essays of higher quality.

**Summary of Effects of Writing and Revising Goals on Argumentative Essays**

Research shows that the provision of genre-specific sub-goals improves students’ argumentative writing quality (Graham et al., 2016; Ferretti et al., 2000; Ferretti et al., 2009; Ferretti & Fan, 2016; Graham & Perin, 2007; Midgette et al., 2008; Philippakos, 2012). The elaborated goal provides students with a list of argumentation-related
elements that should be included in argumentative essays. However, the quality of an argument should not be simply judged by the elements of argumentation. According to the pragma-dialectical approach to argumentation, the quality of argumentative discourse should be dependent on its reasonableness (van Eemeren & Grootendorst, 2004; van Eemeren et al., 2014). One evaluative criterion of reasonable arguments focuses on the appropriate use of argumentation schemes, which is achieved by asking and answering critical questions about its use. However, there is limited empirical evidence in the argumentative writing literature examining the effects of critical questions on students’ argumentative writing. This dissertation will focus on incorporating critical questions into an elaborated goal. It is expected that the incorporation of critical questions will benefit students’ argumentative writing quality.

**Current Investigation**

This dissertation has two purposes. First, research has shown the positive effects of an elaborated goal and critical questions independently (Feretti & Fan, 2016; Graham et al., 1995; Midgette et al., 2008; Song & Ferretti, 2013; Wissinger & De La Paz, 2015). However, there is no research investigating whether the provision of elaborated revision sub-goals that include information about critical questions improves the argumentative writing of college students. Furthermore, we do not know whether a goal that simply provides information about critical questions will affect the quality of college students’ argumentative writing. We know that students possess tacit knowledge about argumentation (Ferretti & Lewis, 2019), so a goal that directs college students to include scheme-relevant information may positively impact their writing. In addition, this dissertation investigates the relationship between keyboarding fluency and argumentative writing quality. A number of studies have explored the impact of transcription skills on
children writing quality (Graham, McKeown, Kiuhara, & Harris, 2012; Jones & Christensen, 1999). However, limited research has been conducted examining the role of transcription in adult writing. Graham (1990), Berninger (1999) and Peverly (2006) argued that transcription skills continue to impact the cognitive load of adult writers. Therefore, it is expected that keyboarding fluency will effect the quality of college students’ argumentative writing.

We focused on college students for the following three reasons. First, college students have difficulty producing proficient argumentative essays (Chase, 2011; Graff, 2004; Nussbaum & Kardash, 2005; Perkins et al., 1991). Second, research has demonstrated that college students benefit from explicit instruction on critical questions (Song, 2012; Nussbaum et al., 2018). Third, Graff (2003) argues that text-based argument is the "hidden curriculum" of all writing in college courses. However, very little argumentative writing research has been conducted with college students. As the literature review will demonstrate, much of the current literature on argumentative writing, goal-setting, and critical questions has focused on studies with K-12 students, with the exception of a few studies with English Language Learners at the college level.

In addition to analyzing the added value of critical questions within an elaborated goal, this dissertation will fill a gap in the research on college student writing.

In summary, this study examined the relationship between keyboarding fluency and writing quality and contrast the effects of four revision goals on the argumentative writing of college students. Participants begin by participating in a typing speed test and writing an argumentative essay about a controversial issue. Participants’ pre-test essays were analyzed and used to assign them to conditions to ensure that all groups are comparable. Specifically, participants were matched on the number of reasons to support
their own opinion, the number of counterarguments, the number of alternative standpoints, and the number of rebuttals. Based on pretest performance, participants were matched and randomly assigned to one of the four revision conditions: the elaborated goal (EG) condition, the elaborated goal plus critical questions (EGCQ) condition, the critical questions (CQ) condition, and the general goal (GG) condition. Students in the GG condition received information about a general goal for argumentative writing, which asked them to revise their essays to make them more convincing. Students in the EG condition received the same general goal, and an elaborated goal that includes genre-specific sub-goals. Students in the EGCQ condition received the general goal, the elaborated goal, and critical questions associated with two argumentation schemes: argument from consequences and argument from example. Students in the CQ condition received the general goal and critical questions. After receiving these goals, participants were asked to revise their pretest essays using those goals. Finally, participants wrote a second argumentative essay using the same writing goals received in the revision session.

In addition to these four groups, another randomly selected group of students served as the topic control group. This group only participated in the posttest session during which they completed the typing speed test and write an essay in response to the posttest writing prompt.

Regarding the primary research interest, empirical evidence has supported the effects of an elaborated goal and critical questions on students’ revisions of argumentative essays. Due to the complementary nature of the information provided in an elaborated goal and critical questions, we believe that the inclusion of critical questions will augment the effects of an elaborated revision goal. Additionally, we also expect that the provision of elaborated goal and critical question will improve students’ first drafts on
a new essay topic because the acquisition of critical standards for revision should positively impact the quality of students’ writing (MacArthur, 2012). Based on these reasons, it is expected that students in the EGCQ condition will outperform students in the other three conditions in terms of the overall persuasiveness of the essays on the revised and the posttest essays. Students in the EG condition and CQ condition are also expected to write essays of higher quality on the revised essays and the posttest essays than those in the GG condition. In addition to the primary research interest in examining the effects of critical questions and the elaborated goal on writing quality, this dissertation has a secondary question about the relationship between transcription skills and writing quality. Although there has been limited research on the relationship between typing fluency and writing quality for adult writers, Connelly et al.’s studies (2005, 2006) suggest that transcription skills may influence the writing quality of adults. Therefore, it is expected that keyboarding fluency will be associated with the quality of college students’ written arguments.

**Research Questions**

Is there a correlation between college students’ keyboarding fluency and argumentative writing quality?

Do the different goals impact overall quality of college students’ first drafts and revised argumentative essays after controlling for keyboarding fluency?

Do the different goals impact the structures of college students’ first drafts and revised argumentative essays?

Do the different goals impact the use of argumentative schemes in college students’ first drafts and revised argumentative essays?
Chapter 2

LITERATURE REVIEW

The principal purpose of this dissertation is to examine the effects of writing goals for revision, particularly elaborated, genre-specific sub-goals and critical questions, on college students' argumentative writing performance. This chapter will provide a review of the literature on the cognitive models of writing, transcription skills and writing quality, argumentative writing, reasonable arguments, and goal-setting studies, and revision. Specifically, I will begin this chapter by discussing literature on the cognitive models of writing. I will then focus on defining argumentation, discussing reasonable arguments, and reviewing interventions supporting students’ argumentative writing performance. The last section provides an overview of cognitive models of the revision process and goal-setting writing research. As the reader will see throughout this chapter, this review gives particular attention to goal-setting argumentative writing interventions because this dissertation is focused on incorporating critical standards of argumentation into traditional goal-setting research.

Cognitive Models of Writing

Since the late 1970s, researchers have systematically studied the cognitive and psychological processes involved in writing and proposed various models depicting those complex processes (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980; Hayes, 1996; MacArthur & Graham, 2016; Scardamalia & Bereiter, 1986). In this section, I will discuss three seminal cognitive models of the writing process including the Hayes and Flower’s 1980 model, the Hayes’s 1996 model, and the Bereiter and Scardamalia’s 1987 model. Each of these models has offered scholars valuable insight into the writing
process and has led to effective writing interventions. These models also provide the theoretical foundation of this dissertation.

*Hayes and Flower (1980).* By studying how undergraduate students solved writing problems, Hayes and Flower (1980) developed their initial model of the writing process. In this model (Hayes & Flower, 1980; Flower & Hayes, 1981), writing includes three basic components: the task environment, the cognitive processes, and the writer’s long-term memory. The task environment includes all contextual factors that affect the writing process, such as the writing topics, the materials available to support the process, and the writer’s already-produced text. The cognitive processes consist of the mental processes that writers engage in when composing. For example, writers need to plan their writing (generate ideas, organize essays, and set up goals), produce text (type or write text), and revise (read and make substantive changes to the text in order to improve its overall quality). The last component of this writing model is the writer’s long-term memory, which involves the writer’s prior knowledge of the assigned topics, the writing genre, and the awareness of the intended audience.

According to Hayes and Flower (1980), writing is a complex goal-directed thinking process. Goal-setting, Flower and Hayes argue, is a fundamental component of writing (Flower & Hayes, 1981). Through goal-setting, writers generate a list of aims that can be used to regulate and monitor their writing processes (Flower & Hayes, 1981). This hierarchical set of goals may include both high-level, overarching, global goals and specific sub-goals (Flower & Hayes, 1981). The overall goals often provide writers with helpful direction and draw their attention to the coherence of their text production (Flower & Hayes, 1981). For example, an overall goal for an argumentative essay would be to convince an audience to accept your position. The sub-goals include specific and
concrete information to enable writers to operationalize the top-level goals (Flower & Hayes, 1981). For examples, sub-goals for an argumentative essay might be the inclusion of alternative standpoints, counterarguments and rebuttals. Proficient writers, for example, use goals as reference points during knowledge retrieval, develop and transcribe ideas in accordance with the goals, and use goals to evaluate and revise the written text.

Although goals are a fundamental component of writing, Flower and Hayes (1981) argue that writers differ in their ability to generate goals for writing. Skilled writers often generate a clear overall rhetorical goal and supportive sub-goals, but poor writers primarily focus on top-level goals. For example, when poor writers work on an argumentative essay, they might focus their attention on the overall goal of convincing the audience without developing sub-goals such as stating their opinion and the alternative perspective. Using both overall goals and sub-goals, skilled writers are also able to successfully regulate and control their writing processes (Flower & Hayes, 1981; MacArthur & Graham, 2016). The differences in goal-setting skills potentially contribute to the performance gap between skilled and inexperienced writers. Research also shows that elaborated genre-specific goals can help improve students’ writing performance (Ferretti & Fan, 2016, Graham et al., 2016).

*Bereiter and Scardamalia (1987)*. Bereiter and Scardamalia (1987) proposed two models depicting skilled and novice writers’ composing processes: the knowledge-telling model and the knowledge-transforming model. Bereiter and Scardamalia (1987) proposed that novice writers consider writing to be a process of telling what they know about the topic, which they called the “knowledge-telling” approach. In this model, novice writers’ writing processes involve the following components: (a) the writer receives the writing assignment and develops a mental representation of the assignment, (b) the writer
retrieves knowledge and information related to the topic and the writing genre from his or her long-term memory, (c) the writer transcribes the retrieved knowledge and information into written text, and (d) the writer then continues with another cycle of information retrieval.

To illustrate this model, consider how a novice writer might compose an essay about whether schools should allow students to carry their cellphones. When starting to compose, the novice would first develop a mental representation of the school, students, and cellphones, as well as the argumentative writing genre. Then, he or she recalls knowledge and information relevant to the topic and the writing genre, such as memories of friends using cellphones at school and elements of the argumentative writing genre, such as standpoints and reasons. After retrieving the information, the writer transcribes the recalled information into written text and uses the already-produced text as a cue to begin another cycle of information retrieval. As shown in this example, novice writers who use the knowledge-telling approach start the composing process without setting an overall goal or plan, and they focus more on the continuous process of the retrieving and transcribing information. Consequently, they might overlook the rhetorical goals for writing, ignore the needs of the intended audience, and pay little attention to the organization of the writing (Graham & Harris, 2016; Scardamalia & Bereiter, 1986).

In contrast, expert writers tend to compose essays using the “knowledge-transforming” approach (Scardamalia & Bereiter, 1987). Scardamalia and Bereiter (1987) argue that experienced writers compose by considering their beliefs and knowledge related to the essay topic, as well as the rhetorical and communicative goals of the writing genre. During the writing process, as in the knowledge-telling model, writers first develop a mental representation of the writing topic and the genre. Unlike
writers using knowledge-telling approach, they then develop goals for writing and make decisions about what to say as well as how to say it appropriately for their intended audience according to those goals. After completing these processes, skilled writers retrieve and transcribe the information into written text and continue with another cycle of information retrieval. To illustrate, consider how a skilled writer may compose an essay to teachers about whether schools should allow students to carry their cellphones. First, the skilled writer will develop a mental representation of the essay topic and the argumentative writing genre. Then, the writer will develop an overall goal (to convince teachers that students should be allowed to carry cellphones) and consider the intended audience (teachers). He or she will then plan what to say to support her opinion and how to say it appropriately to the intended audience. Then, he or she will begin retrieving knowledge, transcribing information into text, and continue another cycle of information recall guided by the writing goals.

Hayes (1996). In 1996, Hayes proposed another model of writing, which provides a more comprehensive and sophisticated description of the cognitive processes involved. The revised model of the writing processes includes two major components: the task environment and the individual. The task environment consists of all contextual factors that affect writing, such as the social environment (e.g., the audience, collaborators, and other social component involved in the writing process) and the physical environment (e.g., the produced text and the writing medium). The individual component of writing includes factors related to an individual writer, such as working memory, long-term memory, cognitive processes, motivation and affect. Working memory describes a limited-capacity component of human memory system that temporarily holds and manipulates a small amount of information (Baddeley, 1986; Baddeley & Hitch, 1974).
Long-term memory is defined as a component of human memory system where information is stored for a relatively long period of time (Atkinson & Shiffrin, 1968; Ericsson & Kintsch, 1995). Cognitive processes involved in writing include text interpretation, reflection, and text production. The motivation and affect refers to motivational factors involved in writing, such as goals, predispositions, cost/benefits analysis, beliefs, and attitudes. According to Hayes (1996), the task environment and the individual together influence the writing process that each writer assumes.

As in Hayes and Flower’s 1980 model, goals are an essential component of the writing process in the revised model. Hayes (1996) discussed a few additional benefits of goals. Hayes argues that goals help motivate writers’ continued effort in writing, as motivation is enhanced by achieving the goals they generated for the writing assignment. Additionally, goals are a critical part of the revision task schema (a set of knowledge and information that writers use to control the revision process). The goals in the revision task schema help guide writers’ attention and behavior to certain targeted revision behaviors. Additionally, as the revision goals become part of the writers’ revision schema, the goal-setting process in revision becomes an automatic process reducing the cognitive load on working memory (Hayes, 1996). For example, if the revision goal is to correct grammatical errors, then this goal will lead the writer to review the essay’s grammar rather than the global organization or structure. In line with this argument, it is expected that the quality of the revision goals will be associated with the writer’s revision skills. More developed goals might help writers make better revisions and improve overall writing quality.

In summary, cognitive models of writing emphasize that writing is a complex, goal-directed process (Bereiter & Scardamalia, 1987; Hayes & Flower, 1980; Flower &
Hayes, 1981; Hayes, 1996). Consistent in all cognitive models discussed above, goals affect writers’ writing processes from various aspects (Ferretti & Fan, 2016; Hayes & Flower, 1980; Hayes, 1996; MacArthur & Graham, 2016). Writers generate goals for writing and use them to direct their writing processes, such as planning and revising (Hayes & Flower, 1980; Hayes, 1996). The goals that writers generate positively impact writing performance when they provide clear direction about what needs to be included (Ferretti & Fan, 2016). Significantly, Scardamalia and Bereiter’s models demonstrate that experienced and novice writers use goals differently. The absence of effective writing goals might adversely affect novice writers’ writing performance. Empirical evidence has demonstrated that providing students with elaborated writing goals would improve their writing performance (Ferretti et al., 2000; Ferretti et al., 2009; Ferretti & Fan, 2016; Graham & Perin, 2007; Matsuhashi & Gordon, 1985).

**Transcription Skills and Writing Quality**

Transcription skills refer to the cognitive and physical tasks involved in creating written representations of writing (Connelly et al., 2006; McCutchen, 2011, Peverly, 2006). Research suggests that children start off with limited transcription skills and gradually develop greater fluency with experience (Berninger & Graham, 1998; Berninger & Swanson, 1994). Additionally, weak transcription skills may adversely impact the writing of children and novice (Berninger & Swanson, 1994; Berninger, 1999). A meta-analysis of writing research for elementary students (Graham et al., 2012) found that teaching text transcription skills can improve elementary students’ writing quality. Jones and Christensen (1999) conducted two research studies to investigate the relationship between automaticity in handwriting and student writing quality. One hundred and fourteen 2nd graders participated in their first study and were tested on a
group reading test, a writing speed and accuracy measure, as well as a written express assessment. Analyzing student performance on reading achievement, writing quality, and writing speed and accuracy, Jones and Christensen (1999) found positive correlations among all three measures. In addition, after controlling for reading scores, writing speed and accuracy is shown to account for 53% of the variance in writing quality, which demonstrates the unique contribution of writing speed and accuracy in writing quality.

In Jones and Christensen’s (1999) second study, 38 students were first measured on a reading test, a writing speed and accuracy test, and a writing expression test. Nineteen students who were identified as having difficulty in letter formation were assigned to the experimental group. A control group, matched to the experimental group on gender and reading achievement, was selected from students who did not have handwriting difficulty. Students in the experimental condition received small group or individual instruction on letter formation and participated in activities for improving letter formation speed and accuracy. Students in the control condition participated in regular activities with any additional targeted support. After the intervention, all students were tested on the same three measures. Jones and Christensen found that handwriting instruction significantly impacted students’ writing performance in the experimental group. The control group outperformed the experimental group in writing scores at the pretest, while no significant differences were found at the posttest. Jones and Christensen’s research demonstrated the relationship between handwriting and written text quality and showed that intervention on handwriting could improve the writing quality of students who have handwriting difficulties.

As discussed above, the role of transcription has been extensively studied in children’s writing. However, limited research has been conducted with adults.
Transcription is often considered to be less influential with adults because they usually possess fluent transcription skills (Connelly et al., 2006). As a result, transcription skills place fewer demands on adults’ cognitive resources (Olive, Favart, Beauvais, 2008; Connelly, Dockrell, & Barnett, 2005).

However, Graham (1990), Berninger (1999) and Peverly (2006) argued that transcription continues to impact the cognitive load of adult writers. A study conducted by Connelly, Dockrell, and Barnett (2005) examined the influence of the handwriting process on undergraduate student writing in a timed exam task and a timed non-exam task. Twenty-two participants were measured on handwriting fluency and asked to write two essays: one as a formative essay to receive feedback from the tutors (non-assessed task) and another as a graded exam answer (assessed task). Analyzing handwriting fluency and writing quality of the two essays, they found that while there was no significant correlation between handwriting fluency and the quality of the non-assessed essay, handwriting fluency accounted for 40% of the variance in the quality of the assessed essay. The results of Connelly et al.’s (2005) study suggested that handwriting fluency constrains the writing performance of undergraduate students in an assessed task.

Connelly, Campbell, MacLean, and Barnes (2006) examined the influence of handwriting fluency on the writing quality of undergraduate students with dyslexia. Three groups of students, including students with dyslexia, an age-matched group, and a spelling-skill-matched group, were measured on a reading fluency task, a handwriting fluency task, a working memory task, as well as an argumentative writing task. Analyzing student performance on all measures, Connelly et al. (2006) found that handwriting fluency was positively correlated with and accounted for unique variance in writing quality for students with dyslexia and spelling-skill-matched group, but not the
age-matched group. The authors argued that handwriting fluency continues to influence writing quality of some undergraduate students.

Although there has been limited research on the relationship between transcription skills and writing quality for adult writers, Connelly et al.’s studies (2005, 2006) suggest that transcription skills may influence the writing quality of adults. Keyboarding has become an essential way for adults to write, so keyboarding fluency may have an effect on college students’ writing. Connelly, Gee, and Walsh (2007) argued that writers need to develop keyboarding fluency as a stepping stone to generate high-quality writing. This dissertation explored the relationship between keyboarding and the quality of written arguments, using the Web Application to Record Text Entry Metrics tool (Arif, 2016).

**Argumentative Writing**

Argumentation is an integral component of everyday life (van Eemeren et al., 1996). It can serve different rhetorical purposes, including persuading, cajoling, negotiating, consulting, debating, and resolving conflicts (Ferretti et al., 20007; Song, 2012; Walton, 1992;). People write arguments in many different contexts. At work, people write arguments in emails and memos to discuss differences of opinion. In school, argumentative writing has shown to be positively associated with college students’ academic achievement (Halpern, 1998; Preiss et al., 2013). Given the importance of argumentative writing, it has been emphasized in the Common Core State Standards (Ferretti & Fan, 2016).

Although argumentative writing has been studied for decades, there are multiple perspectives about its definition (Newell et al., 2011). This dissertation adopts the pragma-dialectical approach to argumentation developed by van Eemeren and colleagues (1996, 2002, 2014), which combines research from the field of communication with
research on practical reasoning from the study of critical dialogues. According to the
pragma-dialectical approach, argumentation is a means of communication that aims to
resolve difference of opinion about a controversial issue (van Eemeren & Grootendorst,
2004; van Eemeren et al., 1996, van Eemeren, Jackson, & Jacobs, 2015). Specifically,
Eemeren and colleagues defined argumentation as

> a verbal, social, and rational activity aimed at convincing a reasonable
critic of the acceptability of a standpoint by putting forward a constellation
of propositions justifying or refuting the proposition expressed in the

This definition emphasizes three critical aspects of argumentative discourse
(Ferretti & Fan, 2016; Ferretti & Lewis, 2018; Song, 2012). First, argumentation is a
verbal and social activity. As a verbal activity, argumentation requires interlocutors with
different opinions to communicate and interact in order to resolve of difference of
opinion. As a social activity, argumentation is a discursive activity during which
interlocutors exchange views about a controversial issue. Even in a monologue, the
interlocutor anticipates and exchanges opinions with an imagined audience (van Eemeren
et al., 2014; van Eemeren & Grootendorst, 2004).

Second, interlocutors use a set of interrelated and structured argumentative
statements (“a constellation of propositions”) to increase the acceptability of their
standpoints and achieve their rhetorical goals. In other words, the author’s standpoint,
reasons, evidence, alternative perspective, counterarguments, and rebuttals together
impact the quality of the argument. Therefore, the quality of an argument is not merely
dependent on the presence of argumentation elements; instead, it is determined by these
elements in their totality working together (Ferretti et al., 2007). For example, Ferretti et
al. (2009) has shown that the measures derived from the argumentative structure
accounted for 70% of the variance in essay persuasiveness. Last, argumentation is a
discursive activity that requires interlocutors to act as a reasonable critic to evaluate arguments. According to van Eemeren and colleagues (1996, 2014), the quality of argumentative discourse should be evaluated by critical standards that are relevant to the overall purpose of augmentation. This dissertation will focus on one of these critical standards: the reasonableness of the arguments (van Eemeren et al., 2014; van Eemeren & Grootendorst, 2004). As I will show later in this chapter, reasonable arguments address critical questions about the argumentation schemes used by interlocutors to accomplish their discursive purposes.

Reasonable Arguments

According to van Eemeren and colleagues (1996, 2014), the quality of argumentative discourse should be measured by criteria relevant to the overall purpose of augmentation. A normative evaluation criterion of essay quality is the reasonableness of argumentative discourse (van Eemeren et al., 1996; Siegel & Biro, 2008). In the pragma-dialectical approach, Eemeren and colleagues opt for the “critical” view of reasonableness, which argues that reasonableness should be measured against the degree to which it can help facilitate the resolution of difference of opinion. Specifically, reasonableness is defined as

The reasonableness of the procedure (argumentation) is derived from the possibility it creates to resolve difference of opinion (its problem validity) in combination with its acceptability to the discussants (its conventional validity). (2004, p.131-132)

By definition, the reasonableness of an argument is related to the possibility that a particular argument will resolve the difference of opinion and be viewed as acceptable by the interlocutors. In other words, reasonable arguments increase the possibility of establishing a resolution, while unreasonable arguments lower that possibility (van
Consequently, reasonableness is considered a key criterion in measuring argumentative discourse quality (van Eemeren et al., 1996; Siegel & Biro, 2008). Reasonable arguments can positively impact the overall quality of argumentative essays.

Unfortunately, interlocutors often generate arguments that lack reasonableness (van Eemeren et al., 1996; van Eemeren et al., 2002). For example, interlocutors may fail to ask and answer questions associated with particular argumentation schemes used in their arguments. The failure to address questions about the use of an argumentation scheme violates the “argumentation scheme rule” of reasonable argument, which states that interlocutors ask and answer a set of questions associated with each particular argument scheme to make their arguments reasonable (van Eemeren et al., 2002; van Eemeren et al., 2014). The violation of the argumentation scheme rule negatively impacts the reasonableness of their arguments.

Given the importance of reasonableness as a critical evaluative criterion and the lack of reasonableness in daily argumentation practices, it is essential for students to know the standards of reasonableness to improve their argumentative writing skills. However, few argumentative writing interventions have investigated the effects of incorporating information about critical standards of reasonableness. This dissertation will help fill this void by examining the effects of incorporating the evaluative criteria of reasonableness into a goal-setting intervention. The following section will further discuss the pragma-dialectical standards of reasonableness and its implications for writing research.

According to van Eemeren and colleagues (1996, 2004, 2014), reasonable arguments help achieve the resolution of difference of opinion. To help interlocutors
produce reasonable arguments, van Eemeren and colleagues (2002, 2014) have also proposed a series of rules regulating argumentation processes. These rules help us distinguish a “reasonable” argument from an “unreasonable” argument. If any of these rules are violated, the argument cannot be considered “reasonable.” In preparation for a discussion of these rules of reasonableness, I will first review the concept of critical discussion because it provides the context for understanding these standards.

In the view of van Eemeren and his colleagues (1996; 2004; 2014), a critical discussion is a type of an argument in which interlocutors interact with each other in order to resolve their differences of opinion. Their model of a critical discussion includes a number of stages and associated rules for achieving the resolution through the appropriate use of various argumentative moves.

In the critical discussion model, argumentation has four stages: the confrontation stage, the opening stage, the argumentation stage, and the concluding stage (van Eemeren & Grootendorst, 2004; van Eemeren et al., 2002, van Eemeren et al., 2014). Each of these stages corresponds to a different phase of argumentation that must be completed in order to resolve their differences. Additionally, each argumentation stage is also associated with a set of appropriate argumentative moves that can be used by interlocutors (van Eemeren & Grootendorst, 2004; van Eemeren et al., 1996).

In the confrontation stage, interlocutors communicate with each other to establish their different opinions on a standpoint (van Eemeren & Grootendorst, 2004; van Eemeren et al., 1996). The differences of opinion can be a non-mixed difference (e.g., the interlocutor’s opinion is not immediately accepted by others) or a mixed difference (e.g., interlocutors advocate different opinions on the topic). For example, in the confrontation stage of a discussion on whether schools should allow students to use cellphones,
interlocutors will express their opinions about this topic. Some interlocutors would express their advocacy for allowing students to use cellphones, while others might express their doubts about this perspective. The differences in the interlocutors’ opinions set up the foundation for the following stages.

In the opening stage, interlocutors identify themselves as either the protagonist or the antagonist for the argumentation topic and undertake their obligations of the selected roles. The protagonist is committed to defending the standpoint, and the antagonist would critique the protagonist’s arguments. In this stage, the protagonist and antagonist need to determine whether there is sufficient common ground for continuing further arguments. The common ground could be shared knowledge, values, or beliefs. Without enough common ground, the resolution of difference of opinion cannot possibly be achieved. For instance, in the cellphone example discussed above, interlocutors would choose to adopt the role of the protagonist or the antagonist. Once the roles are selected, the protagonist and the antagonist are required to commit to their roles and fulfill the associated responsibilities for the rest of the stages. In addition to selecting roles, interlocutors also need to determine whether they have sufficient common knowledge related to the students’ use of cellphones at school. Some of the common knowledge could be shared understanding about students, conceptions of cellphone usage in education, and beliefs about school systems. Once the protagonist and the antagonist agree that they share sufficient common understanding of the topic, they would begin the argumentation stage.

In the argumentation stage, the protagonist defends the standpoint, and the antagonist critically responds to that standpoint. If the antagonist is not convinced by the protagonist’s defenses, he or she then expresses criticisms and elicits additional arguments from the protagonist. During the argumentation stage, the protagonist and
antagonist adduce arguments from each other. For instance, in the argumentation stage of cellphones example, the protagonist will express his or her reasons (students often need to contact family about early dismissals caused by weather or other emergencies) and evidence (e.g., friends using cellphones to contact parents in the case of a medical emergency) to support his or her standpoint. If the antagonist is not convinced by the protagonists’ initial arguments, he or she will provide criticisms and pose questions. Then, the protagonist will respond to potential criticisms and continue to exchange ideas with the antagonist.

In the concluding stage, the protagonist and the antagonist determine whether the protagonist has successfully convinced the antagonist. If the antagonist is convinced, then the resolution of difference of opinion is reached in favor of the protagonist. In contrast, if the protagonist does not successfully defend his or her standpoints and withdraws it, then the difference of opinion is resolved in favor of the antagonist. If the protagonist and the antagonist did not agree about the outcome of the discussion, then they did not resolve the difference of opinion. In the cellphones example mentioned above, the concluding stage is the time when interlocutors determine whether the “school should allow students to use cellphones” is successfully defended.

The model of critical discussion demonstrates the four stages of argumentation discourse and interlocutors’ responsibilities for each of those stages (van Eemeren et al., 1996; van Eemeren et al., 2002; van Eemeren et al., 2014). In order to help people generate reasonable arguments through these stages, van Eemeren and colleagues developed the “Ten Commandments,” which refer to ten guidelines for behaviors that the interlocutors should engage in during argumentative discourse (van Eemeren et al., 1996; van Eemeren et al., 2002; van Eemeren et al., 2014). Any violations of these
commandments might prevent an interlocutor from producing reasonable arguments and hinder the resolution of difference of opinion (van Eemeren et al., 1996; van Eemeren et al., 2002). Of the proposed 10 rules, this dissertation will focus on the argument scheme rule because it can be applied when people write arguments without dialogue with interlocutors, that is, they are writing monologically. Additionally, the argumentation scheme rule is relevant to the writing goals participants received in this study. Previous research (Ferretti et al., 2000; 2009; Matsuhashi & Gordon, 1985; Midgette et al., 2008) shows that an elaborated goal induces participants to justify their perspectives, think of alternative perspectives, and generate rebuttals and counterarguments, all of which are commonly ignored in written arguments. The application of the argumentation scheme rule provides additional information about how to generate these commonly ignored elements of argumentation, which might potentially augment the effects of an elaborated goal.

The argumentation rule emphasizes that individuals must use argument schemes correctly in order to produce reasonable arguments (van Eemeren et al., 1996; van Eemeren et al., 2002). To do so, they need to ask and answer a set of questions associated with each particular argument scheme. These questions are called critical questions (van Eemeren et al., 1996; van Eemeren et al., 2002; Song, 2012). The following section will discuss argumentative schemes and critical questions and demonstrate their importance for written argumentation.

An argument scheme refers to pragmatic reasoning patterns that can be used to draw inferences that link premises and the conclusion (Walton et al., 2008). Once the argument schemes have been identified, interlocutors can evaluate if the schemes are well
supported. Appropriate use of the argument schemes contributes to the reasonableness and the overall quality of argumentative discourse (Walton et al., 2008).

Walton et al. (2008) identified and categorized a series of schemes that are often employed in argumentative discourse, such as argument from expert opinion (i.e., interlocutors use experts’ opinion as to support their arguments), the argument from sign (i.e., interlocutors use a particular observation or instance as evidence or sign of the existence of a property or event), and the argument from authority (i.e., interlocutors suggests that someone or something has the right to exercise command over others due to recognized position of power). This dissertation will focus on two schemes: the argument from example and the argument from consequences. These schemes are commonly used in arguments about policy issues (see Ferretti et al., 2007). The examples used to illustrate these two schemes are adopted from Song and Ferretti’s study (2013).

Argument from example refers to the use of illustrative examples to support or reject a standpoint (Song & Ferretti, 2013). The following argument, presented in an argument scheme training guide (Song & Ferretti, 2013), illustrates the use of the argument from example scheme:

I believe that university students should be required to take classes outside their field of study. Our professor shared an instance with the class where a student who specialized in Math or Social Studies was thrown into teaching Science after graduation. (p.6)

In this example, the writer’s standpoint was that “university students should be required to take classes outside their field of study” The writer used an individual example of a student who works outside her major area after graduation as evidence to support this standpoint.

Argument from consequences refers to the invocation of positive or negative consequences of an event to support or reject a standpoint (Song & Ferretti, 2013).
following argument from the argument scheme training guide (Song & Ferretti, 2013) illustrates the use of the argument from consequences scheme:

I believe that the U.S. government should require all high school students to study a national curriculum before entering college. If there were a national curriculum, then all seniors would have at least the minimum amount of classes. This will help them be prepared for college which begins only two months after graduation. (p.12)

In this argument, the writer’s standpoint is that “the U.S government should enforce all high school students to study a national curriculum before enrollment in college.” The writer uses two reasons to support this claim. The first reason is that “all seniors would have at least the minimum amount of classes” and the second reason is that “national curriculum will help students be prepared for college.” Both reasons are positive consequences of requiring all high school students to study a national curriculum. The writer’s use of positive consequences to support his or her standpoint is recognized as using the argument from consequences scheme.

The identification of argumentative schemes helps interlocutors understand the reasoning patterns employed in argumentation (van Eemeren et al., 2014). More importantly, it also provides an opportunity to evaluate and improve the arguments by asking critical questions (van Eemeren & Grootendorst, 2002; van Eemeren et al., 2014). Critical questions refer to specific questions that can be asked to evaluate the argumentation schemes that were used (van Eemeren et al., 2014). For example, in order to evaluate an argument from example, a writer might use a critical question which asks whether the example is true. If respondents provide relevant information when asked this critical question, they have satisfied their communicative obligation and advanced the goal of resolving their differences of opinion (van Eemeren & Grootendorst, 1992; Song,
In other words, by asking and answering critical questions, individuals can determine whether an argument is reasonable.

Critical questions not only help writers compose reasonable arguments but also help them include elements that are often missed, such as alternative perspectives, counterarguments, and rebuttals (Song, 2012). As mentioned above, this dissertation focuses on two argument schemes, argument from consequences and argument from example. The following paragraphs will review critical questions related to these two argument schemes and describe how writers can use these questions.

The critical questions associated with argument from example include:

(a) Is the example claimed in the premise in fact true?

(b) Is the example typical of the kinds of cases that generalization covers?

(c) Do special circumstances of the examples impair its generalizability? (Walton et al., 2008, p.314)

Each of these questions can be considered as a potential counterargument for someone who disagrees with the writer’s opinion. The first critical question requires the writer to think about a counterargument that focuses on the truthfulness of the example. To respond to this counterargument, the writer would need to provide more information to show that the example is indeed true, which serves as a rebuttal to the potential criticisms. The following two questions encourage the writer to consider whether the example is a typical example and whether it can be generalized. To successfully answer these questions, the writer must explain why the cited example is a typical case and explain how likely this cited example can be generalized. By answering all critical questions related to the use of examples, the writer ensures the correct application of the argument from example scheme, anticipates counterarguments, generates rebuttals, and consequently, further strengthen the written arguments.
The critical questions associated with argument from consequences proposed by Walton et al. (2008) include:

(a) How strong is the likelihood that the cited consequence will (may, must) occur?

(b) What evidence supports the claim that the cited consequences will (may, must) occur, and is it sufficient to support the strength of the claim adequately?

(c) Are there other opposite consequences (bad as opposed to good for example) that should be taken into account? (p. 102)

These critical questions for argument from consequences also direct interlocutors to think about alternative perspectives, to anticipate criticisms of their own standpoints (e.g., counterarguments), and to respond to potential criticisms (e.g., rebuttals). By asking and answering these questions, writers generate arguments that are reasonable.

Critical questions not only help writers strengthen their own perspective, but also help them critically respond to alternative perspectives. Competent argumentative writing requires writers to anticipate and rebut alternative perspectives and supporting information. However, research has shown that students have difficulty generating alternative perspectives, counterarguments, and rebuttals (Nussbaum & Kardash, 2005; Perkins et al., 1991). By asking and answering critical questions about the alternative perspective, writers can generate criticisms and rebuttals to weaken the alternative perspectives and its supporting reasons. For example, a writer who believes that schools should allow students to use cellphones may anticipate and respond to a negative consequence that could be cited by someone who supports the alternative perspective. For example, cellphones might distract students’ attention. The writer could use critical questions to criticize the anticipated alternative opinion by doubting the likelihood of the negative consequence or by questioning whether there is sufficient evidence to support it.
Providing goals that include information about how critical questions can be used to generate counterarguments and rebuttals may increase the reasonableness and quality of written arguments. Goal-setting research often provides sub-goals to include reasons for the writer’s perspective, the alternative perspective, reasons for the alternative perspective, counterarguments, and rebuttals. However, these studies did not include information that would enable writers to make normative judgments about the arguments for the different perspectives. The inclusion of critical questions provides writers with evaluative information on how to generate counterarguments and rebuttals. Therefore, it is expected that the incorporation of critical questions into goal-setting research would further promote students’ argumentative writing performance. Although there are few studies focusing on students’ use of argumentation schemes and critical questions (Ferretti et al., 2009; Song & Ferretti, 2013; Wissinger & De La Paz, 2015), no research has been conducted to examine the impact of incorporating information about critical questions into writing goals. The following section will first discuss current argumentative writing literature with a focus on goal-setting approach, and then focus on the inclusion of argumentative schemes and critical questions in writing research.

**Approaches Supporting Argumentative Writing**

Argumentative writing is a challenging task for students. National assessments repeatedly show that a large proportion of K-12 students cannot write competent arguments with strong supporting reasons and evidence (Applebee, Langer, Jenkins, Mullis, & Foertsch, 1990; National Center for Educational Statistics, 2012). Not surprisingly, the struggle continues with high school and college students, who will be the focus of this dissertation’s study (Nussbaum & Kardash, 2005). Empirical evidence has shown that college students’ argumentative essays lack critical components, such as
counterarguments and rebuttals, and fail to take an alternative perspective; many of their essays focus on their own perspective of the controversial topic without considering counter perspectives (Chase, 2011; Nussbaum & Kardash, 2005; Perkins et al., 1991). Given the significance of argumentative writing and students’ poor performance, researchers have developed various instructional interventions to improve students’ argumentative writing skills, such as goal-setting, dialogical support, and strategy instruction (Crowell & Kuhn, 2014; Ferretti et al., 2000; Ferretti et al., 2009; Reznitskaya, Anderson, & Kuo, 2007; Sexton, Harris, & Graham, 1998).

The following section will describe writing interventions using each of the following approaches: goal-setting, dialogical support, and strategy instruction. In recent decades, a significant number of recent writing interventions focus on upper-elementary, middle school and high school students. However, there is a significant gap in the research about argumentative writing interventions with college students. This literature review includes studies with both K-12 and college students.

One approach to improve argumentative writing is to provide students with elaborated genre-specific goals. As shown in the cognitive models of writing and empirical research, goals can influence students’ writing performance (Hayes & Flower, 1980; Hayes, 1996). Researchers have also developed elaborated sub-goals that include elements of argumentation discourse to support an argument’s persuasiveness. The elaborated sub-goals include: (a) state the writer’s standpoint; (b) provide reasons and evidence to support the writer’s standpoint; (c) offer explanation of why the reasons and evidence support the writer’s standpoint (d) state alternative perspective (e) provide reasons and examples for alternative standpoint; (f) anticipate and respond to counterarguments; (g) develop rebuttals to alternative perspective. These sub-goals goals
provide students with clear directions about what needs to be included and have been demonstrated to improve students’ argumentative writing performance (Ferretti & Fan, 2016).

Two studies have shown the efficacy of goals on argumentative writing. Ferretti et al. (2000) investigated the effect of an elaborated goal on argumentative writing of 4th and 6th grade students with and without LD. A hundred and twenty-four students participated in the study and were assigned to either the general goal condition or the elaborated goal condition. Students in the general goal condition received a general goal of persuading an audience to agree with them on the assigned topic. Students in the elaborated goal conditions received the same general goal as well as a list of sub-goals. These sub-goals directed students to include elements of argumentation such as standpoint, reasons, alternative standpoints, counterarguments and rebuttals.

Comparing students’ written essays after the intervention, Ferretti and colleagues found that 6th grade students in the elaborated goal condition outperformed those in the general goal condition: they included more argumentative elements and composed more persuasively. However, the 4th grade students were not affected by the elaborated goal. Ferretti and colleagues argued that there are two possible explanations for 4th graders' performance: first, they may not have fully understood the argumentative elements included in the elaborated goal, and second, they may have been unable to use the information provided in the elaborated because of the constraints on working memory. Ferretti and colleagues’ study demonstrated the positive impact of an elaborated goal, which are the inclusion of argumentative elements and improvement in overall quality. However, they did not address the impact of an elaborated goal on the argumentation structure and the types of argumentation schemes used by participants.
Ferretti et al. (2009) extended this research by investigating the impact of an elaborated goal on the quality of students’ argumentative essays quality and their essay structure. Ninety-six 4th and 6th graders with and without LD wrote essays after receiving either a general goal or an elaborated goal. Students in the general condition were asked to take a position and write a letter to their teacher on whether students should be given more assignments. Students in the elaborated goal condition received the same general goal and an elaborated goal. The elaborated goal is the same as the ones used in Ferretti et al. (2000). Ferretti and colleagues (2009) found that students in the elaborated goal condition wrote letters that were more persuasive than those in the general goal condition. In addition, an analysis of the structure of their written arguments showed that students who received the elaborated goal produced more alternative perspectives, reasons directly supporting the alternative standpoints, and rebuttals. Additionally, the measures derived from the argumentative structure accounted for 70% of the variance in essay persuasiveness, which means that these measures are highly predictive of the essay quality. Finally, students in the elaborated goal condition produced more argumentative strategies than those in the general goal condition but did not differ with respect to the types of strategies or their relative distribution across strategy types. Finally, the argument from consequences was most frequently used, and argument from example, argument from slippery slope and argument from verbal classifications were also used to support the argument from consequences.

Dialogical support has been shown to increase students’ argumentative writing performance. As suggested previously, argumentation is dialogical in nature because interlocutors interact to resolve their differences of opinion. The possibility of a resolution depends upon the participants’ commitment to fulfilling their communicative
obligations (van Eemeren & Grootendorst, 2004). When these obligations are met, dialogic interactions can improve the quality of argumentative discourse (Newell et al., 2011). However, in a written argument, the active participation of opposing interlocutors is often absent. In the absence of an opposing interlocutor, writers are required to anticipate the interaction with someone who disagrees on the issue, develop alternative viewpoints and criticisms, and create rebuttals. The dialogical process of exchanging of ideas with an imagined interlocutor can be cognitively challenging, especially for struggling writers. For this reason, dialogic interventions have been designed to support planning, composing, and revising arguments. These interventions provide students with opportunities to engage in argumentative dialogues, such as debates and discussions (Kuhn, Shaw & Felton, 1997; Reznitskaya et al., 2007). Well-designed dialogic interactions encourage perspective taking and support the development of argumentative writing skills (Crowell & Kuhn, 2011).

Kuhn and Crowell’s (2011, 2014) 3-year study of dialogic argumentation illustrates the potential benefits of combining face-to-face and computer-based argumentative activities. Middle-school students from academically disadvantaged backgrounds were randomly assigned into one of the three classes, of which two were randomly selected as experimental groups and one as the control group. During the 3-year period, students in the experimental group participated in a series of learning activities. They first participated in the “pregame” phrase during which they worked in same-side small groups to generate and evaluate arguments, and to anticipate alternative standpoints. In the “game” phrase, students paired up with a same-side partner to argue against an opposing-side pair via the instant messaging software. After the discussion, students completed a reflection sheet to reflect on both perspectives. In the “end-game”
phrase, students regrouped into same-side groups and participated in a final debate. Students in the experimental groups engaged in a series of dialogic argumentative activities, and those in the control group engaged in a whole-group class in which they engaged in teacher-led, whole-class discussions as well as written assignment exercises.

Kuhn and Crowell (2011) found that, compared to students in the control condition, students in the experimental condition wrote essays with more statements addressing both sides of the controversy at Year 2 and 3. In addition, they also wrote essays with more arguments at Year 3. These results suggest that an extended argumentative dialogue intervention can effectively support the development of underprivileged students’ argumentative writing skills. However, it should be noted that intact classes were assigned to the different conditions, and no effort was made to estimate the effects of differences across classes on the argumentative writing outcomes. In addition, information about the fidelity of implementation was reported by the authors.

Dialogical support has also been effective improving elementary students’ argumentative writing skills. Reznitskaya et al. (2007) studied the effects of dialogic interaction on the argumentative writing of 4th and 5th grade students. Students in each grade were assigned to the collaborative reasoning (CR) condition, the CR-plus lessons condition, or the control condition. Students in the CR condition engaged in four face-to-face augmentative discussions about everyday social dilemmas. Students in the CR-plus lessons condition first received explicit instruction about argumentation delivered through two scripted lessons, which focused on the definition and purpose of arguments, as well as the use of reasons, counterarguments, and rebuttals. After the lessons, they participated in four sessions of CR. Students in the control condition received reading instruction. At the end of the intervention, all students were asked to respond to an
interview about their argumentation knowledge, write an argumentative essay, and recall an argumentative text.

The researchers found that 4th and 5th graders in the CR condition wrote longer argumentative essays than students in the other two conditions. Additionally, 5th graders in the CR condition composed essays with more my-side reasons than students in the other conditions. Fifth graders in the CR also produced more counterarguments and rebuttals that than those in the CR-plus lessons conditions, but unexpectedly, those in CR and control conditions did not differ. Furthermore, the three conditions did not differentially affect the number of reasons in 4th graders essays, although the direction of the effect was similar to that for 5th graders. Reznitskaya’s study seems to show that the CR condition improves students’ written arguments, while the CR-plus lessons condition did not. In fact, it appears that the lessons suppressed the production of counterarguments and rebuttals. However, the authors provided no information about the quality of the lessons or the degree to which they were implemented faithfully. Therefore, conclusions about their suppressive effects are speculative.

There is also compelling evidence demonstrating the efficacy of interventions that focus on teaching students to strategically regulate their writing processes (Graham & Perin, 2007; Graham et al., 2013; Kiuhara, O’Neill, Hawken, & Graham, 2012). One commonly used model in strategy instruction is the Self-Regulated Strategy Development (SRSD) model, which focuses on teaching students writing strategies as well as knowledge and self-regulation procedures required to employ the strategies independently (Graham, Harris, & Mason, 2005). In the SRSD model, the teacher initially provides explicit support for students’ acquisition and application of the writing strategies, then gradually fades the support to let students take independent responsibility
for applying those strategies (Harris & Graham, 1985, 1992). SRSD instruction interventions also often provide students with information about the strategy’s purposes and potential benefits, as well as experiences designed to ensure the strategy’s internalization, maintenance, and generalization (Graham & Harris, 2005; Graham et al., 2013).

Sexton et al. (1998) examined the efficacy of a three-step writing strategy on elementary students’ argumentative writing. Six 5th and 6th grade students with LD participated in this study. Before the training, students established their pre-instruction response rates on the number of functional elements, time spent on planning, essay length, essay quality and attribution (e.g. what factors contribute to their essay quality). Then, they were taught a three-step strategy for writing argumentative essays. In the first step of the strategy, students were asked to think about the purpose of their writing and its potential audience. Next, they were taught to use the TREE mnemonic during planning, which prompted them to provide a Topic sentence, to provide Reasons for their opinion, to Examine the reasons from the audience’s perspective, and to provide an Ending. At the end, students were taught the last step of the strategy which asked them to write more in their essays. In addition to the 3-step strategy, this intervention also included an attributional component, which encouraged students to attribute their success and achievement to the use of writing strategy and their personal effort. After the instruction, each student wrote three to four essays as the posttest and one as the maintenance test.

Sexton and colleagues (1998) found that prior to instruction, students’ baseline essays were of poor quality. Students spent little time on planning, generated essays that contained a limited number of words, and included few discourse elements in their writing. The results on the baseline attribution measures showed that all students
attributed writing success to effort, but only four considered the use of strategy to be important to writing success. After instruction, five of the six students used the acquired strategy for writing posttest and maintenance test essays. Analyzing students’ essays, Sexton and colleagues concluded that all students showed improvement in their essays, including more functional elements, increasing essay length, and improving quality. The post-instruction attribution measures also suggested that all students made strong attributions about the importance of effort as well as strategy use for writing performance.

Kiuhara and colleagues (2012) tested the effects of strategy instruction with high school students. In this study, six 10th graders were taught the STOP, AIMS, and DARE strategies, which can be used to plan and write their arguments. The STOP strategy teaches students to plan before they write. Specifically, students were taught to Suspend their initial judgment by providing reasons for each side of the opinion, Take a position after reviewing the listed reasons, Organize ideas, and Plan and write more information. The DARE strategy directs students to Develop a topic sentence, Add supporting information, Reject alternative perspectives, and End with a conclusion. The AIMS strategy teaches students to write an introduction that should Attract the reader’s attention, Identify the problem of the topic so the reader understands the issues, Map the context of the problem or provide background needed to understand the problem, and State the thesis so the premise is clear. Kiuhara et al. (2012) found that, before instruction, students spent little time planning and writing their essays. The essays were underdeveloped and were of poor quality. After instruction, students spent more time planning and writing their essays. They attempted to produce rebuttals to the alternative perspective and wrote essays that were of higher quality and more elaborated. In addition,
the post-instruction essays usually contextualized the topic and provided relevant background information about it.

In summary, goal-setting, dialogical support, and strategy instruction have been shown to promote students’ argumentative writing skills. There is a common feature worth noting in these studies: current writing interventions focused on the inclusion of basic argumentative elements, which contributes to the overall persuasiveness (Song, 2012). However, according to the pragma-dialectical approach to argumentation, the quality of argumentative discourse does not simply depend on the inclusion of basic element of argumentation (Ferretti et al., 2007; Ferretti et al., 2009). According to van Eemeren and colleagues, the quality of an argumentative discourse should be measured by the standards of reasonableness (van Eemeren et al., 2014; Siegel & Biro, 2008). A discussion of the effects of the standards of reasonableness, the use of critical questions, will follow.

A few studies report evidence about incorporating critical standards into writing intervention. Nussbaum and Edwards (2011) studied the effects of teaching middle school students to ask critical questions on the production of arguments that were sensitive to alternative perspectives. Three classrooms participated in the study, two of which served as the experimental group and one as the control group. Students in both groups engaged in oral discussions on 8 controversies selected from current events reported in the Newsweek magazine. During these discussions, students in the experimental condition received instruction on how to use an argument vee diagram (AVD) to present arguments and counterarguments and to ask critical questions to evaluate the strength of arguments on both sides. Students in the control condition were only taught to use the AVD without learning about the critical questions.
Nussbaum and Edwards (2011) found that students who were taught critical questions included more arguments in their AVD documents that addressed multiple perspectives than students in the control condition. However, the effect of critical questions did not consistently show in transfer tests on two new controversies when the classroom discussion and critical questions prompt were absent. An in-depth analysis of an individual student’s AVDs and participation in class discussion was conducted and found that the students considered critical questions helpful in developing arguments and critical questions helped the student develop arguments weighing both-sides of a controversy.

Nussbaum et al. (2018) examined the effects of teaching college students critical questions through oral discussions and writing. Undergraduate students in three sections of a general education seminar participated in the study, two of which were assigned to the experimental group and the third to the control group. At the beginning of study, all students completed an essay on the value of college. Students in both conditions then participated in a series of classroom discussions about controversial issues, received instruction on the revision process, and produced and revised two positional papers. Students in experimental condition used AVDs with critical questions, while students in the control condition used only AVDs. Analyzing students written arguments and AVD documentation, they found that the inclusion of critical questions was associated with an increase in the number of arguments that involves considering different perspectives of the argument. However, the effect of critical questions did not always transfer to written essays when students were not prompted with the critical questions. Nussbaum’s 2011 and 2018 research suggested that the incorporation of critical questions in instructional
interventions with instructional and dialogical support encourage middle school and college students’ consideration of alternative perspectives.

Song and Ferretti’s study (2013) demonstrated the augmented effects of incorporating critical standards of argumentation to SRSD instruction. College students were assigned to one of three conditions: the ask and answer critical questions (ASCQ) condition, the argument schemes (AS) condition, and an uninstructed control condition. In the ASCQ condition, students were taught to revise their essays by asking and answering critical questions about two argumentation schemes (argument from consequences and argument from example) that are commonly used to address controversial policies (Ferretti et al., 2007; 2009). In contrast, students in the AS condition were taught to revise their essays by using these schemes to elaborate their standpoints but did not learn to apply the critical questions. Finally, students in the control condition received no instruction.

The ASCQ condition was expected to increase the students’ responsiveness to alternative perspectives because they were taught to anticipate counterarguments and rebut the alternative standpoint. In contrast, students in the AS condition were taught to use argumentative schemes to bolster supporting reasons for their standpoint. In fact, students in the ASCQ condition wrote essays that were of higher quality and included more counterarguments, alternative standpoints, and rebuttals than those in the other conditions. Furthermore, the students who learned the AS strategy produced more reasons for their standpoints than those in the other conditions. Interestingly, these effects were also evident for students’ first drafts. This study suggests that the acquisition of critical standards for revision should positively impact the quality of students’ writing.
Wissinger and De La Paz (2015) mirrored the positive effects of argument schemes and critical questions on the historical arguments of middle school students. A hundred and fifty-one middle school students were randomly assigned to the experimental condition or the comparison condition. Students in the experimental condition engaged in teacher-led discussions using two argumentative schemes and five critical questions while students in the comparison condition engaged in group discussions responding to traditional sets of questions that are used to facilitate students’ understanding of the topic. Wissinger and De La Paz (2015) found that after learning about argument schemes and critical questions, students gained more historical knowledge than students in the control group. Additionally, students in the experimental group demonstrated important aspects of historical thinking by including significantly more elaborated arguments and rebuttals in their essays. These studies demonstrate that students can be taught to use critical questions to improve their argumentative writing. It is expected that incorporating information about critical questions into revising goals will positively impact college students’ argumentative writing.

In summary, according to the pragma-dialectical approach, the reasonableness of arguments is determined by its contribution to resolving difference of opinion (van Eemeren et al., 2004; van Eemeren et al., 2014). To help interlocutors produce reasonable arguments, van Eemeren and colleagues (2002, 2004, 2014) proposed a model of critical discussion and developed the “Ten Commandments” which provides guidelines that help interlocutors generate reasonable arguments. If any of these ten rules are violated, the argument cannot be considered “reasonable.” This dissertation focuses on the “argument scheme rule,” which requires interlocutors to appropriately use argument schemes through asking and answering critical questions (van Eemeren et al., 2002). It is expected
that providing students critical questions will help them write more reasonable arguments, and therefore, arguments of higher quality. This dissertation will investigate the efficacy of incorporating information about critical questions into conventional goal-setting revision intervention. Before discussing the current investigation in depth, I will review the literature about goal-setting argumentative writing interventions focusing on the revision process.

**Goal-setting Argumentative Research and Revision**

Studies discussed in the earlier section demonstrate the positive impact of providing students with writing goals. Empirical evidence also shows that providing goals during the revision process can improve the quality of argumentative essays (Graham et al., 1995; Midgette et al., 2008).

Revision is a fundamental component of the writing processes. It provides writers with many opportunities to critically read the produced text, reflect on their intended ideas, identify problems and make changes to the text or their intended ideas to improve overall writing quality (Flower & Hayes, 1981; MacArthur, 2016; Scardamalia & Bereiter, 1986). However, the affordances of revision are not always achieved by struggling writers (Butler & Britt, 2011; Scardamalia & Bereiter, 1986; Kinsler, 1990; MacArthur, 2016). Experienced writers revise more often than novice writers (Bridwell, 1980; Flower, Hayes, Carey, Schriver, & Stratman, 1986; Galbraith & Torrance, 2004; Hayes & Flower, 1986; Wallace & Hayes, 1991). In addition, they revise to communicate their intended ideas to the audience and to achieve their rhetorical (Hayes & Flower, 1981). Novice writers and those that are struggling tend to revise to correct grammatical and spelling errors, change word choices and make sentence-level changes (Bridwell, 1980; Faigley & Witte, 1981; Myhill & Jones, 2007). Although students’ revision skills
develop with experience, some students struggle to revise effectively (MacArthur, 2016). For example, Pianko’s research (1979) showed that college freshmen only spent 9% of their entire writing time on revision. Therefore, it is critical to help students learn how to revise effectively. Understanding the cognitive processes involved in revision is a necessary step in developing interventions to support students’ revision skills.

In Hayes & Flower’s (1980) initial model of the writing process, revision, which was called “review,” is a process during which writers read and evaluate the text, detect problems, and resolve them by making changes. Specifically, revision involves two main sub-processes: evaluating (read the produced text and detect any problems) and revising (find a solution and execute the changes). According to Flower and Hayes (1981), revision can be a conscious process during which writers read to evaluate and make changes to the text. However, revision can also be unplanned, triggered by the produced text or issues with writing processes. For example, a writer might start the revision processes when he or she identifies a grammatical error. Regardless of being conscious or triggered, effective revisions can help improve overall writing quality. Although Hayes and Flower’s model (1980) identified revision as a fundamental process of writing, it did not provide a comprehensive overview of revision.

Bereiter and Scardamalia (1987) proposed another model of revision which better represents its iterative and problem-solving nature. In Bereiter and Scardamalia’s model (1987), revision is composed of three sub-processes: comparing, diagnosing, and operating (CDO). According to this model, the writer identifies problems in writing by comparing the written text to his or her intended meanings. Then, if problems are identified, the writer will diagnose the problem and plan to revise. For example, a writer, who is revising an essay on whether schools should allow students to use cellphones in
school, will first read and compare the already-produced text with his or her intended ideas of this topic. A problem the writer might find is that one of his or her supportive reasons is not clearly explained. For example, the writer may not have explained how a cellphone could be used in an emergency. Once the issue is diagnosed, the writer will develop solutions to address this issue. He or she might decide to either add additional explanations to the underdeveloped reasons or delete the underdeveloped reason. Once the decision is made, the writer would make changes to the text in order to complete the revision.

Additional features of the revision processes were later discussed in Hayes’ 1996 model. As in previous cognitive models, revision is also depicted as a problem-solving process. Writers revise their writing by reading and identifying discrepancies between their intended ideas and the written text, finding a solution, and making appropriate changes (Flower & Hayes, 1981; MacArthur, 2016; Scardamalia & Bereiter, 1986). In this revised model (Hayes, 1996), revision consists of three major sub-processes: text interpretation (e.g., critically read the text to revise), reflection (e.g., engage in problem-solving and decision-making processes), and text production (e.g., transcribe text to reflect the changes).

Hayes (1996) argues that we must also understand that revisions are coordinated by a control structure named “task schema” (Hayes, 1996). Task schema refers to the writer’s knowledge relevant to revision, which might include an overarching revision goal (e.g., to improve the text quality), a set of relevant activities involved in revision (e.g. evaluative reading, problem solving, and text production), attentional sub-goals (e.g. paying attention to text, be aware of what errors to identify and correct), criteria for judging essay quality, and strategies for correcting specific types of errors (Hayes, 1996).
The task schema’s overall goals provide writers with high-level direction and draw their attention to the improvement of text quality (Hayes, 1996). The sub-goals provide specific and concrete directions that enable writers to revise their essays. Using all of these goals as the guidance, writers perform and regulate their revision processes (Flower & Hayes, 1981; MacArthur & Graham, 2016).

According to the cognitive models, revision is a problem-solving process that aims to improve the overall essay quality (Bereiter & Scardamalia, 1987; Hayes and Flower, 1981; Hayes, 1996; MacArthur, 2016). Revision processes allow writers to read and detect discrepancies between their intended ideas and the written text, consider solutions and make changes accordingly (Flower & Hayes, 1981; MacArthur, 2016; Scardamalia & Bereiter, 1986). Revision enables writers to reflect on their ideas, develop and apply critical standards of evaluation, and improve their essays quality (Scardamalia & Bereiter, 1986). Revision interventions, such as peer feedback, strategy instruction, and goal-setting, help students to achieve the above-mentioned goals and improve their essay quality (Graham & Perin, 2007; MacArthur, 2016). Because this dissertation employs a goal-setting revision design, the following section will review and discuss current literature on goal-setting revision studies.

Matsuhashi and Gordon’s study (1985) examined the effects of writing goals on college students’ argumentative writing revisions. In their study, 110 college students participated and were assigned to one of the three conditions: the general revision goal condition, the specific revision goal condition, and the modified specific revision goal condition. All participants participated in two sessions. In the first session of this study, all participants were asked to write an argumentative essay. In the second session, participants were asked to revise their essays using the different goals. Students in the
general goal condition received a general goal that asked them to revise their essays to improve their quality. Students in the specific goal condition were asked to add five ideas to improve their essay. Students in the specific goal condition were instructed to first develop a list of five things to add to improve their essay quality and then add information in the list to improve their essays.

Matsuhashi and Gordon (1985) found that after receiving the goals, college students made more revisions that changed the meaning of their text. Specifically, students who received the specific goal made more substantial revisions in their final drafts than students who received the general goals. Unfortunately, Matsuhashi and Gordon did not compare the quality of the revised essays. However, it is possible that students in the specific goal condition, who made more substantial revisions, wrote revised essays that were of higher quality than students in the general goal condition.

Researchers have also found goal-setting revision to be effective with upper elementary and middle-school students. Midgette and colleagues’ study (2008) demonstrated the positive effects of an elaborated goal on 5th and 8th graders’ revisions and overall essay quality. In their study, 181 students from 5th and 8th grade were randomly assigned to one of three revision goal conditions: the general goal (GG) condition, the content goal (CG) condition, and the content plus audience awareness goal (CGAG) condition. This study had two sessions during which participants first wrote and then revised their essays using the assigned goals. In the first session, all participants were asked to write an argumentative essay about whether young people should be allowed to watch any kind of movie on TV. In the second session, students were asked to revise their essays using different writing goals and then to write their revised essays on a new sheet of paper. Students in the GG condition received a general goal to improve
paper quality. Students in the CG condition were provided with a content goal which instructed them to think about argumentation-related organizational goals, such as additional reasons and evidence to support their standpoints for the CG condition. Students in the CGAG condition received the same content goal as used in the CG condition and an additional audience awareness goal, which asked them to consider intended audiences and critically respond to possible disagreements.

Midgette et al. (2008) found that students who received the elaborated goal, including the CG and the CGAG, wrote more persuasive essays than students in the general goal condition. Students in the CGAG condition outperformed peers in the CG and GG condition by generating more rebuttals and opposing reasons. Additionally, the results also show that 8th-grade students included more opposing reasons and rebuttals than 5th graders. Midgette et al.’s study (2008) demonstrated that when students received genre-specific goals, they included more elements of argumentation and improved the overall essay quality. More importantly, this study suggests that the inclusion of audience-awareness goals further augmented the effects of organizational goals: students who received the CGAG goal outperformed the rest of the participants in the inclusion of rebuttals and opposing reasons.

The empirical evidence discussed here shows that goal-setting can improve students’ revisions and overall argumentative essay quality. However, most of the current intervention research designed to impact revision processes did not address the genre-specific critical standards related to argumentation (Walton et al., 2008; Song, 2012). This dissertation focuses on the inclusion of critical questions, which provide a standard for evaluating the argument’s reasonableness. Therefore, including information about
critical questions in a revision goal is predicted to improve the overall quality of college students’ argumentative essays.

Summary

Argumentative writing has gained increasing attention in educational research because of its significance in school and in the workplace. However, empirical evidence shows that students have difficulty writing arguments proficiently (Applebee et al., 1990; National Center for Educational Statistics, 2012). Given the importance of argumentative writing and students’ poor performance, it is critical to help them improve their argumentative writing skills. In the past decades, researchers have investigated approaches to improve students’ argumentative writing quality. These approaches include providing students with genre-specific sub-goals, engaging students in argumentative dialogues, and offering strategy instruction (Ferretti et al., 2000; Ferretti et al., 2009; Ferretti & Fan, 2016; Graham et al., 2016; Graham & Perin, 2007; Midgette et al., 2008;).

This dissertation adopts the pragma-dialectical approach to argumentation, which defines argumentation as a verbal and social activity that requires interlocutors with different opinions to communicate and interact in order to resolve of difference of opinions (van Eemeren & Grootendorst, 2004; van Eemeren et al., 1996, van Eemeren, Jackson, & Jacobs, 2015). In this approach, the quality of an argument does not simply depend on the inclusion of basic element of argumentation (Ferretti et al., 2009). Instead, the quality of an argumentative discourse should be measured against critical standards of argument, such as the reasonableness (van Eemeren & Grootendorst, 2004; van Eemeren et al., 1996; Siegel & Biro, 2008). However, the critical standards of argumentation are rarely addressed in most of the current writing research.
This dissertation is designed to investigate whether incorporating critical questions into revision goals augments the effects of an elaborated goal. It is expected that the incorporation of critical questions will improve students’ argumentative writing quality. Additionally, the dissertation also explores the relationship between keyboarding fluency and adult argumentative writing quality. We anticipate that keyboarding fluency will be associated with adult writing quality.
Chapter 3

METHODS

Participants

Approximately 105 undergraduate students were recruited from courses taught in the School of Education at a university in the mid-Atlantic United States. All participants were required to be at least 18 years of age and self-reported native English speakers. Four-fifths of the participants were randomly assigned to experimental groups, and one-fifth of the participants were randomly assigned to the writing prompt testing condition. The latter condition was used to provide an untreated control comparison for the posttest essay as they only participated in the posttest writing the posttest writing prompts without receiving any goals. All participants in the experiment groups started the study by writing an argumentative essay using the pretest topic. After the pretest, participants in the experimental group were matched and assigned to one of the four conditions: the EG condition, the EGCQ condition, the CQ condition, and the GG condition. In the second session of the study, participants in different conditions received different writing goals and were asked to revise their pretest essays using those goals. In the last session, participants in the experimental groups wrote a second argumentative essay using the posttest prompt, while participants in the essay topic control condition wrote essays for the first time. These sessions were completed on three separate days.

Writing Prompt

The writing prompts used in this dissertation are adopted from Song and Ferretti (2013), who asked undergraduate students to generate lists of interesting and controversial writing topics. This dissertation used two of those writing prompts (one about school policy and the other about social media) as the pretest and the posttest essay.
topics. The pretest prompt requires students to argue whether “schools should hold students accountable for behaviors discovered on students’ Facebook accounts.” The posttest prompt asks whether “high school students should be allowed to use cellphones while in school to communicate with family and friends.” These prompts were selected because the dissertation investigates whether the inclusion of information about critical questions for arguments from consequences and arguments from examples impacts participants’ argumentative writing. Song and Ferretti (2013) demonstrated that these prompts are associated with the use of these argumentation schemes. See Appendix A for the two writing prompts.

**Design and General Procedures**

Explicit scripts were prepared and presented by the experimenter for each phase of the study: (a) pretest phase (including the EG condition, the EGCQ condition, the CQ condition, and the GG condition); (b) revision phase (including the EG condition, the EGCQ condition, the CQ condition, and then GG condition); and (c) posttest phase (including the EG condition, the EGCQ condition, the CQ condition, the GG condition, and the topic control condition). See Appendix B for the scripts that were administered by the experimenter during each phase of the study.

The study employed a pretest-posttest quasi-experimental design. During the pretest, all participants were asked to participate in a typing-speed test and then write an argumentative essay independently, using the Microsoft Word processor. Participants’ pretest essays were analyzed and used to assign them to conditions to ensure that all groups are comparable. Specifically, participants were matched on the following criteria in their essays: (a) the number of reasons supporting their own opinions, (b) the number
of counterarguments, (c) the number of alternative standpoints, and (d) the number of rebuttals.

After the pretest, participants were assigned to one of the four revision conditions: the EG condition, the EGCQ condition, the CQ condition, or the GG condition. During the revision session, participants in all conditions first received different writing goals and then independently revised their essays. A detailed description of each condition and the script associated with each were provided in a later section of this dissertation. After the revision session, participants wrote another argumentative essay on the posttest topic. In addition to these four experimental groups, another randomly selected group of students served as the topic control group. This group only participated in the posttest session during which they completed the typing speed test and wrote an essay in response to the posttest writing prompt without receiving any writing goal. This condition was included to control for possible topic differences on writing and for the possible effect of repeated testing on the posttest performance of participants assigned to the four revision conditions.

Pretest Instructions

Participants completed the pretest in a small-group setting (i.e., groups of five or six students). At the beginning of the pretest session, the experimenter first instructed the participants to complete a typing-speed test using the WebTEM, an online application developed to record text entry metrics (Arif, 2016; Arif & Mazalek, 2016). This application measures participants’ keyboarding fluency by presenting them with predetermined English phrases proposed by MacKenzie and Soukeoff (2003). Specifically, a short phrase appeared one a time in the screen in a random order and participants were asked to type the phrase into a text box and hit enter to continue with
the next phase. After completion of the typing-speed test, the experimenter introduced the essay topic and then informed students to take as much time as they needed to complete the essay. After this introduction, the experimenter presented the writing prompt using Microsoft PowerPoint and asked students to independently compose their essays using the Microsoft Word processor.

**GG Revision Instructions**

Participants completed the revision session in a small-group setting or individual sessions. The size of the group depended on the availability of the participants, which was outside of the researchers’ control. The general goal provided in this session was presented using Microsoft PowerPoint. Participants in the GG condition received a general goal during the revision session. Students were not allowed to communicate with each other. Prior to the start of this session, participants saw their pretest essays on a computer screen in front of them. At the beginning of session, the experimenter described the general goal to revise the pretest essay to make it more convincing. After introducing the general goal, the experimenter asked participants to revise their pretest essay using the provided information. The instruction for the general goal revision session took around 3 minutes and used one slide page. All students’ revisions were recorded using the track-change function of Microsoft Word.

**EG Revision Instructions**

Participants completed the revision session in a small-group setting or individual sessions. The size of the group depended on the availability of the participants, which was outside of the researchers’ control. All information provided in this session was presented using Microsoft PowerPoint. Participants in the EG condition received both the
general goal and the elaborated goal. Prior to the start of this session, participants saw their pretest essays on a computer screen in front of them. At the beginning of session, the experimenter first introduced the general goal of this session. After introducing the general goal, the experimenter provided the elaborated goal, which consisted of a list of the argumentation-specific sub-goals. The elaborated goal included: “(a) Make sure your opinion is clearly stated in your essay; (b) Think of at least 3 reasons and examples to back up your opinion; (c) Explain why those reasons and examples support your opinion; (d) Think about other people who might disagree with your opinion, and be sure to state their opinion; (e) Provide 3 reasons and examples they would give to support their opinion; (f) Explain why the reasons and examples for their opinion aren’t good; (g) Include a conclusion.” Then, the experimenter instructed participants to start revising their pretest essays using information provided in the session. A handout with sub-goals was given to students. The instruction for the EG revision session took around 8 minutes and used two slide pages. All students’ revisions were recorded using the track-change function of Microsoft Word.

EGCQ Revision Instructions

Participants completed the revision session in a small-group setting or individual sessions. The size of the group depended on the availability of the participants, which was outside of the researchers’ control. The elaborated goal and critical questions provided in this session were presented using Microsoft PowerPoint. Participants in the EGCQ condition received information about the general goal, the elaborated goal, and critical questions. As in the EG condition, participants saw their pretest essays on a computer screen in front of them. At the beginning of this session, the experimenter introduced the general goal and the elaborated goal following the same procedures used
in the EG condition. After providing the elaborated goal, the instructor then introduced critical questions for argument from consequences and argument from example.

The critical questions for argument from consequences included three questions:
“(a) Will these things (consequences) probably happen if the University requires students to be accountable for their behavior? (b) What evidence (examples or facts) do you have that these consequences will happen? and (c) Are there other good or bad things that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?” After introducing these questions, the experimenter reminded participants to ask and answer these critical questions when they used consequences to support their own standpoints.

After presenting the critical questions for argument from consequences, the experimenter presented the second set of critical questions that focused on the argument from example. These critical questions included three questions: “(a) Are the examples true? (b) Are the examples typical of the kinds of examples that could be used to support the opinion? and (c) Are there any special circumstances that make the examples atypical?” After introducing the critical questions for argument from example, the experimenter reminded participants to ask and answer these critical questions for the examples they used to support their opinions.

After presenting critical questions that participants could use for their own standpoints, the experimenter asked participants to ask and answer the same sets of critical questions for the alternative perspective as a means of rebutting the alternative perspective and its supporting reasons. The same procedures were used to introduce critical questions. At the end of the session, the experimenter asked participants to start revising their pretest essays using information provided in the session. A handout with
the elaborated goal and two sets of critical questions were given to students. The instruction for the EGCQ revision session took around 18 minutes and used 18 slide pages. All students’ revisions were recorded using the track-change function of Microsoft Word.

CQ Revision Instructions

Participants completed the revision session in a small-group setting or individual sessions. The size of the group depended on the availability of the participants, which was outside of the researchers’ control. The critical questions provided in this session were presented using Microsoft PowerPoint. Participants in the CQ condition received information about the critical questions during the second session. As in the EG condition, participants first saw their pretest essays on a computer screen in front of them prior to the start of this session. At the beginning, the experimenter introduced the general goal. The instructor then introduced the critical questions for argument from consequences and argument from example.

Participants received the list of critical questions for argument from consequences. The critical questions included three questions: “(a) Will these things (consequences) probably happen if the University requires students to be accountable for their behavior? (b) What evidence (examples or facts) do you have that these consequences will happen? and (c) Are there other good or bad things that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?” After being introduced to these questions, the participants were reminded that they needed to ask and answer these critical questions when using consequences to support their own standpoints.
After presenting the critical questions for argument from consequences, the researcher continued with the second set of critical questions for the argument from example. These critical questions included three questions: “(a) Are the examples true? (b) Are the examples typical of the kinds of examples that could be used to support the opinion? and (c) Are there any special circumstances that make the examples atypical?” After being introduced to the critical questions for argument from example, the participants were reminded that they needed to ask and answer these critical questions for the examples they used to support their opinions.

After presenting critical questions for their own standpoints, the experimenter instructed participants to ask and answer the same sets of critical questions for the alternative perspective as a means of rebutting the alternative perspective and its supporting reasons. The same procedures were used to introduce critical questions.

At the end of the session, the experimenter asked participants to start revising their pretest essays using information provided in the session. A handout with two sets of critical questions was given to students. The instruction for the CQ revision session took around 12 minutes and used 13 slide pages. All students’ revisions were recorded using the track-change function of Microsoft Word.

Posttest Instructions

During the posttest, the instructor asked participants from EG, EGCQ, CQ and GG conditions to write another essay on a different topic using the same handout received during the revision session. Participants in the topic control group met with the researcher for the first time. During their first and only session, they were asked to complete a typing-speed test using the WebTEM and then write an argumentative essay using the posttest prompt without receiving any writing goal.
Measures

This section describes the measures for keyboarding fluency, essay quality, argument structure, and argumentation schemes. All measures for argumentative essays were adopted and modified from Song and Ferretti (2013), including the primary trait rating of quality, the structural aspects of the argument, and the argumentation schemes used by the writer.

Typing Speed.

The participants’ typing speed was measured by the word per minute (WPM) metric. The WPM is a commonly used empirical metric for text entry performance, which estimates how many words a participant can type within a minute (Yamada, 1980). Specifically, WPM is defined as $\text{WPM} = \frac{|T| - 1}{s} \times 60 \times \frac{1}{5}$. $T$ refers to the length of the transcribed text, $s$ refers to the seconds counted from the first key press to the last (Arif & Stuerzlinger, 2009). The factor 60 is the number of seconds in a minute, and the constant 1/5 is the average length of words in characters (Yamada, 1980). For the current study, participants’ WPM performance was automatically calculated by the WebTEM application (Arif & Mazalek, 2016).

Overall Essay Quality.

The quality of the written essays was measured using a seven-point primary trait rating scale (Ferretti et al., 2000; Song & Ferretti, 2013). This scale measures the potential to influence an audience to change his or her own perspective or take action on a controversial issue (Song & Ferretti, 2013). When determining the overall quality of participants’ essays, the following elements were be taken into consideration: (a) whether
the author’s opinion is clearly stated, (b) whether the author includes reasons to support his or her standpoint, (c) how well the author uses reasons and examples to elaborate on his or her standpoint, (d) whether the author mentions and responds to alternative perspectives and counterarguments, and (e) how well is the author’s argument organized, such as including an introduction and a conclusion. See Appendix C for the primary traits scoring guide.

The researcher and a second rater scored the quality of essays independently. The researcher scored all essays. A second rater, who was blind to the experimental conditions, received training in using the primary trait scoring guide. After the second rater completed his or her training, she then scored all essays. The inter-rater reliability were calculated using an established method used in previous research: the total of agreements plus disagreements were divided by the total number of agreements (Ferretti et al., 2009; Song & Ferretti; 2013). Interrater agreement within 1 point was 90%. Only one essay (.3%) had a score difference of 2 points.

Structure Analysis.

The structure of participants’ essays was graphed using the argumentative essay structure coding guide developed by Ferretti and colleagues (Ferretti et al., 2009; Song and Ferretti, 2013). This structure analysis procedure is derived from the pragma-dialectical approach to argumentation (Song & Ferretti, 2013; Eemeren, Grootendorst, & Henkemans, 2002). This method allows researchers to create a visual representation that depicts the relationships among the elements of the argumentation, such as standpoints, reasons, and counterarguments. See Appendix D for the argumentation structure guide. See Figure 1 for an example of the argument structure.
As in Song and Ferretti (2013), the raters graphed the structure of participants’ essays. First, they derived all of the functional elements using the codebook in Appendix D and identified the following elements related to the author’s perspective: (a) the author’s standpoint(s), (c) level-1 reasons (i.e., reasons that directly support the author’s standpoint), (d) reasons subordinate to level-1 reasons (such as elaborations of level-1 reasons), (e) counterarguments (potential criticisms of the author’s standpoints or reasons), and (f) rebuttals of the counterarguments (the author’s explanation for why these counterarguments are not acceptable).

After identifying these elements related to the author’s standpoint(s), the raters identified the elements for the alternative perspectives: (a) alternative standpoint(s) (the standpoint(s) of someone who disagrees with the author), (b) reasons for the alternative standpoint(s), and (c) the rebuttals of the alternative standpoint(s) (propositions that criticize the alternative standpoint(s) or its supportive reasons). Additionally, the raters also identified the following elements: (a) an introduction that foreshadows the text, (b) a conclusion that summarizes the essay content, (c) a functional element that repeats previously stated standpoints or reasons, and (d) the non-functional element that includes irrelevant information. After all elements were identified, the raters graphically depicted them in a visual representation of the essay.

As with the overall essay quality measures, two raters were involved in graphing the structures of all essays: the researcher and a graduate student who was blind to the study’s purposes. The inter-rater reliability was established using the same method described above, which used the total of agreement plus disagreements divided by the total number of agreements (Ferretti et al., 2009; Song & Ferretti, 2013). The inter-rater agreement was calculated for each structure measure: author’s standpoints (s) = 92%,
Level-1 reasons = 90%, reasons below Level-1 reasons = 94%, alternative perspective = 95%, reasons for alternative perspective = 92%, counterargument = 91%, rebuttal = 92%, introduction = 99%, and conclusion = 96%, repetition = 75%, non-functional = 50%. The low inter-rater agreement for non-functional elements were attributed to the few non-functional elements.

To illustrate, I provided an example of a visual representation of an exemplary argumentative essay. The structure represented in Figure 1 reveals that the essay includes the author’s standpoint that high schools should allow students to bring cellphones to communicate with family and friends. It also illustrates the alternative standpoint that high school should not allow students to bring cellphones to school to communicate with family and friends. For the author’s standpoint, there are two level-1 reasons. The first reason is that students can use cellphones to contact their homes in case of an emergency, and the second is that students can use cellphones to communicate with friends during breaks to socialize with each other. Additionally, there are two subordinate reasons under the first level-1 reason. These are two examples used to support the first level-1 reason for the author’s standpoint. The second level-1 reason for the author’s standpoint has a counterargument (i.e., Someone might argue that students often use cellphones in class rather than during breaks) and a rebuttal of the counterargument (i.e., However, class policy should be clearly established and communicated with students to inhibit cellphone usage in the classroom). For the alternative standpoint, there is one level-1 reason (i.e., Cellphones can distract students from lessons), and a rebuttal of the level-1 reason (i.e., With appropriate direction and management, teachers could stop students from using cellphones during the instruction time). In addition, the writer also includes an introduction (i.e., Cellphones have become a critical component of people’s daily life.
Whether schools should allow students to bring cellphones to the classroom has been debated for decades, a conclusion (i.e., In summary, based on the reasons described above, I believe that high schools should allow students to bring cellphones to communicate with family and friends), and a functional element (i.e., Cellphones should be allowed in schools).
Figure 1  Argumentation Structure

Cellphones have become a critical component of people's daily life. Whether schools should allow students to bring cellphones to the classroom has been debated for decades.

SP
I believe that high schools should allow students to bring cellphones to communicate with family and friends.

AS
Some might argue that high schools should not allow students to bring cellphones to school to communicate with family and friends.

SP1.R1
Students can use cellphones to contact their homes in case of an emergency.

SP1.R2
Students can use cellphones to communicate with friends during breaks to socialize with each other.

AS.R1
Cellphones can distract students from lessons.

SP1.R1.R1
For example, I used my cellphone to contact my parents when I suddenly felt ill at school.

SP1.R1.R2
Another example came from my friend who had to call her parents to pick her up from school earlier due to cancellation of the basketball after-school program.

SP1.R2.CA
Someone might argue that students often use cellphones in class rather than during the breaks.

AS.R1.RB
With appropriate direction and management, teachers could stop students from using cellphones during the instruction time.

SP1.R2.CA.RB
However, class policy should be clearly established and communicated with students to inhibit cellphone usage in the classroom.

SP1.R2.CA.RB.Rep
Cellphones should be allowed in schools.

In summary, based on the reasons described above, I believe that high schools should allow students to bring cellphones to communicate with family and friends.
Argumentation Schemes.

In addition to the overall essay quality and the argument structure, we analyzed the types of argumentation schemes used in students’ essays using the argumentation scheme scoring guide developed by Ferretti and his colleagues (Ferretti et al., 2009; Song and Ferretti, 2013). I classified five commonly used argumentation schemes including argument from example, argument from consequences, argument from goal, argument from administrative authority, and argumentation from rule. Song and Ferretti (2013) found that these five argumentation schemes were most frequently used with these writing prompts. See Appendix E for the argumentation scheme guide.

The argument schemes are described and illustrated below: (a) argument from example: the author uses an example to illustrate a reason given in support of the standpoint (e.g., I believe university students should be required to take classes outside their field of study. Our professor shared an instance with the class where a student who specialized in Math or Social Studies was thrown into teaching Science after graduation); (b) argument from consequences: the author uses the positive or negative consequences of enacting a policy as a reason for supporting the standpoint (e.g., I believe that the U.S. government should require all high school students to study a national curriculum before entering college. If there were a national curriculum, then all seniors would have at least the minimum amount of classes. This will help them be prepared for college which begins only two months after graduation); (c) argument from rules: author suggests that every member in a particular group must act in a particular way because it is obligated (prohibited) according to a rule. (e.g., Some people may argue that the university should be allowed to look at one’s Facebook because the information put out on Facebook may result in damage of the school name. However, everyone is subjected to their own opinion. If one decided to say something negative about their school experiences, then
they can do because they are backed by the first amendment.; (d) argument from goal: the author argues that if someone or something has a goal, then they should act in a way that achieves it (e.g., I believe the government should not require students to take advanced placement courses before entering college because some students want to take a break from schooling and try to feel out the real world. Taking advanced placement courses in high school doesn’t prepare them for the real world.); and (e) argument from administrative authority: the author suggests that someone or something has the right to exercise command over others due to recognized position of power (e.g., Some people may argue that the university has the right to check a student’s Facebook account because we are the students of their university and they have a great deal of control over what students do over the Internet.).

The argumentation schemes were graphed by the researcher and a graduate student who was blind to the purposes of the study. The inter-rater reliability was established using the same method described above. The inter-rater agreement was calculated for each argumentative scheme: argument from consequences = 95%, argument from examples = 93%, argument from rules = 81%, argument from goals = 86%, argument from rule = 69%, argument from administrative authority = 90%, and other argument scheme = 91%.
RESULTS

Keyboarding Fluency and Essay Quality

A Pearson correlation was computed to determine if there was a relationship between words per minute (WPM), a measure of keyboarding fluency, and pretest essay quality. Table 1 presents the means and standard deviations for keyboarding fluency by condition. In fact, there was a small but statistically significant positive correlation between keyboarding fluency and pretest essay quality, \( r(84) = .299, p = .006 \), with WPM explaining 9% of the variation in pretest essay quality. The results suggested that participants who typed faster tended to have higher quality essays. Due to the positive correlation between WPM and essay quality, WPM was later controlled as a covariate in all subsequent analyses involving essay quality. A one-way ANOVA was then conducted to determine if participants’ keyboarding fluency differed among conditions. The results showed that WPM did not differ significantly among conditions, \( F(3, 83) = .801, p = .497 \), which suggested that participants in all conditions were comparable in terms of keyboarding fluency.

Table 1  Means and Standard Deviations for Keyboarding Fluency by Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQ</td>
<td>68.656</td>
</tr>
<tr>
<td></td>
<td>(15.728)</td>
</tr>
<tr>
<td>EG</td>
<td>69.685</td>
</tr>
<tr>
<td></td>
<td>(10.253)</td>
</tr>
<tr>
<td>EGCQ</td>
<td>67.633</td>
</tr>
<tr>
<td></td>
<td>(11.646)</td>
</tr>
<tr>
<td>GG</td>
<td>64.092</td>
</tr>
<tr>
<td></td>
<td>(11.493)</td>
</tr>
</tbody>
</table>
Essay Quality

The EG condition provided participants genre-specific sub-goals to strength their essays. The CQ condition informed participants to ask and answer critical questions about their own and the alternative perspectives. The EGCQ condition introduced participants the sub-goals and critical questions. The GG condition provided students a GG to revise their essays to make it more convincing. We expected that students in the EG, CQ, and EGCQ conditions would produce revision and posttest essays of higher quality than students in the GG condition. Table 2 presents the means and standard deviations for pretest, revision, and posttest essays quality by condition.

### Table 2

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Revision</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQ</td>
<td>3.762 (0.995)</td>
<td>5.000 (0.632)</td>
<td>4.619 (0.740)</td>
</tr>
<tr>
<td>EG</td>
<td>3.667 (1.017)</td>
<td>5.238 (0.768)</td>
<td>4.952 (0.669)</td>
</tr>
<tr>
<td>EGCQ</td>
<td>3.619 (0.973)</td>
<td>5.333 (0.796)</td>
<td>5.191 (0.928)</td>
</tr>
<tr>
<td>GG</td>
<td>3.523 (1.078)</td>
<td>4.143 (0.910)</td>
<td>4.238 (1.261)</td>
</tr>
</tbody>
</table>

A 2-way ANCOVA with repeated measure was conducted with condition and phase as the independent variable, WPM as a covariate, and essay quality as the dependent variable. As recommended in the literature, the WPM was centered by subtracting the mean WPM from each WPM to avoid distorting estimates of within-subject factors and increasing Type I error (Schneider, Avivi-Reich, and Mozuraitis, 2015). There was a statistically significant interaction between the condition and phase on essay quality, $F(6, 158) = 4.950$, $p < .001$, partial $\eta^2 = .158$. The main effect of time
was statistically significant, $F(2, 158) = 126.911$, $p < .001$, partial $\eta^2 = .616$. The main effect of group showed that there were statistically significant differences in essay quality among conditions, $F(3, 79) = 3.105$, $p = .031$, partial $\eta^2 = .105$.

A series of 1-way ANCOVA were then conducted at each phase with condition as the independent variable and WPM as a covariate. At the pretest, after adjusting for WMP, condition had a non-significant effect, $F(3, 79) = .082$, $p = .969$, partial $\eta^2 = .003$. At the revision, condition had a significant effect on essay quality, $F(3, 79) = 9.137$, $p < .001$, partial $\eta^2 = .258$. Pairwise comparisons indicated that students in EG, CQ, and EGCQ conditions outperformed students in the GG condition. However, there were no significant differences between the EG, CQ, and EGCQ conditions. At the posttest, condition had a significant effect on essay quality, $F(3, 79) = 3.759$, $p = .014$, partial $\eta^2 = .125$. Pairwise comparisons using the Tukey HSD test indicated that students in EGCQ condition outperformed students in the GG condition. No other differences were statistically significant.

In conclusion, the essay quality analysis partially confirmed our hypotheses that students in the EG, CQ and EGCQ conditions generated revised essays of higher quality than students in the GG condition. The results suggested that providing college students with an elaborated goal, critical questions, or the incorporation of the elaborated goal and critical questions had a comparable positive effect on essay quality at the revision phase. Although the provision of critical questions and the elaborated goal did not show an augmented effect in the revised essays, it was sufficient to help college students to write more persuasive first draft essays. Participants in the EGCQ condition wrote essays of significantly higher quality than students in the GG condition.
An additional 1-way ANCOVA was conducted on the posttest essay quality with the condition as the independent variable and WPM as a covariate. The students in the essay topic test condition were included in this analysis to provide a control group for possible topic differences on writing and for the possible effect of repeated testing on the posttest performance of participants assigned to the four revision conditions. After controlling for keyboarding fluency, condition had a significant effect, $F(4, 99) = 5.159$, $p = .001$, partial $\eta^2 = .172$. Pairwise comparisons using the Tukey HSD test indicated that students in the EGCQ condition wrote essays of higher quality than students in the topic control and GG condition. Students in the EG condition outperformed students in the topic control condition. The results again indicated that the provision of incorporation of the elaborated goal and critical questions in the EGCQ and EG conditions improved the quality of college students’ first draft argumentative writing.

Structure Analysis

A 2 X 2 multivariate analysis of variance (MANOVA) was conducted to examine the effect of goal conditions and phase on measures derived from the analysis of the argumentation structures: standpoint, Level-1 reason, reasons below Level-1, counterargument, rebuttals, alternative perspectives, reasons for alternative perspectives, introduction, and conclusion. Functional elements and non-functional elements were not included in the analysis because they were used infrequently. A Pearson correlation was computed to determine if there was a relationship between keyboarding fluency and structural elements and found that keyboarding fluency is not related to any structural element. Therefore, it is not included as a covariate. We tested the assumptions of univariate and multivariate homogeneity, and these assumptions are violated. Results of MANOVA are robust to these assumptions when group size are equal (Stevens, 2002;
Lix, Keselman & Keselman, 1996). However, to be conservative, we used the Pillai’s trace to test the multivariate significance because it is robust to assumption violations (Olson, 1976; Tabachnick & Fidell, 2007). Using the Pillai’s trace, there was a significant interaction between condition and phase, $F(54, 942) = 2.324$, $p < .001$, partial $\eta^2 = .118$.

A series of univariate ANOVAs were conducted to examine the effects of conditions, phase, and the interaction between condition and phase after making Bonferroni corrections for the nine dependent variables ($\alpha = .006$). Table 3 and Table 4 present the means and standard deviations for each argumentation structures by condition and phase.

<table>
<thead>
<tr>
<th>Structural Element</th>
<th>CQ Pre</th>
<th>CQ Rev</th>
<th>CQ Post</th>
<th>EG Pre</th>
<th>EG Rev</th>
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Table 4  Means and Standard Deviations for Structural Elements for EGCQ and GG Conditions

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Standpoints

Because participants were college students who have a considerable amount of experience writing argumentative essays, it was expected that phase and condition would not significantly impact the number of standpoints included in the essays. A 2-way ANOVA with repeated measures was conducted with condition and phrase as the independent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2(2) = 49.798, p < .001$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .715$). The results showed that there was a non-significant effect of phase, $F(1.324, 114.422) = 1.324, p = .264$, partial $\eta^2 = .016$; a non-significant effect of condition, $F(3, 80) = .438, p = .726$, partial...
η² = .016; and a non-significant interaction of condition and phase, F(4.291, 114.422) = .942, p = .424, partial η² = .034. As expected, the goal conditions did not impact the inclusion of standpoints in college students’ argumentative essays.

**Level-1 Reasons**

The EG and EGCQ condition provided students an elaborated goal of generating three reasons to support their own standpoints. Descriptive analysis on the number of Level-1 reasons in the pretest essays showed that participants in all conditions on average included more than 2.5 Level-1 reasons in the pretest. Therefore, it is expected that there will not be any difference in the number of Level-1 reasons among conditions.

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and Level-1 reasons as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase (χ²(2) = 32.851, p < .001). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity (ε = .786). There was not a statistically significant interaction between the condition and phase on the number of Level-1 reasons, F(4.714, 125.698) = .609, p = .611, partial η² = .022. The main effect of condition showed that there was no statistically significant difference in Level-1 reasons among intervention groups F(3, 80) = 915, p = .437, partial η² = .033. The main effect of phase showed statistically significant differences at the different phases, F(1.571, 125.667) = 7.014, p = .003, partial η² = .081. Pairwise comparisons using the Tukey HSD test indicated students included more Level-1 reasons in the revised essays than the pretest and posttest essays. No other differences were statistically significant.
Reasons below Level-1.

The EG condition provided students an elaborated goal encouraging them to include three reasons and three examples to strengthen their arguments. The CQ condition provided students critical questions to further develop their arguments. The EGCQ condition offered students the elaborated goal and critical questions. Therefore, it is expected that students in the EG, CQ, and EGCQ conditions would produce more reasons below level-1, subordinate reasons, in the revision and posttest essays than students in the GG condition.

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and subordinate reasons as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2(2) = 13.119, p = .001$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .918$). There was not a statistically significant interaction between the condition and phase on the number of subordinate reasons, $F(5.508, 146.891) = 3.117, p = .008$, partial $\eta^2 = .105$. The main effect of condition showed that there was no statistically significant difference in subordinate reasons among intervention groups $F(3, 80) = .694, p = .559$, partial $\eta^2 = .025$. The main effect of phase showed statistically significant differences at the different phases, $F(1.836, 146.891) = 42.320, p < .001$, partial $\eta^2 = .346$. Pairwise comparisons using the Tukey HSD test indicated students included more subordinate reasons in the revised essays than the pretest and posttest essays. No other differences were statistically significant.

Unexpectedly, we did not find significant differences in the number of reasons below Level-1 in the revision and posttest among students in different conditions. One reason could potentially account for the insignificant group effect is that college students naturally elaborate reasons to support their standpoints when being asked to revise their
essays. Although the elaborated goal and critical questions encouraged participants in the EG, EGCQ, and CQ conditions to generate more subordinate reasons, the increase was not marked enough to reach the significance level.

Counterarguments

The critical questions encouraged participants to think about counterarguments by asking questions to criticize the author’s perspective. Therefore, it is expected that students in the CQ and EGCQ conditions would produce more counterarguments in the revision and posttest essay than participants in the EG and GG conditions.

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and counterargument as the dependent variable. The results showed that there was a non-significant effect of condition, $F(3, 80) = 4.270, p = .008$, partial $\eta^2 = .138$; and a non-significant interaction of condition and phase, $F(6, 160) = 2.930, p = .010$, partial $\eta^2 = .099$. The main effect of phase was statistically significant, $F(2, 160) = 21.791, p < .001$, partial $\eta^2 = .214$. Pairwise comparisons using the Tukey HSD test indicated students included more counterarguments in the revision and posttest essays than the pretest essays. No other differences were statistically significant.

We did not find a significant difference in the number of counterarguments in the revision and posttest among students in different conditions. Perhaps this is because the critical questions did not explicitly ask readers to include counterarguments. Additionally, participants in the CQ and EGCQ conditions received these critical questions without any guidance about how to incorporate them in their written arguments. The absence of explicit instructional support about the use of critical questions could potentially account for the absence of the effect.
Rebuttals

The elaborated goal explicitly guided participants to include rebuttals by asking them to explain why the alternative reasons and examples are not good. The critical questions were designed to help participants to include more rebuttals by asking them to use the critical questions to rebut the alternative perspectives and respond to the criticisms on their own perspectives. Therefore, it is expected that students in the EG, CQ, and EGCQ conditions would produce more rebuttals in the revision and posttest essays than participants in the GG condition.

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and rebuttals as the dependent variable. There was a statistically significant interaction between the condition and phase on the number of rebuttals, F(6, 160) = 6.758, p < .001, partial η2 = .202. The main effect of phase was statistically significant, F(2, 160) = 47.354, p < .001, partial η2 = .372. The main effect of group showed that there were statistically significant differences among intervention groups, F(3, 80) = 11.753, p < .001, partial η2 = .306.

A series of 1-way ANOVA were then conducted at each phase with the condition as the independent variable. At the pretest, condition did not have a significant effect, F (3, 80) = .367, p = .777, partial η2 = .014. Participants in all groups did not differ in the number of rebuttals included. At the revision, condition had a significant effect, F(3, 80) = 10.623, p < .001. Pairwise comparisons using Tukey HSD test indicated students in the EG and EGCQ condition included significantly more rebuttals than students in the GG condition. No other differences were statistically significant. At the posttest, condition had a significant effect, F(3, 80) = 10.216, p < .001. Pairwise comparisons using Tukey HSD test indicated students in the EG and EGCQ conditions included significantly more
rebuttals in the posttest essays than students in the GG condition. No other differences were statistically significant.

We did not find a significant difference in the number of rebuttals in the revision and posttest between students in the CQ and GG conditions. As discussed before, perhaps this is because the critical questions did not explicitly ask readers to include any argumentative elements, such as counterarguments and rebuttals. Additionally, participants in the CQ condition received these critical questions without any guidance about how to use them to revise and write arguments. The absence of direct instructional support could potentially account for the absence of the effect.

Alternative Standpoints

The elaborated goal explicitly asked readers to include an alternative standpoint. Critical questions guided readers to consider the alternative perspectives. Therefore, it is expected that students in the EG, CQ, and EGCQ conditions would produce more alternative standpoints in the revision and posttest essays than participants in the GG condition.

A 2-way ANOVA with repeated measures was conducted with condition and phrase as the independent variable and alternative standpoint as the dependent variable. There was a statistically significant interaction between the condition and phase on the alternative perspective, F(6, 160) = 3.283, p = .005, partial η2 = .110. The main effect of phase was statistically significant, F(2, 160) = 11.97, p < .001, partial η2 = .130. The main effect of group was statistically significant, F(3, 80) = 6.564, p = .001, partial η2 = .198.

A series of 1-way ANOVA were then conducted at each phase with the condition as the independent variable. At the pretest, condition didn’t have a significant effect, F(3,
Students in all conditions did not differ in the number of alternative standpoints included at the pretest. At the revision, condition had a significant effect, $F(3, 80) = 5.899, p = .001$. Pairwise comparisons using Tukey HSD test indicated that students in EG and EGCQ conditions included more alternative standpoints than students in the GG condition. There were no significant differences among other groups. At the posttest, condition had a significant effect, $F(3, 80) = 4.990, p = .003$. Pairwise comparisons using Tukey HSD test indicated that students in EG condition included more alternative standpoints in the posttest essays than students in the GG condition. No other differences were statistically significant.

Unexpected, we did not observe a significant effect of critical questions on the inclusion of alternative standpoint. Again, we reasoned that the insignificant effect might be attributed to the nature of critical questions and the lack of direct instructional support.

Reasons for Alternative Standpoint

The elaborated goal asked students to include reasons to support the alternative standpoint. The critical questions guided participants to think about the reasons for the alternative perspectives and ask and answer critical questions on the opposing reasons. Therefore, it is expected that students in the EG, CQ, and EGCQ conditions would produce more reasons for the alternative standpoints in the revision and posttest essays than participants in the GG condition.

A 2-way ANOVA with repeated measures was conducted with condition and phrase as the independent variable and reasons for alternative perspectives as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2(2) = 8.037, p = .018$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .967$). There was a non-
significant interaction between the condition and time, $F(5.802, 154.709) = 3.117, p = .007$, partial $\eta^2 = .105$. The main effect of time was significant, $F(1.934, 154.709) = 12.414, p < .001$, partial $\eta^2 = .134$. Pairwise comparisons using Tukey HSD test indicated that students included more reasons for alternative standpoints in revision and posttest essays than the pretest essays. The main effect of the group was statistically significant, $F(3, 80) = 6.438, p < .001$, partial $\eta^2 = .194$. Pairwise comparisons using Tukey HSD test indicated that student in the EG and EGCQ conditions included more reasons for alternative standpoints than students in the GG condition. We did not find a significant difference in the number of reasons for alternative standpoint between students in the CQ and GG conditions. As discussed before, we reasoned the absence of effect is due to the lack of explicit instructional support.

**Introductions**

Because college students have a considerable amount of experience in writing argumentative essays, it is expected that time and condition would not significantly impact the number of introductions included in the essays. A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and introduction as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2 (2) = 75.033, p < .001$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .648$). The results showed that there was a significant effect of phase, $F(1.297, 103.750) = 7.929, p = .003$, partial $\eta^2 = .090$; a non-significant effect of condition, $F(3, 80) = .308, p = .819$, partial $\eta^2 = .011$; and a non-significant interaction, $F(3.891, 103.750) = .387, p = .812$, partial $\eta^2 = .014$. Pairwise comparisons results showed that posttest essays included more...
introductions than the pretest and revision essays. No other differences were statistically significant.

Conclusions

As mentioned above because participants are college students, we expected that phase and condition would not significantly impact the number of conclusions included in the essays. A 2-way ANOVA with repeated measure was conducted with condition and phase as the independent variable and conclusion as the dependent variable. The results showed that there a significant effect of phase, F(2, 160) = 5.538, p = .005, partial η² = .065; a non-significant effect of condition, F(3, 80) = .283, p = .837, partial η² = .011; and a non-significant interaction, F(6, 160) = 1.614, p = .146, partial η² = .057. However, pairwise comparisons results showed that there are no significant differences in the number of conclusions among pretest, revision, and posttest.

In summary, the EG and EGCQ conditions each showed a positive impact on the measures that show considerations of the alternative perspectives. Participants in the EG condition included more rebuttals, alternative standpoints, and reasons for alternative standpoints in the revision and posttest essays than students in the GG condition. Participants in the EGCQ condition demonstrated a greater consideration of rebuttals, alternative standpoints, and reasons for alternative standpoints than students in the GG in the revision essays as well. However, it is also important to note that the provision of critical questions alone did not show any significant effect on those structural measures. Although the structure analyses only partially confirmed our hypotheses, the overall results demonstrated that the elaborated goal or the incorporation of the elaborated goal and critical questions help lead to an increase in college students’ awareness of alternative perspectives.
The Relationship Between Essay Quality and Elements of Argumentative Discourse

A block-entry hierarchical regression was conducted to determine the effect of the structural measures, goal condition, and keyboarding fluency on participants’ essay quality. Prior research (Ferretti et al., 2000; Ferretti et al., 2009) has suggested that the argumentation structural measures accounted for a significant proportion of the variance in elementary and middle school students’ argumentative essays. To test the predictive power of the argumentative structures, seven blocks were entered in the following order: “my-side structure” (author’s standpoints, Level-1 reasons, reasons below Level-1), “your-side structure” (alternative standpoints, reasons for alternative standpoints, counterarguments, and rebuttals”), “extra” (introduction and conclusion), “covariate” (keyboarding fluency), “goal condition” (writing goals), and “functional element”. The order of these blocks was guided by prior research by Ferretti et al., (2009) to assess the validity of the structural analyses of writing quality.

The unstandardized regression coefficients, standard error of the unstandardized regression coefficient, standardized regression coefficients, and semipartial coefficient squared for independent variables at each step were presented in Table 5. With only my-side elements included in the regression model, R² = .211, F(3, 248) = 22.122, p<.001. With the addition of elements of alternative perspective at step 2, R² = .488, F(4, 244) = 32.959, p < .001. With the addition of introduction and conclusion, R² = .594, F(2, 242) = 31.789, p < .001. After step 4, with the addition of keyboarding fluency, R² = .604, F(1, 241) = 5.924, p = .016. After step 5, with the addition of goal condition, R² = .604, F(1, 240) = .151, p = .698. In step 5, the value of R² did not show any improvement. The insignificant predictive power of the goal condition suggested that after controlling for those structural elements and keyboarding fluency, goal condition no longer had predictive power. After step 6, adding the number of functional elements into regression
did not modify the results. In fact, the number of functional elements was excluded from the model because it can be perfectly predicted from one or more of the other independent variables.

Table 5  Summary of Block-Entry Hierarchical Regression Analysis

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<td>0.013**</td>
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<tr>
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<td>0.103</td>
<td>0.072</td>
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*p < .05, **p < .005, ***p < .001


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*p < .05, **p < .005, ***p < .001

**Argumentation Schemes Analysis**

In the revision and posttest sessions, students in the CQ and the EGCQ conditions received critical questions relevant to argument from consequences and argument from example. By receiving these questions, participants in CQ and EGCQ conditions were expected to include more arguments from consequences and argument from example in their revision and posttest essays.

**Argument from Consequences**

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and argument from consequences as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2(2) = 16.952, p < .001$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .886$). There was a statistically significant interaction between the condition and phase on the number of argument from consequences, $F(5.371, 141.777) = 4.564, p < .001$, partial $\eta^2 = .146$. The main effect of phase was statistically significant, $F(1.676, 141.777) = 65.977, p < .001$, partial $\eta^2 = .452$. The main effect of group showed that there was no statistically significant difference in the number of argument from consequences among intervention groups $F(3, 80) = 2.382, p = .075$, partial $\eta^2 = .082$.

A series of 1-way ANOVA were then conducted at each phase with the condition as the independent variable. At the pretest, condition did not have a significant effect, $F(3, 80) = .790, p = .503$, partial $\eta^2 = .029$. At the revision, condition had a significant
effect, $F(3, 80) = 5.072$, $p = .003$, partial $\eta^2 = .160$. Pairwise comparisons using Tukey HSD test indicated that students in CQ and EGCQ conditions included more arguments from consequences in the revision essays than students in the GG condition. At the posttest, condition did not have a significant effect, $F(3, 80) = 1.961$, $p = .127$, partial $\eta^2 = .068$. The results of this analysis confirmed our hypothesis that the inclusion of critical questions on argument from consequences leads to the increase in the use of the argument from consequences scheme.

**Argument from Example**

A 2-way ANOVA with repeated measures was conducted with condition and phase as the independent variable and argument from example as the dependent variable. Mauchly’s test indicated that the assumption of sphericity was violated for phase ($\chi^2(2) = 18.856$, $p < .001$). Consequently, degrees of freedom were corrected using the Huynh-Feldt estimates of sphericity ($\varepsilon = .872$). There was not a statistically significant interaction between the condition and phase on the number of arguments from example, $F(5.229, 139.451) = 1.338$, $p = .250$, partial $\eta^2 = .048$. The main effect of time showed statistically significant differences at the different time points, $F(1.743, 139.451) = 19.761$, $p < .001$, partial $\eta^2 = .198$. Students included more arguments from example in the revision essays and posttest essays than the pretest essays. The main effect of group was insignificant, $F(3, 80) = 1.192$, $p = .318$, partial $\eta^2 = .043$.

The insignificant group differences among conditions can be explained by that students commonly add examples to their essays as a way of elaboration regardless of their goal conditions. Even the introduction of the critical questions on argument from example increased participants’ use of this particular scheme; the difference was not marked enough to reach statistical significance.
Distribution of schemes

In addition to argument from consequences and argument from example, the scheme analyses showed that participants also used argument from administrative authority, argument from goal, argument from rules, and other argumentation schemes on both writing promotes. The frequencies of each argumentation scheme in each prompt were calculated and presented in Table 6 and Table 7. As Table 6 and Table 7 show, argument from consequences and argument from example were used most frequently by participants. Over 62% of the total nodes of arguments across two writing prompts reflected the argument from consequences scheme, and 24% reflected argument from example.

Table 6 Means and Standard Deviations of Argumentation Schemes for CQ and EG Conditions

<table>
<thead>
<tr>
<th>Schemes</th>
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<th>EG</th>
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</thead>
<tbody>
<tr>
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<td>Pre</td>
<td>Rev</td>
</tr>
<tr>
<td>Argument of Goals</td>
<td>1.050 (1.596)</td>
<td>1.670 (2.477)</td>
</tr>
<tr>
<td>Argument of Rules</td>
<td>.05 (.218)</td>
<td>.710 (2.101)</td>
</tr>
<tr>
<td>Argument of Administrative Authority</td>
<td>3.000 (3.728)</td>
<td>5.100 (5.873)</td>
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</tbody>
</table>
Table 7 Means and Standard Deviations of Argumentation Schemes for EGCQ and GG Conditions

<table>
<thead>
<tr>
<th>Schemes</th>
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<th>GG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Rev</td>
</tr>
<tr>
<td>Argument of Consequences</td>
<td>14.570 (5.793)</td>
<td>27.57 (10.568)</td>
</tr>
<tr>
<td>Arguments of Example</td>
<td>4.480 (4.946)</td>
<td>10.81 (9.811)</td>
</tr>
<tr>
<td>Argument of Goals</td>
<td>.810 (1.209)</td>
<td>1.480 (1.662)</td>
</tr>
<tr>
<td>Argument of Rules</td>
<td>0.000 (.000)</td>
<td>.140 (.478)</td>
</tr>
<tr>
<td>Argument of Administrative Authority</td>
<td>1.190 (1.601)</td>
<td>2.330 (2.221)</td>
</tr>
</tbody>
</table>

Across the two writing prompts, argument from consequences scheme accounted for 60% and 65% of the total nodes, and argument from example constitutes 21% and 28% of the nodes. The next commonly used scheme was argument from administrative authority, which accounts for 7% of the total nodes for both prompts. Specifically, argument from administrative authority accounted for 9% of the total nodes for the pretest prompt and 2% for the posttest prompt. Argument from goal was also used frequently for both prompts constituting about 4% for the pretest prompt and 3% for the posttest prompt. The argument from rule scheme was rarely used with both prompts about 1%. About 3% of the total nodes reflected other argumentation schemes not coded for this dissertation, such as argument from analogy and argument from verbal classification.

In summary, these results suggested that the inclusion of critical questions on argument from consequences resulted in an increase in the use of argument from consequences, while critical questions about argument from example did not lead to a significant change in the use of argument from example. The scheme distribution
suggested that argument from consequences and argument from example are most commonly used by college students when responding to both writing prompts, followed by argument from administrative authority.
Chapter 5

DISCUSSION

According to van Eemeren and colleagues (1996, 2014), the quality of argumentative discourse should be measured by its reasonableness (van Eemeren et al., 1996; Siegel & Biro, 2008). Given the lack of reasonableness in daily argumentation practices, it is essential for students to know the standards of reasonableness so that they may use them to improve the quality of their arguments. However, few argumentative writing interventions have investigated the effects of these critical standards of reasonableness (Nussbaum & Edwards, 2011; Nussbaum et al., 2018; Song & Ferretti, 2013). The principal purpose of this dissertation was to investigate the effect of critical questions on college students’ written arguments. In addition, this dissertation also examined the effect of transcription skill on college students’ writing by studying the relationship between college students’ keyboarding fluency and argumentative writing quality. Prior research supported the expectation that lower levels of transcription skills may adversely affect the quality of writing by children and novice writers (Berninger & Swanson, 1994; Berninger, 1999; Jones & Christensen, 1999). However, limited research has been conducted to explore if transcription skills impact adult writing.

An elaborated goal provided students with clear directions about what needed to be included and has been demonstrated to improve students’ argumentative writing performance (Ferretti & Fan, 2016). The inclusion of critical questions in instructional studies have also shown positive impact on student’s written arguments (Song & Ferretti, 2013). Our results suggested that college students who received the elaborated goal, critical questions, or the incorporation of the elaborated goal and critical questions wrote revised essays of higher quality than students who received a general goal. The results of
this study are consistent in that the elaborated goal effectively impacts argumentation writing quality (Ferretti et al., 2000; Ferretti et al., 2009). Additionally, the current study extended prior findings by showing the benefits of the elaborated goal on college students’ argumentative writing. Results are also consistent and extend the findings of Song and Ferretti (2013) demonstrating the positive impact of teaching about argumentation strategies and critical questions on college students’ writing quality. Unlike Song and Ferretti (2013), this dissertation found an effect by providing students information about argumentation strategies and critical questions without offering extensive instruction. These findings are hopeful because they suggest that either the provision of an elaborated goal or a goal that includes information about argumentation strategies and critical questions is sufficient to improve the quality of college students’ revised essays. We reasoned that although college students presumably have tacit knowledge of argumentation, so either the provision of the elaborated goal or the goal with argumentation strategies and critical questions provided guidance to include this information in their revised essays.

We did not find significant differences in revision essay quality among students in the EG, CQ, and EGCQ conditions. Although students in the EGCQ condition on average had the most significant improvement in revision essay quality, the differences among three experimental conditions were not marked enough to reach the significance level. These findings suggested that the elaborated goal or the goal that included argumentation strategies and critical questions can each independently improve college students’ argumentation essay quality as effectively as the combined information of both. The incorporation of the elaborated goal and argumentation strategies and critical questions did not show an augmented effect as expected. We attributed the absence of augmented
effect to the goal-setting design of the present dissertation. In prior critical questions research (Song & Ferretti, 2013, Nussbaum & Edwards, 2011; Nussbaum et al., 2018), students received explicit instructional support on how to use critical questions and completed sufficient practice on the use of critical questions. In the current study, students solely received information about the argumentation strategies and critical questions. The absence of instruction, practice, and feedback about the implementation of these goals made it challenging for participants to integrate information about argumentation strategies, critical questions, and the discourse elements. The literature shows that goals are most effective when they are specific and challenging, the participants have the requisite ability, and feedback is provided about progress with respect to their implementation (Locke, Shaw, Saari, & Latham, 1981). The CQ and EGCQ goals were certainly challenging. However, the participants in all likelihood lacked a detailed understanding of argumentation strategies and critical questions, and they received no instruction, practice, or feedback about the implementation of the goal.

We also sought information about whether the provision of revision goals affected students’ first-draft essay quality. We found that students in the EGCQ condition wrote first drafts of higher quality than students who wrote the essays without receiving any writing goals or receiving only the general goal. Students in the EG condition outperformed students who wrote the essays without receiving any writing goals. This finding shows that the elaborated goal and the incorporation of the elaborated goal and critical questions helped college students to write stronger first-draft argumentative essays. The effects of the elaborated goal and the incorporation of the elaborated goal and critical questions on first-draft essay quality extend findings of prior goal-setting research.
by Ferretti et al. (2000, 2009), who reported that the elaborated goal positively impacted fourth- and sixth-grade students’ first draft essay quality.

The current research further suggested the provision of the elaborated goal can also benefit college students’ first draft arguments. However, the provision of goals that included information about argumentation strategies and critical questions was insufficient to improve the quality of first-draft essays. Like discussed above, it may be that the lack of instruction, practice, and feedback in implementing the EGCQ and CQ goals might explain the absence of an effect on first drafts. Nevertheless, the results are promising because they show that the information about the elaborated goal and critical questions learned in the revision session can positively impact college students’ writing quality for a different topic. These findings suggest that providing students with either an elaborated goal or the incorporation of the elaborated goal and critical questions is an effective and resource-efficient way of improving college students’ written arguments.

We assessed the effects of different writing goals on the argumentation structural measures. We found that all groups were comparable in the pretest regarding the use of all structural elements. Students’ pretest essays were consisted of mainly my-side arguments and few addressed the alternative perspectives. College students’ “my-side” bias reemphasized the needs of writing interventions aiming at increasing college students’ awareness of alternative perspectives. Our results suggested that the elaborated goal resulted in greater consideration of alternative perspectives in the revised essays. Specifically, students in the EG condition included more rebuttals, alternative perspectives, and reasons for alternative perspectives in their revision essays than students in the GG condition. The effects of the elaborated goal on alternative standpoints, reasons for alternative standpoints, and rebuttals are consistent with the
findings of Ferretti et al. (2009) in that an elaborated goal increased young students’ recognition of alternative standpoints, reasons for that standpoint, and rebuttals of those reasons. The absence of an effect on counterarguments is also consistent with the findings of Ferretti et al. (2009). Ferretti et al. (2009) reasoned that the elaborated goal did not explicitly ask students to include potential objections to their standpoints, and therefore did not impact the production of counterarguments. We believe the same reasoning applies to college students as well. Without receiving explicit goals for generating counterarguments, college students rarely included them. To increase college students’ attentiveness of counterarguments, future writing interventions should provide explicit goals on including counterarguments.

We found that participants in the EGCQ condition produced more rebuttals, alternative perspectives, and reasons for alternative perspectives in their revised essays than students in the GG condition. These findings are consistent with prior goal-setting and critical questions research in that the provision of the elaborated goal or critical questions resulted in an increased use of alternative perspectives, reasons for alternative perspectives, and rebuttals (Ferretti et al., 2009; Song & Ferretti, 2013). However, the effect was less distinctive for counterarguments than reported in prior critical questions instructional research: the provision of critical questions in EGCQ condition did not result in more counterarguments (Song & Ferretti, 2013). Again, we attributed the lack of results to the goal-setting design of the study. The provision of critical questions was sufficient to improve college students’ revised essay quality. Its effect on the inclusion of argumentative elements was much less distinctive.

We found that the provision of only critical questions did not have any impact on the argumentation structural measures, which contrasts with previously reported
instructional research findings (Song & Ferretti, 2013). Song and Ferretti (2013) reported that students who received instruction on argumentation strategies and critical questions wrote essays that included more alternative perspectives, counterarguments, and rebuttals than those who were not taught about critical questions. We speculated that college students would be critical questions without explicit support. Our results indicated otherwise. Two reasons could potentially explain the differences in the results. First, students in the CQ condition were told to answer critical questions about argumentation strategies, but they were not told to include specific discourse elements in their written arguments. Second, goals are most effective when the receive instruction, practice and feedback about their implementation of argumentation strategies and critical questions (Locke et al., 1981; Song & Ferretti, 2013; Nussbaum & Edwards, 2011). Our results indicate that it is likely college students still lack the capacity to independently use critical questions without explicit guidance and feedback. Future research is needed to understand the conditions that will support college students’ use of goals involving argumentation strategies and critical questions.

We also explored the impact of different goals on the structural elements of first drafts of essays. When prompt with the elaborated goal, participants in the EG condition showed greater consideration of alternative perspectives, including more alternative standpoints, reasons for alternative standpoints, and rebuttals, than students in the GG condition. Students in the EGCQ also included more rebuttals and reasons for alternative perspectives than students in the GG condition. We were surprised to find that students in the EG condition showed an impact on more structural measures than students in the EGCQ condition because students in the EGCQ condition received both the elaborated goal and critical questions. Perhaps students in the EGCQ condition likely had difficulty
using all the information provided and selected some information to use. This would be likely the informational demands of integrating this information exceeded the participants’ processing capacities (Ferretti & Fan, 2016).

Like Ferretti et al. (2009), we also examined the predictive power of those structural measures on essay quality. The results suggested that the structural measures and keyboarding fluency together accounted for 60% of the variance in the quality of college students’ argumentative essays, which validate the use of structural measures to predict essay quality. This finding is consistent with the findings reported by Ferretti et al. (2000) and Ferretti et al. (2009), that the structural measures accounted for a large proportion of the variance in the essay quality. Additionally, we found that after controlling for structural measures, keyboarding was shown to predict essay quality. The results supported previous research about the impact of transcription skills on adult writing and suggested that future adult writing research should not overlook the impact of transcription skills. Goal condition no longer had predictive power after controlling for those structural measures, which is consistent with the findings of Ferretti et al. (2009). Ferretti et al. (2009) reasoned that the structural measures consumed the variance in essay quality that would have been attributed to the goal condition.

I also examined students’ use of different argumentation schemes. Ferretti et al. (2009) and Song and Ferretti (2013) proposed that specific argumentative schemes are suitable to achieve particular discourse purposes, and different writing prompts might induce writers to use different argumentation schemes. In the present study, the writing prompts focus on school-related policy and have been demonstrated to result in frequent use of the argument from consequences and the argument from example schemes (Song & Ferretti, 2013). The argumentation scheme distribution results suggested that all
students frequently used the argument from consequences and the argument from example schemes. This finding is consistent with those of Song (2012) in that students overwhelmingly used these two schemes for these two particular prompts. The results suggested that students’ use of argumentation schemes is relevant to the selection of writing prompts. It is interesting to examine the relationship between the types of writing prompts and writers’ use of schemes. Additionally, participants in the CQ and EGCQ conditions included a higher number of arguments from consequences in the revision essays than students in the GG condition. The increased use of the argument from consequences scheme confirmed our hypothesis and is consistent with Song (2012), who reported that the students who were taught argumentation schemes and critical questions included more elements of argument from consequences and argument from example. In contrast, participants in all conditions on average included more arguments from example in the revised essays. In contrast to arguments from consequences, it may be that college students have a better understanding of how examples are used to support an argument.

As I mentioned earlier, we examined the relationship between keyboarding fluency and argumentative writing quality. We found a small but statistically significant positive correlation: college students who typed faster tended to write pretest essays of higher quality. This result is consistent with Connelly, Dockrell, and Barnett (2005) in that transcription skills constrain undergraduate students’ written performances during pressurized tasks. Connelly et al. (2005) believed that when students participate in an assessed writing task, stress hypothetically decreases the cognitive capacity available for composition. Advanced transcription skills reduce the cognitive load required for writing and therefore benefit the quality of writing. Christensen (2004) suggested that
keyboarding fluency instruction could help improve the quality of secondary school student writing. We expect that appropriate keyboarding fluency interventions could potentially benefit college students as well. More research is needed to gain a deeper understanding of the impact of transcription skills on adult writing processes. Specifically, additional research is needed to determine whether typing fluency, handwriting fluency, and spelling each predict adults’ writing quality.

Additionally, future instructional research is needed about the effects of argumentation strategies and critical questions and the elaborated goal on college students’ argumentative writing performances. I speculated the insignificant augmented effect of incorporating critical questions and the elaborated goal in the current research is potentially due to the absence of explicit instruction, practice, and feedback. Therefore, the provision of practice and feedback in the use of the elaborated goal, argumentation strategies, and critical questions would show an augmented effect on written argument quality.

This dissertation has a few limitations to acknowledge. First, due to the recruitment difficulties the researcher has encountered, the present research was conducted with college students who are taking education courses and the majority of the participants were female. Therefore, the current study lacks ecological validity. The homogeneity of the research participants limited the generalization of the results. It will be beneficial for future research to extend to a more representative population of college students, such as students in the science, technology, engineering, and math fields. Additionally, the experiment was conducted in small group settings, which is atypically college educational setting. The lack of resemblance of real life setting of this study also contributes to its low ecological validity. To develop interventions that are applicable to
college courses, it is recommended for future research to be conducted in real life settings. Second, this study was conducted in small groups: students were received information on the different wiring goals in small groups. Due to the small number of participants, the analysis used individual student as the unit of analysis instead of using small groups. It is important to recognize the use of individual students as the unit of analysis as a limitation. Third, we found a positive relationship between keyboarding fluency and writing performance. Although this study provided some evidence on the impact of transcription skills on adult writing quality, much still remains unknown because transcription skills are rarely studied or addressed for the adult population. For example, the effect of spelling skills, another component of transcription skills, was not studied in the current research. Therefore, we propose that more research should be done to understand the impact of transcription skills on adult writing and examine the effect of keyboarding fluency interventions on adult writers’ written arguments.
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Appendix A

WRITING PROMPTS

Pretest Prompt:

Should the university hold students accountable for behavior discovered on the students’ Facebook accounts?

Posttest Prompts:

Should high school students be allowed to use cellphones while in school to communicate with family and friends?
Appendix B

PROCEEDURES

Pretest Protocol (all conditions except the control condition)

Thanks for coming in and agreeing to work with us on our project. The project is meant to help us learn about how people write convincing essays so that we can teach other people how to write better. We’ll be taping your sessions with us so that we can study how people write. The only people watching these tapes are people like me who are working on this project.

You’ll be using the computer to enter your work today. You’ll use the word processor WORD. Any questions? (student answers). Please remember NOT to change any settings on the WORD software.

Today, we’re going to ask you to participate in a typing-speed test first. Please read the instruction provided in the word document and start the test.

Now, we’re going to ask you to write an essay about this question: Should the university require students to be accountable for behavior discovered on the students’ Facebook account?

This is what we want you to write about. Any questions?

Okay. Now you’re going to write your essay. Take as much time as you need to write your essay.

OK, any questions? Good luck writing your essay!

Pretest Protocol (control condition)

Thanks for coming in and agreeing to work with us on our project. The project is meant to help us learn about how people write convincing essays so that we can teach other people how to write better. We’ll be taping your sessions with us so that we can
study how people write. The only people watching these tapes are people like me who are working on this project.

You’ll be using the computer to enter your work today. You’ll use the word processor WORD. Any questions? (student answers). Please remember NOT to change any settings on the WORD software.

Today, we’re going to ask you to participate in a typing-speed test first. Please read the instruction provided in the word document and start the test.

Now, we’re going to ask you to write an essay about this question: Should high school students be allowed to use cellphones while in school to communicate with family and friends? This is what we want you to write about. Any questions?

Okay. Now you’re going to write your essay. Take as much time as you need to write your essay.

General Goal Condition Revision Protocol

Thank you all for coming in today. Just like the other day, you’ll be using the computer to enter your work. You’ll use the word processor WORD, just like you did before. Any questions? (student answers). Please remember NOT to change any settings on the WORD software.

Ok, you all should see the essay you wrote last time on the computer screen in front of you. Remember, you wrote an essay about this question: Should the university require students to be accountable for behavior discovered on the students’ Facebook account? (show slide 2)

Today I’m going to give you the chance to revise your essay. I want you to answer this question: what does it mean to revise your essay? Go ahead type it up on the computer. (Students type). When you are done, please look up at me.
OK, today I want you to revise your essay to make it more convincing. (show slide 3)

OK, now you can start revising your essay. Any questions? Good luck revising your essay!

Elaborated Goal Condition Revision Protocol

Thank you all for coming in today. Just like the other day, you’ll be using the computer to enter your work. You’ll use the word processor \textit{WORD}, just like you did before. Any questions? (student answers). Please remember NOT to change any settings on the \textit{WORD} software.

Ok, you all should see the essay you wrote last time on the computer screen in front of you. Remember, you wrote an essay about this question: \textit{Should the university require students to be accountable for behavior discovered on the students’ Facebook account?} (show slide 2)

Today I’m going to give you the chance to revise your essay. I want you to answer this question: what does it mean to revise your essay? Go ahead type it up on the computer. (Students type). When you are done, please look up at me.

OK, today I want you to revise your essay to make it more convincing.

To be convincing you need to do the following: (show slide 3)

Make sure your opinion is clearly stated in your essay;

Think of at least 3 reasons and examples to backup your opinion;

\textit{Explain why} those reasons and examples support your opinion; (show slide 4) (no change was made)

Think about other people who might disagree with your opinion, and be sure to state their opinion;
Provide 3 reasons and examples they would give to support their opinion;

*Explain* why the reasons and examples for their opinion aren’t good; (no change was made)

Include a conclusion;

OK, here is the handout that you will be able to use today. (show slide 5) It has the list of things you need to do to make your essay convincing (point to the goals). Use this handout in any way that you want to revise your essay. Any questions? Good luck revising your essay!

Critical Questions Condition Revision Protocol

Thank you all for coming in today. Just like the other day, you’ll be using the computer to enter your work. You’ll use the word processor *WORD*, just like you did before. Any questions? (student answers). Please remember NOT to change any settings on the *WORD* software.

Ok, you all should see the essay you wrote last time on the computer screen in front of you. Remember, you wrote an essay about this question: *Should the university require students to be accountable for behavior discovered on the students’ Facebook account?* (show slide )

Today I’m going to give you the chance to revise your essay. I want you to answer this question: what does it mean to revise your essay? Go ahead type it up on the computer. (Students type). When you are done, please look up at me.

OK, today I want you to revise your essay to make it more convincing. To be convincing, you need to imagine that you’re having a conversation with someone who disagrees with you. When people disagree with each other, they should explain why they disagree. They do this this by asking each other questions, and then answering each
other’s questions. So, a good explanation for people who disagree asks and answers each other’s questions.

Someone may disagree with you about your essay. (click, animation used for the next sentence). A good explanation for someone who disagrees with you would ask and answer questions that person might have about your opinion; After you answer the other person’s questions, you would ask the person who disagrees with you questions about their opinion;

So, first you have to think about the questions someone who disagrees with you might have about your opinion, and then you have to answer those questions to convince the person who disagree with you.

OK. You might use information about the good or bad things or consequences that might happen if your opinion was accepted to support your opinion;

To make your opinion convincing, you would have to ask and answer the other person’s questions about the good or bad things or consequences that might happen if your opinion was accepted. I’m going to show you questions that someone might ask, and you have to answer those questions.

Here are the questions (show slide):

Will these things (consequences) probably happen if the University requires students to be accountable for their behavior?

What evidence (examples or facts) do you have that these consequences will happen?

Are there other good or bad things that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?
These are the questions you need to ask and answer about good or bad things or consequences that might happen if your opinion was accepted. (show slide)

Now, let’s talk about the examples you used in your essay. For each example you used in your essay, (click, animation used for the next sentence), you need to ask and answer questions that someone who disagrees with you might have about your examples:

Here are the questions (show slide):

Are the examples true?

Are the examples typical of the kinds of examples that could be used to support the opinion?

Are there any special circumstances that make the examples atypical?

These are the questions you need to ask and answer about your examples (show slide 11)

OK. To make your essay convincing, you would first ask these questions, just like someone would if they disagreed with you, and then you would answer the questions to convince the other person that your opinion is good. (show slide)

We can also ask and answer the same questions to explain why the other person’s opinion isn’t good. Just like before, imagine that you have a conversation with someone who disagrees with you. You need to explain why the other person’s opinion isn’t good by asking and answering questions about their opinion.

Suppose that the other person’s uses information about the good or bad things or consequences that might happen if their opinion was accepted to support their opinion. You would have to ask and answer these questions about the good or bad things or consequences that might happen if their opinion was accepted. (Show slide)
They’re the same questions that you had to *ask* and *answer* about your opinion.

(Point to the questions)

Will these things (consequences) *probably* happen if the University requires students to be accountable for their behavior?

What *evidence (examples or facts)* do you have that these consequences will happen?

Are there other good or bad things that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?

These are the questions you need to ask and answer about good or bad things or consequences that might happen if the other person’s opinion was accepted. By asking and answering these questions, you explain why the other person’s opinion isn’t good.

(show slide)

To explain why the other person’s examples aren’t good, you need to *ask and answer* questions that you would have about their examples (show side). Again, they’re the same questions that you had to *ask and answer* about your examples. *Now you’ll use the same questions to explain why the other person’s examples aren’t good.*

Here are the questions (Point to the questions)

Are the examples *true*?

Are the examples *typical* of the kinds of examples that could be used to support the opinion?

Are there any *special circumstances* that make the examples atypical?

These are the questions you need to ask and answer about the other person’s examples to explain why the other person’s examples aren’t good examples. (show slide)
Now you use the questions we just talked about to explain why the other person’s opinion isn’t good. First you would ask the questions, then you would answer the questions to convince them.

OK, here is the handout that you will be able to use today. (show slide) It has the questions that you could ask and answer about your as well as the other person’s opinion. (Point to the related section) Remember these are the same questions. Use this handout in any way that you want to revise your essay. Any questions? Good luck revising your essay!

The Elaborated Goal Plus Critical Questions Condition Revision Protocol

Thank you all for coming in today. Just like the other day, you’ll be using the computer to enter your work. You’ll use the word processor WORD, just like you did before. Any questions? (student answers). Please remember NOT to change any settings on the WORD software.

Ok, you all should see the essay you wrote last time on the computer screen in front of you. Remember, you wrote an essay about this question: Should the university require students to be accountable for behavior discovered on the students’ Facebook account?(show slide 2)

- Today I’m going to give you the chance to revise your essay. I want you to answer this question: what does it mean to revise your essay? Go ahead type it up on the computer. (Students type). When you are done, please look up at me.

OK, today I want you to revise your essay to make it more convincing.

To be convincing you need to do the following: (show slide 3)

Make sure your opinion is clearly stated in your essay;

Think of at least 3 reasons and examples to backup your opinion;
Explain why those reasons and examples support your opinion; (show slide 4) (no change was made)

Think about other people who might disagree with your opinion, and be sure to state their opinion;

Provide 3 reasons and examples they would give to support their opinion;

Explain why the reasons and examples for their opinion aren’t good; (no change was made)

Include a conclusion;

Remember, these are the things you need to do to make your essay convincing.

Now, let me tell you a little more about this goal (show slide 5). This one (show slide 6) says that you should explain why your reasons support your opinion and why your examples support the reasons for your opinion.

Imagine that you have a conversation with someone who disagrees with you, (click, animation used for the next sentence), a good explanation for someone who disagrees with you would ask and answer questions that person might have about your reasons and examples;

So, you have to think about the questions someone who disagrees with you might have about your reasons and examples, and then you have to answer those questions.

OK, let’s start with your reasons. Those reasons might include information about the good or bad things or consequences that might happen if your opinion was accepted;

To explain each of your reasons, you would have to ask and answer the other person’s questions about the good or bad things or consequences that might happen if your opinion was accepted. I’m going to show you questions that someone might ask, and you have to answer those questions.
Here are the questions (show slide 7):

Will these things (consequences) probably happen if the University requires students to be accountable for their behavior?

What evidence (examples or facts) do you have that these consequences will happen?

Are there other good or bad things that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?

These are the questions you need to ask and answer about good or bad things or consequences that might happen if your opinion was accepted. (show slide 8)

Now let’s talk about the examples that support the reasons for your opinion (show slide 9).

To explain why each of your examples support the reasons for your opinion, (click, animation used for the next sentence), you need to ask and answer questions that someone who disagrees with you might have about your examples:

Here are the questions (show slide 10):

Are the examples true?

Are the examples typical of the kinds of examples that could be used to support the opinion?

Are there any special circumstances that make the examples atypical?

These are the questions you need to ask and answer about your examples (show slide 11)

OK for each of your reasons and examples, you would first ask these questions, just like someone would if they disagreed with you, and then you would answer the
questions to convince the person that your reasons and examples were good. (show slide 12)

Again, these are the things that you need to do to make your essay convincing. Now let’s look at this one (show slide 13). It says that (show slide 14) you need to explain why the other person’s reasons and examples don’t support his or her opinion.

Just like before, imagine that you have a conversation with someone who disagrees with you. You need to explain why the other person’s reasons and examples don’t support their opinion by asking and answering questions about their reasons and examples. (click, animation used for the next sentence)

Suppose that the other person’s reasons were about the *good or bad things or consequences* that might happen if their opinion was accepted. You would have to ask and answer these questions about their reasons to convince the other person. (show slide 15)

They’re the same questions that you had to ask and answer about your reasons. *Now you use these questions to explain why the other person’s reasons aren’t good reasons.*

(Point to the questions)

Will these things (consequences) *probably* happen if the University requires students to be accountable for their behavior?

What *evidence (examples or facts)* do you have that these consequences will happen?

Are there *other good or bad things* that could happen that you haven’t mentioned if the University requires students to be accountable for their behavior?
These are the questions you need to ask and answer about good or bad things or consequences that might happen if the other person’s opinion was accepted. By asking and answering these questions, you explain why the other person’s reasons aren’t good reasons. (show slide 16)

To explain why each of the other person’s examples don’t support the reasons for their opinion, you need to ask and answer questions that you would have about their examples (show side 17). Again, they’re the same questions that you had to ask and answer about your examples. \textit{Now you’ll use the same questions to explain why the other person’s examples don’t support the reasons for their opinion.}

Here are the questions (Point to the questions)

Are the examples \textit{true}? 

Are the examples \textit{typical} of the kinds of examples that could be used to support the opinion?

Are there any \textit{special circumstances} that make the examples atypical?

These are the questions you need to ask and answer about the other person’s examples to explain why the other person’s examples aren’t good examples. (show slide 18)

Now you use the questions we just talked about to explain why the other person’s reasons and examples don’t support his or her opinion. First you would ask the questions, then you would answer the questions to convince them their reasons were not good.

\textbf{OK, here is the handout that you will be able to use today.} (show slide 19) It has the list of things you need to do to make your essay convincing (point to the goals), and here are the questions that you could ask and answer to explain why your reasons and examples support your opinion (point to the related section). Here are the same questions
you which could ask and answer to explain why the other person’s reasons and examples aren’t good. (Point to the related section) Remember these are the same questions. You use them to explain why your reasons and examples support your opinion, and why the other person’s reasons and examples don’t support his or her opinion.

Use this handout in any way that you want to revise your essay. Any questions?

Good luck revising your essay!

Posttest Protocol

Thank you all for coming in today. Just like the other day, you’ll be using the computer to enter your work. You’ll use the word processor WORD, just like you did before. Any questions? (student answers). Please remember NOT to change any settings on the WORD software.

Today, we’re going to ask you to write an essay about this question: Should high school students be allowed to use cellphones while in school to communicate with family and friends?

This is what we want you to write about. Any questions?

Okay. Now you’re going to write your essay. Take as much time as you need to write your essay.

OK, any questions? Good luck writing your essay!
QUALITY SCORING GUIDE

Argumentative writing attempts to influence readers to change their thinking or behavior. It may contain great amounts of information, such as facts, details, examples, comparisons, statistics, or anecdotes, but its main purpose is to go beyond the presentation of knowledge in order to persuade others to take some action or bring about some change. It involves having a clear awareness of what arguments might be most effective for the particular audience.

In evaluating the quality of argumentative writing, several factors are important. First, a clear claim or statement of a position or opinion is needed. Second, reasons should be provided to support that opinion. Third, these reasons should be explained clearly and supported and elaborated. Such explanation and elaboration may involve consequences of practices of policies, examples, analogies and comparisons, causal explanations, statistics, appeals to principle, or other techniques. Fourth, argumentative writing should anticipate and respond to alternative standpoints and counterarguments in some way. Fifth, an introduction, which foreshadows the argument, and a conclusion, which summarizes the argument, strengthen the writing. Finally, argumentative writing is weakened by inconsistencies in claims or reasons, and irrelevant information.

The rubric for evaluating argumentative writing incorporates all of these elements. However, your task in scoring the essays is to evaluate overall persuasiveness. Thus, it is important to balance all of the above factors in making a judgment.

1 Minimally developed. Paper states a clear opinion and gives one or two reasons to support the opinion, but the reasons are not explained and
supported in any coherent way. The reasons may be of limited plausibility, and inconsistencies may be present. May not include an introduction or a conclusion.

2 Between the standards for 1 and 3.

3 Partially developed. Paper states an opinion and gives reason(s) to support the opinion, plus some explanation or elaboration of the reasons. The reasons are generally plausible though not enough information is provided to convince a reader. The paper may contain an introduction and/or conclusion. There may be some inconsistencies, irrelevant information, or problems with organization and clarity.

4 Between the standards for 3 and 5.

5 Developed. Paper states a clear opinion and gives reasons to support the opinion. The reasons are explained clearly and elaborated using information that could be convincing. May mention alternative standpoints, but does not make an effort to rebut these opinions. May acknowledge potential counterarguments, but does not fully develop them or rebut them. If a rebuttal occurs, it tends to be poorly developed. The essay is generally well organized and usually contains an introduction and/or conclusion. The paper is free of inconsistencies and irrelevancies that would weaken the argument.

6 Between the standards for 5 and 7.

7 Fully developed and elaborated. Meets the criteria for previous level. In addition, presents an alternative standpoint and may discuss reasons that support this alternative standpoint. Furthermore, it rebuts these reasons for
the alternative standpoint by explaining why these reasons should not be accepted. The paper also anticipates potential counterarguments and makes an effort to rebut them. Usually, it includes an introduction and a conclusion. Overall the essay is persuasive.
Appendix D

STRUCTURE GUIDE

Guidelines for segmenting essays into functional units

1. When scoring text, be sure you know the topic.

2. Read through the essay to understand the writer’s standpoint and main reasons as well as writing conventions with respect to the organization of the argument before you start to graph and score it.

3. Ignore all errors of punctuation and grammar (unless they render the resulting text incomprehensible).

4. Parts of the essay are scored as either functional or nonfunctional.

   Functional units include: (a) standpoint(s), (b) reason(s), (c) alternative standpoint(s) about the topic, (d) reason(s) for the alternative standpoint(s), (e) counterarguments, (f) rebuttal(s), (g) introductions, (h) conclusions, and (i) rhetorically functional repetitions.

   Nonfunctional elements include (a) repetitions that do not serve some rhetorical purpose and (b) other information that does not appear relevant to the topic.
**Standpoint**

**Definition.** A standpoint represents a stated belief or opinion that is put forth for the reader’s acceptance. A standpoint always takes a *proposition* as its object. A proposition ascribes a certain quality to a person or thing to which it refers. Said differently, a proposition predicates a quality or property to a person or thing, e.g., “Students should be held accountable for their behavior discovered on their Facebook account.” In this instance, the property or quality that is attributed to the proposition about students’ accountability for their Facebook account is their behavior. In simple words, the proposition is the quality of students’ behavior. Therefore, the standpoint expresses an opinion about a proposition.

A *positive standpoint (SP)* expresses an affirmative opinion about the proposition. People generally offer *reasons* to support a positive standpoint. Each of the following examples expresses a positive standpoint because they express affirmative opinions about a proposition:

(1) “I firmly believe that university students should be required to take classes outside their field of study (SP1).”

(2) “I believe that the U.S. government should require all high school students to study a national curriculum before entering college (SP1).”

(3) “I believe that Facebook should be allowed to collect information about people’s purchasing preferences, and then sell it to other companies (SP1).”

(4) “I believe the university should hold students accountable for behavior discovered on the student’s Facebook accounts (SP1).”
A negative standpoint (SN) expresses a negative opinion about the proposition. The following expresses a negative standpoint about a proposition:

(5) “Courses outside the major field of study should not be required (SN1).”

(6) “I believe the government should not require students to study a national curriculum before entering into college (SN1).”

(7) “Facebook should not be allowed to collect its users’ information about purchasing preferences and sell it to other companies (SN1).”
(8) “I don’t think that students should be held accountable for their behavior discovered on their personal Facebook account (SN1).”

In example (5), the viewpoint *negates* the proposition “Courses outside the major field of study should be required.” In example (6), the viewpoint *negates* the proposition “The government should require students to study a national curriculum before entering into college.” Examples (7) and (8) illustrate the same principle. All these examples represent the expression of negative viewpoints.
It is important that a standpoint should be able to stand alone, i.e., you should be able to infer the topic without looking at the writing prompt. Thus, an answer “yes” or “no” without accompanying script to indicate what “yes” or “no” means is not scored as a statement of a standpoint. Instead, it should be scored as non-functional. The following example is scored as a reason without a standpoint (see below for a definition of a reason):

(9) “No (NF), because there are thousands of high schools throughout different states in the US (R1).”

Also note that an essay can have more than one standpoint: an original standpoint, an alternative standpoint, and a third standpoint that qualifies one of the previously stated standpoints. The following are examples of a qualified standpoint:
(10) “I believe that Facebook should be allowed to collect and sell people’s purchasing preferences, but only after the users have checked off that they agree with this plan (SP1).”

(11) “I don’t think that Facebook should be allowed to collect and sell people’s purchasing preferences if they do not agree with the plan (SN1).”

Multiple Standpoints. If a clear statement of a writer’s belief follows another statement that is also a clear statement of the writer’s belief, treat the second statement as another standpoint. The following example illustrates this convention:

(12) “University should not require students to take classes outside of their major (SN1). University should allow students to pick some of their classes (SP1).”
In the example above, the writer is offering an alternative to the proposition of not requiring students to take classes outside of their major, that of “allow[ing] students to pick some of their classes (SP1).” Although this is an alternative, it is still a statement of the writer’s belief, instead of the belief of others, and is therefore scored as another standpoint.

**Distinguishing multiple standpoints and qualified standpoints.** Students sometimes place qualifications to their standpoints. When a qualification is presented in the same sentence with the standpoint, it should be scored as a single qualified standpoint. For example,

(13) “University should be allowed to check students’ Facebook account only when the students agree to (SP1).”

When a qualification is presented in a different sentence and forms a standpoint different than the previous one, it should be scored as multiple standpoints. Let us look at the following example.

(14) “University should be not allowed to check students’ Facebook account (SN1). However, I think that university can check if the students consented (SP1).”
However, if a writer states a standpoint, and then specifically elaborates on that standpoint in order to clarify it, those specific elaborations will be scored as part of the original standpoint. This is because the elaboration does not fundamentally change the standpoint. The following represents this convention:

(15) “University should require students to take classes outside of their major. Like first year mathematics then second year students would have American History (SP1).”

In this example, the propositions “first year mathematics” and “second year students would have American History” are not qualifications of the original standpoint, but a specific example of how “university should require students to take
classes outside of their major.” Therefore, it is scored as a part of the original standpoint. The following also represents this convention:

(16) “Students should be held accountable for their behavior discovered on Facebook. Like drinking and violence (SP1).”

Like the previous example, the writer offers a standpoint (Students should be held accountable for their behavior discovered on Facebook) and then gives two specific examples of the behavior that could be discovered on Facebook. Since these are specific elaborations, this is scored as a single standpoint.

In addition, if the writer’s initial standpoint is unclear, then the subsequent elaborations or qualifications of it are nonfunctional (NF) unless the writer subsequently clarifies the standpoint (see below Definition of Nonfunctional Units). If the standpoint is subsequently clarified, the clarification is scored as a Standpoint (SP or SN). Take the following example:

(17) I don’t think that there is a real way. Math, science or history.
In this example, the author’s viewpoint is unclear because we cannot assume she is for or against courses required outside one’s major. In this case both the unclear standpoint and the elaborations of that standpoint are graphed as non-functional. However, if the writer would later clarify the view, she would be credited with that standpoint:

(18) I don’t think that there is a real way (NF). Math (NF), science (NF) or history (NF). I say no to courses required outside one’s major (SN1).

17. Unclear standpoint with non-functional elaborations

18. Unclear standpoint with non-functional elaborations and clarification
It may be the case that a writer may offer contradictory standpoints: an original standpoint and then one that directly opposes it. The author in this case is not offering the contradictory standpoint as the opinion of others, but as her own opinion. In this case, both of the standpoints should be represented in the graph. Take the following example:

(19) “I think university should require students to take courses outside their major (SP1) and also that students should not take courses outside their major (SN1).”

In this example the writer offers a standpoint (that university should require students to take courses outside their major) and then offers another standpoint that completely contradicts the first (that students should not take courses outside their major). Although this type of argument can be confusing, both standpoints should be graphed as writer’s standpoints.

Expression of standpoints in progressive and retrogressive arguments. A standpoint can be expressed before or after the reasons for it are given.
If the standpoint is expressed *before* the reasons are given, the argument is *retrogressive*. The following is an example of a retrogressive argument:

(20) “University should not require students to take classes outside their major because they do not help all individuals with their future professions (SN1.R1).”

If the standpoint is expressed *after* the reasons are given, the argument is *progressive*. The following is an example of a progressive argument:

(21) “They do not help all individuals with their future professions (SN1.R1). Therefore, university should not require students to take courses outside their major (SN1).”
Indicators. Indicators often mark the expression of a standpoint in progressive and retrogressive argument. Indicators include (but are not limited to): *I think, I don’t think, In my opinion, I conclude, I hope that I have shown, therefore.*

Additional rules of graphing standpoints. Standpoints can appear anywhere in an essay. **Always pull out different standpoints and put them above all the reasons even if students use the progressive structure.** All the arrows should have the direction of pointing up. If a student writes the same standpoint in different ways in an essay, select the one which is written most directly, clearly, and explicitly. The following is an excerpt of a student’s essay that contains a standpoint.

“Many undergraduate students enter into college without a clear idea of the career path that they would like to follow. *I think that it is important that schools require certain core credits for each student to fulfill (SP1) because it gives and undeclared student time to figure out what is right for them, without completely falling*
behind his or her class. By taking various courses in math, science, and history for instance, this student will have the opportunity to investigate in these subjects to see if any one is right for them.”

This student did not express her standpoint in her introductory paragraph. Rather, she presented in the third paragraph, i.e., the above excerpt. Some students may only state their standpoint in the concluding paragraph. For example,

“In conclusion, required university classes should go away (SN1) because they do not help all individuals with their future professions. Most majors have classes that will in no way affect what the individual will do in their profession. Classes should be determined strictly by the individual’s major. The required classes take up time that could be used to help individuals succeed at their future career.”

**Reason**

**Definition.** A reason is a justification that answers the question “why” a person holds a standpoint. The following are examples of reasons:

(22) “Facebook should be allowed to collect and sell information about people’s purchasing preferences (SP1) because it would be able to make a lot of profit (SP1.R1).”

(23) “Students should be required to take a variety of courses outside their major field of study (SP1) because it will make them a well-rounded person (SP1.R1).”
(24) “I think that universities should not hold students accountable for behaviors that were shown on their Facebook (SN1) because it is an invasion of privacy (SN1.R1).”

(25) “I believe that US government should not require high school students to study a national curriculum before entering college (SN1) because all students learn at different paces (SN1.R1).”
Indicators. Indicators often mark the expression of reasons. Indicators include (but are not limited to): *because, for, first, second*.

Argument Structures

Every argument includes reasons that can be structured in different ways to support a standpoint. There are four types of argument structures: single argument, coordinative argument, multiple argument and subordinative argument.

**Single arguments.** Single arguments usually consist of the standpoint and a single supporting reason. The following are examples of single arguments:

(26) “Facebook should not be allowed to sell people’s purchasing preferences (SN1) because it is an invasion of privacy (SN1.R1).”

In the above example the writers offers a clear standpoint and one reason for the standpoint. Although writers rarely offer just one single argument, single arguments are often part of larger argument structures. Basically all arguments can be reduced to single arguments if so desired.
**Coordinative arguments.** Unlike single arguments, coordinative arguments consist of more than one reason for the same standpoint. The reasons in a coordinative argument depend upon each other to defend the standpoint. Said differently, each of the reasons must be accepted (i.e., are necessary) to defend the standpoint. So, if one of the reasons is rebutted, the entire defense is undermined.

The interdependence of reasons in a coordinative argument occurs for at least two reasons. First, individual reasons may be too weak on their own to defend the standpoint:

(27) “We should have required courses outside our major (SP1) because I can make new friends (SP1.R1a), and because classes outside of the major allow for more professor/student ties to be built (SP1.R1b).”

In (27), each of the reasons is weak and could be easily rebutted because they are not the major purposes of taking courses. For example, (SN1.R1a) could be rebutted by replying: “That’s not the purpose of taking required courses. You can make friends in required and non-required courses. Also, there are many other
effective ways of making friends.” (SN1.R1b) could be rebutted by replying: “The purpose of taking courses is to learn important knowledge and skills that might contribute to your professional development. You don’t take courses simply for building a tie with a professor.” However, the two reasons together, however feeble they may be, are more persuasive than the either one alone.

Second, succeeding reasons may answer objections that could be raised about prior reasons:

(28) “Students should not be required to take any course outside their major field of study (SN1) because they cannot do well in the course (SN1.R1a) and because the course is not of interest to them (SN1.R1b).”

In (28), each of the reasons by themselves is not sufficient to defend the standpoint because it is relatively easy to rebut each reason separately. For example, (SN1.R1a) could be rebutted by replying: “You should try to learn as much as possible. Whether or not you do well is not relevant. If I agree with you, the courses you can take are only the ones that you do well in.” However, taken together, the
reasons represent a more formidable defense of the standpoint because (SN1.R1b) may answer this objection, by saying, “The course is not of interest to them.” In other words, students are not interested in studying these required courses outside their major, so they are not motivated to do well. These coordinative reasons work together to support the standpoint.

Third, and related to (27) and (28), an argument is more likely to be coordinative when it defends a categorically stated standpoint, i.e., a standpoint involving a category that has no exceptions, or is so extreme that it depends upon all of its reasons working together to be supported. Thus, the reasons offered in defense of such a standpoint must mutually support each other in defense of the standpoint.

Coordinative arguments can usually be identified by the coordinating conjunctions that link the propositions, or the fact that the coordinative reasons often appear one after the other in the argument. Coordinating conjunctions generally link two independent clauses (clauses that can stand alone as a full sentence) or link items or examples in a list. These conjunctions include the words: “and,” “but,” “or,” “also,” “besides,” “in addition,” and “as well.”

However, students may not always use coordinating conjunctions to tell us that they are using coordinative arguments. In some cases, student may list reasons for a standpoint with NO coordinating conjunctions at all. So, we cannot purely rely on the coordinating conjunctions when making a decision of coordinative arguments. Take this argument for example:

(29) “Facebook should not be allowed to sell people’s purchasing preferences (SN1). Because it is a communication tool (SN1.R1a). It is not meant for companies to use for purchasing preferences (SN1.R1b).”
In this example, the writer lists reasons why Facebook should not be allowed to sell people’s purchasing preferences. None of the reasons are connected with coordinating conjunctions, but they are used coordinatively to support the standpoint. In this case, if we add a coordinating conjunction *and* between them, it would be clear that they are coordinative reasons.

It is important when graphing coordinating arguments that attention is paid to each of these separate propositions, and that each is graphed as a separate coordinative reason. Especially when students string words and phrases together in a list-like format, these arguments are often coordinative.

In addition, it may be the case that an author states a reason and then uses a coordinating conjunction to attach a clause that simply restates a previously stated reason. In this case the clause is NOT a *separate reason and should be scored as non-functional*:
(30) “I think students should take courses outside their major (SP1) because they need more knowledge (SP1.R1) and more knowledge (NF).”

30. Coordinating conjunction and repeated reason

Distinguishing single and coordinative arguments in the presence of coordinating conjunctions. Although “and” is a coordinating conjunction, we do not always treat the propositions linked by “and” as coordinative reasons. Following are the situations when propositions linked by coordinating conjunctions should be scored as coordinative reasons.

**Situation I: Two or more independent clauses (different subjects, verbs, and objects)**

*There needs to be an intense accountability system for schools (R1a) and this national curriculum would help enforce that (R1b).*

*A person might be left out if they are not invited (R1a), and this could ruin a person’s after school life (R1b).*

*For years, people fought for freedom of speech (R1a) and once we got it the university may try to uphold it (R1b).*
You must understand that your information, when posted on your page, is accessible to virtually anyone (R1a) and by posting it on your page you are allowing your information to be put out into the open (R1b).

**Situation II: Two or more clauses that share the same subject but the verbs and objects are different**

Students will constantly be aware of what looks unprofessional (R1a) and will be prepared for when they are job searching (R1b).

A student may be the smartest in his or her class (R1a), participate in many extra curricular activities (R1b), and be loved by many teachers, advisors, or coaches (R1c).

It would be a pretty bad situation all around (R1a) and especially reflect poorly on the University (R1b).

A great deal of personal information is posted to the site (R1a) or given during registration on a daily basis (R1b).

**Situation III: Examples/illustrations of the previous text**

Sometimes people have pictures posted of themselves doing things that are not professional, such as drinking (R1a) and doing drugs (R1b).

It is important for all students to learn basic information, such as United States history (R1a), English (R1b), and math (R1c).

Students may occasionally take other specific classes of interest, such as scuba diving (R1a) or creative dance (R1b).
Arguments that do not fall into any of the above three situations should be scored as a single argument even if a coordinating conjunction is used. Following are some typical examples:

Subjects/Verbs/Objects are linked with a coordinating conjunction (Other parts of the sentence are shared by them), when not used as examples:

Their lesson plans and curriculum may not be as individualized as they could be.

All of these positive attributes and beliefs about a student can be forgotten if information found on their Facebook is used against them.

Once you agree to the terms of service when joining Facebook, you are telling them that you have read and understand the various aspects of that agreement.

This would require more money and time.

This would be very time consuming and unpractical.

Rewording (Basically stating the same thing):

For example, if a student is seen on Facebook drinking at their home with their parents then it has nothing to do with the university because they are at their house and away from campus.

Facebook is a private webpage which the user chooses who they allow to see their profile and who they don’t allow to see their profile.

Distinguishing Coordinative and Single Arguments in other cases. In most of the cases, the smallest unit of graphing is a clause or a sentence (exception: examples). However, clauses and other things that do not stand on its own (i.e., having an independent meaning) cannot be put into a separate box. They must be scored together
with the other part to be an argument so that we can interpret the meaning of the sentence. The following are the arguments that should not be split into coordinative arguments. Rather, we should score the entire sentence as a single argument. The examples include “to,” “while,” “although,” “where,” “when,” and “whether...or....”

Now more people are joining Facebook, to take part in this research to get their reward.

They are able to keep in touch with both friends and family, while also making new connections with people around the world.

Although the third-party businesses may benefit, Facebook would lose a portion of its own business from doing so.

Facebook is a very large social networking site, where thousands of people are continually communicating back and forth.

In most instances, a person does not want to spend hours researching the best prices or reviews for a certain item they want, whether it being popular or almost unknown to the general public.

On the contrary, the following arguments should be scored as coordinative arguments. They contain words like “not only, but (also),” and “no longer....”

Not only will selling our information away to businesses destroy Facebooks’ reputation (R1a), it’s also illegal (R1b).

No longer will it be a convenient way to keep in touch (R1a), it’ll become a hassle just to navigate through all the advertisements from businesses trying to sell goods that match profiles (R1b).

Subordinative arguments
Subordinative arguments consist of a standpoint and a series of reasons that in turn represent an argument for the preceding reason. They answer the question why the preceding reason is a good reason for the standpoint. In effect, each succeeding reason is a layer in the argument that buttresses the preceding reason. Layers are added until the defense of the viewpoint is solid. Subordinative arguments can be presented retrogressively or progressively.

In a retrogressive presentation, each succeeding reason can be taken as an argument for the preceding reason. The following is an example of a retrogressively presented subordinative argument:

(31) “I firmly believe that university students should be required to take classes outside their field of study (SP1) because I may not be able to find a job after graduation (SP1.R1). Because the future is very uncertain (SP1.R1.R1), jobs are declining in unsettling times with the economy (SP1.R1.R1.R1). It would be unrealistic for me to be spending four years taking nothing but music courses (SP1.R1.R1.R1.R1).”
In (31), each succeeding reason provides an argument for the reason that preceded it. The final reasons would be difficult to challenge, i.e., “It would be unrealistic for me to be spending four years taking nothing but music courses (SP1.R1.R1.R1).”

In a progressive presentation, the reason that clinches the argument is given last, with a chain of reasoning that leads to this argument. Strictly speaking, a progressive presentation involves superordination because the reason that provides the

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base of support for the other reasons is presented last. The following is an example of a progressively presented subordinative argument:

(32) “I firmly believe that university students should be required to take classes outside their field of study (SP1) because it would be unrealistic for me to be spending four years taking nothing but music courses (SP1.R1). Jobs are declining in unsettling times with the economy (SP1.R1.R1), so the future is very uncertain (SP1.R1.R1.R1). Therefore, I may not be able to find a job after graduation (SP1.R1.R1.R1.R1).”
In (32), the argument progresses from the reason that provides the foundation for all other reasons “it would be unrealistic for me to be spending four years taking nothing but music courses (SP1.R1)” to the other reasons, concluding with the reason for “not able to find a job after graduation (SP1.R1.R1.R1)”. The last reason is the main reason that directly supports the standpoint.

The key for distinguishing a retrogressive presentation and a progressive presentation is to locate the main reason which is directly supporting the argument. If the main reason immediately follows the argument, it is a retrogressive presentation; if the main reason is presented at the end, it is a progressive presentation. Regardless of what presentation an argument is, the most important rule is to keep the sequence (i.e., order) of the reasons in the original text when graphing. Remember the standpoint always goes at the top of the graph.

Some writers provide a viewpoint and a single reason, accompanied by an example or illustration of that reason. These arguments are represented as a subordinative argument. The following illustrates a subordinative argument of this type:

(33) “I believe that the university should not hold students accountable for behavior discovered on their Facebook accounts (SN1) because students should not be penalized for pictures of situations outside of the university (SP1.R1), such as in their hometown (SN1.R1.R1).”
In some cases, the writer provides a viewpoint and a single reason, accompanied by *multiple* examples. Similar to the above argument, these examples should be placed subordinatively to the reason that they illustrate. However, the relationship between these examples is coordinative. The following illustrates how examples are presented.

(34) “The government should not require all high school students to study a national curriculum before entering college (SN1) because it will not benefit certain
groups of students (SN1.R1), such as those who are learning English as a second language (SN1.R1.R1a), those who have learning disabilities (SN1.R1.R1b), and those who show talents in particular areas (SN1.R1.R1c).”

In (34), three examples are used to illustrate the reason “because it will not benefit certain groups of students (SN1.R1),” so they are placed subordinately to this reason. In this case, the writer uses a coordinating conjunction to link different examples in the same sentence. Each of these examples should be analyzed as separate elements in the argument’s structure. The relation between them is coordinative.

Additionally, a writer may provide a reason in support of a standpoint, and then specifically identify why that reason is a good reason for the standpoint. Said differently, a writer may state a justification for using a reason in support of his or her
standpoint. If a writer does this, the justification is scored as a subordinative argument.

The following is an example of this type of argument:

(35) “I believe that the university should not hold students accountable for behavior discovered on their Facebook accounts (SN1) because students should not be penalized for pictures of situations outside of the university (SP1.R1), such as in their hometown (SN1.R1.R1). Once that student is home, it is the parents’ responsibility to monitor what their child does, not the university’s (SN1.R1.R1.R1).”

35. Subordinative argument with reason, example, and justification
In (35), the statement “Once that student is home, it is the parents’ responsibility to monitor what their child does, not the university’s” justifies “why” the reason “because students should not be penalized for pictures of situations in their hometown” is a good reason for the standpoint that “the university should not hold students accountable for behavior discovered on their Facebook accounts.”

**Distinguishing Coordinative and Subordinative Arguments.** In many cases, authors will use both coordinative and subordinative arguments in support of their standpoints, and in practice, it is often difficult to distinguish between these two types of argument structures. This distinction is especially problematic when the writer strings a series of reasons together *one after another* without specific discourse markers associated with them. However, if the essay contains no other evidence of subordination or elaboration of reasons, and there is no clear marker for subordination in the string of reasons (e.g., *Therefore, …*), the reasons should be scored as coordinative. The following illustrates this convention:

(36) “I believe that Facebook should be allowed to collect information about people’s purchasing preferences, and then sell it to other companies (SP1). Because all of the consumer opinions can help these companies make their products even better (SP1.R1a). These opinions can create more opportunities for profit for these companies (SP1.R1b). This is not necessarily a bad thing
The distinction becomes more difficult when a writer includes reasons that seem to have a weak link (e.g., the preceding reason is the consequence of the previous reason, can be caused by the previous reason, or it explains and supports the previous reason), but have no subordinative markers (since, because, therefore, etc.) that make this link clear. Instead, the reasons are linked solely by a coordinating conjunction. These types of reasons should be scored coordinatively. Consider the following:

(37) “Facebook should be allowed to collect and sell people’s purchasing preferences (SP1). The reason is the prices of their items will most likely drop (SP1.R1a) and consumers are able to get more for what they are expecting to spend (SP1.R1b).”
In this example one could imagine that “the prices ... drop[ping]” may lead to the consequence that “the consumers [to be] able to get more for what they are expecting to spend.” However, because the student did not make that link clear, these reasons should be scored coordinatively. Furthermore, the reasons are linked by a coordinating conjunction “and” which indicates that two weak reasons are used together. So, we should score them coordinatively. Here is another example:

(38) “I believe the government should not require students to study a national curriculum before entering into college (SN1). Firstly, many students after high school do not wish to go to college (SN1.R1) because it is expensive (SN1.R1.R1a). They go straight to the workforce (SN1.R1.R1b). A national curriculum does not help them prepare for their future (SN1.R1.R1c).”
In this example the writer offers a standpoint (“I believe the government should not require students to study a national curriculum before entering into college.”) followed by a reason (“Firstly, many students after high school do not wish to go to college”). She then provides a string of reasons for why the preceding reason is a good reason, culminating in “A national curriculum does not help them prepare for their future.” Although there is a weak link between the financial stress of going to college and having to go to work (i.e., the latter reason could be led by the previous reason), because the writer did not make the link clearly using subordinative discourse markers, the string of reasons will be scored coordinatively. However, one could imagine a similar argument with clearer subordinative links:
(39) “I believe the government should not require students to study a national curriculum before entering into college (SN1). Firstly, many students after high school do not wish to go to college (SN1.R1) because it is expensive (SN1.R1.R1). This makes them go straight to the workforce (SN1.R1.R1.R1). Therefore, a national curriculum does not help them prepare for their future (SN1.R1.R1.R1.R1).”
In this example, the writer has provided two clear subordinative links between the reasons. For instance, the subordinative indicators “because” and “therefore” are used. In addition, the discourse marker, “This makes” shows that the reason “they go straight to the workforce (SN1.R1.R1.R1)” is the consequence of the reason “College is expensive (SN1.R1.R1).”

It should be considered a general rule of thumb that if there are clear subordinative discourse markers, the argument should be scored subordinatively. However, when there are no clear subordinative markers and the argument does not clearly answer why the previous reason is a good one, the argument should be scored coordinatively.

There could be a case when students use the coordinating conjunction and the subordinative marker together, such as “and therefore...” In this case, we treat the argument as subordinative if (a) one reason can be the consequence of the preceding reason, (b) one reason can be caused by the preceding reason, or (c) one reason explains and supports the other reason. Let’s look at the following example.

(40) “I believe that the university should not hold students accountable for behavior discovered on their Facebook accounts (SN1). Some of the activities or behaviors that students take part in may not take place on campus (SN1.R1), and therefore have nothing to do with the university (SN1.R1.R1).”
In (40), the writer first provides a reason to support her standpoint. Then she provides the last reason “and therefore [it] has nothing to do with the university (SN1.R1.R1)” to support her second reason. Although two discourse markers – “and”, “therefore” were used, it shows clear the causal link between the last two reasons.

Clauses that begin with “which”. Sometimes students may use a dependent clause with the word “which”. If the “which” clause is a reason used to support the main clause or the “which” clause is a consequence of the main clause, the “which” clause should be scored subordinatively to the main clause. For example,

(41) “The university should hold students accountable for behavior discovered on their Facebook account (SP1) because they can eliminate bad students in admission (SP1.R1). Enrolling bad students may cause a decrease in applicants
In (41), *which* clearly introduces a consequence of “decrease in applicants (SP1.R1.R1).” The consequence is “drop in the standings of the school (SP1.R1.R1.R1).” So, the argument should be scored subordinatively.

However, if “which” can be replaced by “and”, usually in this case, the “which” clause does not provide a reason that supports the main clause, nor it can be led by the main clause. Thus, the “which” clause should be scored coordinatively to the main clause. Let’s look at the following examples:
“Universities should require students to take extra courses outside their major (SP1) because a variety of courses creates a wider range of social networks (SP1.R1a) which are vital factors in becoming a known individual on campus (SP1.R1b).”

In (42), *which* does not show a cause relationship between the two reasons, nor it can be led by the previous reason. Rather, *which*, here, can be replaced by the coordinating conjunction *and*. The SP1.R1b can be rewritten as, “and [social networks] are vital factors in becoming a known individual on campus.” So they should be scored coordinatively. This rule should be applied to the word “*so*”, too. (“...so that...” usually indicates subordinantive arguments.)

Sometimes, students may use “*which*” wrongly. They may use “*which*” but it really means “*that*.” For example, “*University should require students to take courses outside their major because the courses offer students the important knowledge which well-educated people should know.*” In this case, “*that*” should be used instead of “*which*”. So, the *which clause* should NOT be scored as a coordinative argument.
If / then clauses in subordinative and coordinative arguments

An if / then construction begins with a particular condition (if this happens) or set of conditions (if this happens and this other thing happens) and ends with a consequence of those conditions (…then this will happen). The difficulty arises because if / then constructions imply causation (which may look subordinative) and they often contain multiple coordinating conjunctions (which may look coordinative). However, the general rule is that when a student uses an if / then structure in her writing, what goes within the if / then structure stays as a single argument. Take this example:

(43) “I believe that universities should not hold students accountable for behavior on Facebook (SN1) because if a student is seen on Facebook drinking at their home with their parents then it has nothing to do with the university (SN1.R1).”

43. If/then clause with single condition and single consequence
This example contains a single if / then structure which presents a single condition (“if a student is seen on Facebook drinking at his home with his parents”) and a single consequence (“then it has nothing to do with the university”). This should be graphed as a single argument under the standpoint. In addition, it is often the case that a student will list several conditions (one after another) in an if / then construct. Here is an example:

(44) “I do think that students should be held accountable for their behavior discovered on their personal Facebook account (SP1). If students post pictures of a sorority party taking place on campus property and the students are clearly not of legal age to consume alcohol, then there are going to be some problems (SP1.R1).”

44. If/then clause with multiple conditions and single consequence

This argument contains an if / then structure composed of two conditions (posting pictures..., and not of legal age to consume alcohol). Although there are two
conditions linked by a coordinating conjunction, the argument is still scored as a
*single argument*. This is because what falls between conditions and the consequence is
its own reason and will therefore be scored as a single argument.

It may also be the case that a writer will use an if/then construct with the “if”
condition marker coming last in the construct instead of first. This would still be
scored as a single reason:

(45) “I do think that students should be held accountable for their behavior
discovered on their personal Facebook account (SP1) because students will
take their behavior more seriously if they knew that they could be punished
(SP1.R1).

In this example, the consequence comes first (taking their behavior more
seriously), which is followed by the condition (if they knew that they could be
punished). The whole is scored as a single reason.
It may be the case, however, that an author uses an if / then structure which contains multiple consequences. In this case the condition(s) and first consequence will be scored as a single argument. Any subsequent consequences will be scored coordinative reasons. Here is an example of this convention:

(46) “I don’t think Facebook should be allowed to collect and sell people’s purchasing preferences (SN1). If joining Facebook meant subscribing to the mass amounts of unwanted junk mail, annoying computer applications and telemarketers, then many people would stop joining (SN1.R1a) and many of the current users might even leave the community completely (SN1.R1b).”

In this example, the author lists two consequences (stopping joining, and leaving the community). In this case the condition and the first consequence are scored as a single argument. However, the second consequence is scored as a coordinative argument.
Similar to example (46), a writer may use an if/then construct with the “if” coming last after a series of consequences. In this case, the last consequence is linked with the condition, but all other consequences are scored coordinatively. The following represents this convention.

(47) “Students should not be required to take courses outside their major (SN1) because it is a waste of time (SN1.R1a), students will be stressed with so many extra courses (SN1.R1b), and they cannot concentrate on their major if they have no choice in making their schedule (SN1.R1c).”

If/Then clauses are sometimes difficult to identify because writers either fail to use both “if” and “then” in their construct, or substitute words for one or both of those terms. Here is an example of an argument where a writer does not use “then.”

(48) “I think that students should take courses outside their major (SP1). If I was taking only my core music classes throughout college and I was never
exposed to the special education class, I may have never really realized that I had a passion for those children (SP1.R1).”

48. If/then argument with no “then” marker

In this example the writer begins the if/then construct with an “if,” but leaves out the “then” when she introduces the consequence. Because this still has a complete set of conditions and consequence, this is scored as a single reason. It is important to notice that although this argument has multiple coordinative conditions, it is still scored as a single reason because it falls within the if/then structure. Here is a similar example with an added complication.

(49) “University should be allowed to hold students accountable for what is on their Facebook accounts (SP1). This is because if students get caught with incriminating information on Facebook such as underage drinking, they should fully take responsibility for themselves (SP1.R1).”
This argument contains an if/then construct with no “then” marker. It also contains examples as part of the condition of this statement: “students get caught with incriminating information on Facebook, such as underage drinking” Although this statement elaborates what came before, these types of conditional examples will be scored as part of the if/then construct and not as a separate subordinative elaboration.

However, if the example is a part of the consequences, it should be scored as a separate subordinative elaboration. For example,

(50) “I do not think Facebook should be allowed to collect people’s purchasing preferences and sell it to companies (SN1). This is because if students started getting bombarded with offers in their inbox, parents may take actions against Facebook (SN1.R1), like they force students to delete their Facebook account (SN1.R1.R1).”
This argument contains an if/then construct with no “then” marker. Like (49), it also contains an example. However, the example is part of the consequence instead of the condition. In this case, the example (like they force students to delete their Facebook account) should be scored as a separate subordinative elaboration.

The general rule of scoring examples/illustrations in the if/then construct is when the example is part of the condition(s), score it in combination of the if/then construct; when the example is part of the consequence(s), score it as a separate subordinative elaboration.

Here is another example of an if/then construct with a complication related to the marker (“When” is used instead of “If”):

(51) “Universities should not use students’ Facebook accounts to obtain information and hold students accountable for it (SN1) because Facebook users
have the right to keep their postings private (SN1.R1). For instance, when a student decides that his page is private, then the university should not be able to deny that student’s right (SN1.R1.R1).”

In this example, the writer uses an if/then clause. However, in this instance the writer uses “when” instead of “if” to introduce the condition. It is important to pay attention to these different markers of if/then clauses in order to score these structures correctly.

It is sometimes the case that an author may not use an “if” to introduce the conditions in an if/then construct. Take this example:

(52) “Students should take courses outside their major (SP1). For example, a business student is required to take a writing course to fulfill credits and she
may learn important writing skills. Then she will become competent in the job market (SP1.R1).”

52. If/then structure with no “if” marker

In (SP1.R1) the author has used an if / then construct without the “if” to introduce the conditions. However, because this example has a clear consequence (becoming competent in the job market) that is marked with a “then”, it should be scored as a single reason according to the if/then rule. As the consequence is stated in a separate sentence, this structure is more complicated to detect. So, it is important to read the whole idea to determine if it is an if/then structure.

**Multiple arguments.** Multiple arguments usually consist of alternative reasons for the same standpoint. These reasons do not depend upon each other to support the standpoint. Said differently, each of the reasons is independent of each other and carries roughly equal weight in the defense of the standpoint. Each of the reasons, if successful, should be sufficient to defend the standpoint. In practice it is often difficult to distinguish between multiple and coordinative reasons. However, the general rule is
that if there is a degree of subordination below a reason, then that reason should be scored as a multiple reason.

One way to distinguish between multiple and coordinative arguments is that sometimes the writer uses discourse markers (e.g., First...Second...Third) that seem to indicate the presence of multiple argument. The reasons are set apart in separate paragraphs, and there is evidence of supporting subordination within the paragraph for each of these reasons. When these conditions are met, the reasons should be treated as multiple reasons, even if the reasons themselves are not compelling:

(53) “I believe that Universities should not hold students accountable for behavior discovered on the students’ Facebook account (SN1). First, it is not related to the school (SN1.R1). For example, if a student is seen on Facebook drinking at their home with their parents then it has nothing to do with the University (SN1.R1.R1). Second, it is an invasion of privacy (SN1.R2). For instance, when a student on Facebook puts that they want their profile to remain private, then the school should not be able to look at the profile (SN1.R2.R1).”
Sometimes, however, a student may offer a reason with a degree of subordination under it, but then offer a weak reason that is not connected syntactically. The following is an example of this:

(54) “It is absurd for a student to take on more courses outside their major (SN1). There are many courses in one major that a student is already responsible for upon completion (SN1.R1). Therefore, this perspective prompts the student to be overwhelmed with the workload (SN1.R1.R1). Second, courses are very expensive (SN1.R2).”
Although the second reason “courses are very expensive (SN1.R2)” is not elaborated, in this case, we do not score it as coordinative to “there are many courses in one major...(SN1.R1).” This is because there is a degree of subordination under the reason (SN1.R1) and because “courses are very expensive (SN1.R2)” is not connected syntactically to the sentences that came before. We should score them as multiple arguments. With the subordinative support (SN1.R1.R1), the first reason (SN1.R1) is strong enough, so it does not need to work together with the second reason (SN1.R2).

Although multiple reasons are usually presented in different paragraphs and numbered by “First,” “Second,” “Third,”..., it might be the case that the writer presents multiple reasons in the same paragraph. The way to determine if these are multiple reasons is to examine if there is any subordination under these reasons. Let’s look at the following argument.
(55) “I think that it is important that schools require certain core credits for each student to fulfill (SP1) because it gives an undeclared student time to figure out what is right for them (SP1.R1). By taking various courses in math, science, and history for instance, this student will have the opportunity to investigate in these subjects to see if any one is right for them (SP1.R1.R1). For students who have already declared a major, taking outside courses can be important as well (SP1.R2). For example, if a business student is required to take a language course to fulfill credits, then he or she may become so intrigued by the language that the student decides to minor in that language (SP1.R2.R1). This opportunity would have never came to be had the student only been required to take strictly business courses (SP1.R2.R1.R1).”
In (55), although the writer does not present the reasons (SP1.R1) and (SP1.R2) in separate paragraphs or number these reasons, there is a degree of subordination under each of them. The first line of reason is explaining why required courses are good for undeclared students, and the second line of reason is explaining why required courses are good for students with declared majors. Furthermore, these two reasons are strong reasons even if they were used independently. In general, multiple reasons are stronger reasons than coordinative reasons.

**Alternative Standpoint**  
**Definition.** The alternative standpoint is the position that is opposed to the writer’s stated standpoint. In other words, the alternative standpoint directly contrasts with the standpoint that the writer is advancing. In general, alternative standpoints are
usually argued against, i.e., the writer will often attempt to strengthen the case for her standpoint by weakening the case for the alternative proposition. The following is an example of an alternative standpoint:

(56) “I believe that universities should not hold students accountable for behavior discovered on the students’ Facebook account (SN1) because it will violate their freedom of speech (SN1.R1). Other people might think that universities should check students’ Facebook (AS1).”

As we indicated earlier, a standpoint is only credited if it is explicitly stated. However, we credit the alternative proposition if the writer: (a) explicitly states the standpoint he or she is trying to advance, and (b) implies a contrasting alternative standpoint. For example, the essay might begin with the standpoint “I think that universities should not hold students accountable for behavior discovered on the students’ Facebook account.” After some development of this idea, the writer may say “Other people say that they should.” In this case, the alternative standpoint does not
stand alone, i.e., it must be inferred by contrasting the latter statement with the original standpoint. In this case, the writer would be given credit for the alternative standpoint.

**Reasons for the Alternative Standpoint**

**Definition.** People who hold an alternative standpoint could give reasons as support for their standpoint. These reasons are used to explain why those people have different opinions than the writer. Reasons for the alternative standpoint generally follow statements about the alternative standpoint. The following is an example:

(57) “I believe that the United States government should not require high school students to study the same curriculum before entering college (SN1) because this will cause some children to fail (SN1.R1). Some believe that students should have the same national curriculum all across the Unites States (AS1) because it will make the students all at the same level (AS1.R1).”

In (57), the writer points out that other people might think that the national curriculum will make the students all at the same level. This is the reason for their standpoint, i.e., the alternative standpoint. If true, the reason for the alternative
standpoint undermines the link between the writer’s standpoint and the reason. Therefore, if the reason for the alternative standpoint is not rebutted (see below), its inclusion actually weakens the student’s standpoint.

Sometimes a writer might offer reasons for the alternative standpoint in a coordinative fashion. We apply the same rule for the coordinative arguments here. The following represents this convention:

(58) “I personally, do not feel as if a university should hold students accountable for behavior discovered on the students’ Facebook account (SN1) because holding students accountable for their Facebook accounts violates their freedom of speech (SN1.R1). Some people may argue that the university has the right to check a student’s Facebook account (AS1) because we are the students of their university (AS1.R1a) and they have a great deal of control over what students do over the internet (AS1.R1b).”

58. Coordinative reasons for the alternative standpoint

SN1
I personally, do not feel as if a university should hold students accountable for behavior discovered on the students’ Facebook account

SN1.R1
because holding students accountable for their Facebook accounts violates their freedom of speech.

AS1
Some people may argue that the university has the right to check a student’s Facebook account

AS1.R1a
because we are the students of their university

AS1.R1b
and they have a great deal of control over what students do over the internet.
Although this structure is very close to the one that came before it, because the reasons for the alternative standpoint contain two separate clauses linked by a coordinating conjunction, they are graphed as two coordinative reasons.

In conclusion, the rules of argument structure: single, coordinative, subordinative, and multiple arguments should be applied to reasons for the alternative standpoint.

**Counterarguments (CA)**

**Definition.** A counterargument is a criticism or objection that could be used to undermine the author’s standpoint. In a real argument between two people, a person who holds an alternative standpoint could make counterarguments to the standpoint of the other person. In students’ written arguments, counterarguments are described as potential criticisms of the student’s standpoint or/and reasons. Students may recognize these potential weaknesses in the reasons for their standpoint, and express these weaknesses with counterarguments. The following is an example of a counterargument:

(59) “I do not think a national curriculum should be required (SN1) because students come to college to specialize in and excel in a certain area that will hopefully become their job at the end of graduation (SN1.R1). Some people may say that even though education is more specialized in college, high school is a time for getting experience in all fields of study (SN1.R1.CA1).”
In (59), you may notice that the counterargument follows the writer’s reason for her standpoint, “because students come to college to specialize in and excel in a certain area that will hopefully become their job at the end of graduation (SN1.R1).” Without doubt, the writer gives this reason to support her standpoint. However, she realizes that some people might disagree with her, so she includes a counterargument, “Some people may say that even though education is more specialized in college, high school is a time for getting experience in all fields of study (SN1.R1.CA1),” which is a clear objection to her own reason.

In some situations, the writer may offer more than one counterargument. The following is an example of coordinative counterarguments:
(60) “I believe that students should not have a national curriculum all across the United States (SN1). The teacher will not be able to change the curriculum for her students that need more time (SN1.R1). However, some people believe that the students will be able to keep up (SN1.R1.CA1a) and this will not be a problem to stick with the same curriculum (SN1.R1.CA1b).”

Although this structure is very close to the one that came before it, because the counterargument contains two separate clauses linked by a coordinating conjunction, we should score it as two coordinative counterarguments. The rules of argument structure: single, coordinative, subordinative, and multiple arguments should be applied to counterarguments.

However, when writers simply express a doubt of their own opinions, the doubt cannot be counted as a counterargument unless they include a reason that
explains why they have such a doubt. Statements of doubt by themselves would be scored as non-functional units (NF). Here is an example:

(61) “I do not think that Facebook should be allowed to sell people’s purchasing preferences (SN1) because people would delete their accounts (SN1.R1). I could be wrong about that (NF).”

In this example, the writer expresses a doubt about the preceding premise but does not connect it with a reason. A simply expressed doubt is not scored as a counterargument because it doesn’t explain why the writer has that doubt. Therefore, it is scored as non-functional (NF).

_Distinguish counterarguments and coordinative reasons in the case of using “but” and “however.”_ “But” and “however” usually indicate a change in meaning from one side to the other. That is why when either “but” or “however” presents, we
usually look for counterarguments, alternative standpoints, and rebuttals. However, this is not always true. Sometimes,

The writer may acknowledge some facts which seem not on the writer’s side. However, these facts are not necessarily on the other side that is against the writer’s standpoint. The function of these facts is not to oppose the writer’s argument. They could just be a simple statement or description of a situation. Such a statement should be treated as a reason, usually a coordinative reason with the upcoming argument, rather than a counterargument. Here is an example:

(62) “University students should be required to take a variety of courses outside their major field of study (SP1). Many students enter college declaring a major that they think interests them (SP1.R1a). However, if they are not required to explore other subject areas, they will never know if another subject area interests them (SP1.R1b).”

62. Coordinative reasons
In (62), the writer states a fact about college students declaring a major, i.e., “Many students enter college declaring a major that they think interests them (SP1.R1a).” The function of this statement is not to oppose the writer’s standpoint that “University students should be required to take a variety of courses outside their major field of study (SP1).” In addition, declaring a major is not necessary on the opposite side that students should be required to take extra courses outside their major field of study. Therefore, it should be scored as a coordinative reason. Let’s look at another example:

(63) “Facebook should not be allowed to collect information about people’s purchasing preferences and sell it to other companies (SN1). The information posted on Facebook is not meant to be completely confidential (SN1.R1a), but is supposed to be secretive to a certain extent (SN1.R1b).”
In (63), the writer states a fact about the information posted on Facebook, i.e., it is not meant to be completely confidential (SN1.R1a). The function of this statement is not to oppose the writer’s standpoint that “Facebook should not be allowed to collect information about people’s purchasing preferences and sell it to other companies (SN1).” This sentence can be written as “Although the information posted on Facebook is not meant to be completely confidential, it is supposed to be secretive to a certain extent. So SN1.R1a does not play a role as a counterargument. Rather, it should be scored as a coordinative reason.

Left unaddressed, these counterarguments will undermine their standpoint. Therefore, counterarguments that follow the reasons for the student’s standpoint may be followed by either a rebuttal or a new standpoint that is offered as an alternative to the student’s original standpoint.

**Rebuttal (RB)**

**Definition.** A rebuttal is a statement that refutes a counterargument or undermines an alternative standpoint, and thereby strengthens the writer’s standpoint. A rebuttal can be expressed in two ways: (a) opposition to an explicit expression of an alternative positive standpoint and associated reasons, and (b) opposition to an explicit expression of a counterargument leveled against the writer’s standpoint and/or reasons.
The following is an example of a rebuttal that opposes an explicitly stated alternative standpoint.

(64) “Companies should not be allowed to sell this information they find on Facebook (SN1). It is wrong for companies to make money off of this (SN1.R1) because the information of people’s purchasing preferences is not theirs to take (SN1.R1.R1). Some people believe that there can be some benefits to buying people’s purchasing preferences (AS1). However, the company will benefit more by finding a more effective way of selling their product (AS1.RB1).”

In (64), the writer directly rebuts the alternative standpoint. However, it may be the case that there is a reason for the alternative standpoint. If that happens, the writer needs to attack the reason for the alternative standpoint, but it is still scored as a
rebuttal of the alternative standpoint. The following is an example of a rebuttal that opposes an explicitly stated alternative standpoint and reason.

(65) “I believe that the United States government should not require high school students to study the same curriculum before entering college (SN1) because this will cause some children to fail (SN1.R1). Some believe that students should have the same national curriculum all across the United States (AS1) because it will make the students all be at the same level (AS1.R1). However, I do not think that this is true because all students do not learn at the same pace (AS1.R1.RB1).”

In (65), the writer rebuts the reason for the alternative standpoint. She does not think that a national curriculum will make the students all at the same level. Rather,
she argues that students do not learn at the same pace, which functions as a rebuttal of the alternative standpoint.

Rebuttals can also be followed by a reason or series of reasons. The following is an example of a rebuttal, and reason for the rebuttal, that arises from a refutation of the reason associated with the explicit expression of an alternative positive standpoint.

(66) “I believe that the United States government should not require high school students to study the same curriculum before entering college (SN1) because this will cause some children to fail (SN1.R1). Some believe that students should have the same national curriculum all across the Unites States (AS1) because it will make the students all be at the same level (AS1.R1). However, I do not think that this is true because all students do not learn at the same pace (AS1.R1.RB1). Therefore, students who learn at a slower pace will not be able to grasp the material (AS1.R1.RB1.R1).”
Like the previous example, the positive alternative standpoint and reason are stated. Then the writer provides a rebuttal to refute the explicitly stated reason.

Furthermore, the writer continues, “Therefore, students who learn at a slower pace will not be able to grasp the material (AS1.R1.RB1.R1)” serves as a reason for that rebuttal.

The following is an example of a rebuttal that arises from the refutation of a counterargument that could be leveled against the writer’s standpoint and supporting reasons:
(67) “I do not think a national curriculum should be required (SN1) because students come to college to specialize in and excel in a certain area that will hopefully become their job at the end of graduation (SN1.R1). Some people may say that even though education is more specialized in college, high school is a time for getting experience in all fields of study (SN1.R1.CA1). However, I think that students should focus on classes and subjects that they are actually interested in (SN1.R1.CA1.RB1). This could result in higher academic achievement (SN1.R1.CA1.RB1.R1).”
In (67), the writer rebuts the counterargument by pointing out that students should focus on classes and subjects that they are interested in. One positive consequence of focusing on interesting subjects is that students can have a higher academic achievement.

A rebuttal must do more than simply express doubt about an alternative standpoint or counterargument. It must actually undermine or weaken the standpoint.
or counterargument. Statements that express doubt but do not actually rebut the alternative standpoint or counterargument should be scored as nonfunctional. The following is an example of a statement that expresses doubt about a standpoint but does not actually rebut it:

(68) “Some people may argue that the U.S. government should require a national curriculum for high school students before they enter college (AS1) because students should be well-rounded in all subjects (AS1.R1). However, I don’t think so (NF).”

An author might also add more than one reason to rebut counterarguments or alternative standpoints. The rebuttals might be used in a coordinative presentation (see coordinative arguments). In this case, they should be scored as coordinative rebuttals. The following illustrates this convention:
(69) “Some people may argue that the university has the right to check a student’s Facebook account (AS1) because we are the students of the university (AS1.R1). I disagree because as college students we are independent (AS1.R1.RB1a) and what we do on the Internet should not be any of the university’s business (AS1.R1.RB1b).”

**Introduction (I)**

Definition. An introduction foreshadows what is to follow in the presentation of the argument. It may tell of the writer’s purposes in writing, her goals, or what the
reader can expect in the remainder of the essay. As with any category, not all essays have an introduction. The following is an example of an introduction:

(70) “One of the controversial topics that has resulted from the use of Facebook is whether or not the University should hold students accountable for behavior discovered on the students’ Facebook accounts. I believe that students should be held accountable for their behavior even if it is discovered on their personal Facebook account (SP1). This essay will highlight some of the reasons why I believe that this would be a good policy (Intro.).”

Example (70) includes an explicitly stated standpoint. In this case, we should extract the standpoint from the introduction and score it as the standpoint.
Additionally, students will often preview reasons for their standpoints in their introduction paragraph and then restate them in their supporting paragraphs. When students do this, the previewed reasons should be scored as part of the introduction, not as reasons. However, at times students will introduce a reason in the introduction that might not be restated later in the essay. In this case, the student should be given credit for the reason in the structure of the argument. Consider the following short essay:

(71) “Many current college students have a Facebook account. Facebook is something that many college students use to post pictures, communicate with friends, and use to share their information with their friends. In many universities, the students have gotten into trouble for using their Facebook accounts and posting inappropriate behavior. However, I believe that universities should not hold students accountable for behavior discovered on the students’ Facebook account (SN1). I believe this because it is an invasion of privacy, this activity may not take place on school grounds and it violates freedom of speech (SN1.R3) (Intro.).

First, the university would be invading one’s privacy if they look at their account (SN1.R1). For instance, when a student on Facebook puts that they want their profile to remain private, then the school should not be able to look at the profile (SN1.R1.R1).
Second, the activity found on one’s website may not take place on school grounds (SN1.R2). For example, if a student is seen on Facebook drinking at their home with their parents then it has nothing to do with the university (SN1.R2.R1).”
In this example the student introduced a third reason in the introduction (“it violates freedom of speech (SN1.R3)”), which was not mentioned in the body of the essay. When students do this, the statement should be scored as a separate reason.

There are also times when a writer might elaborate on a previewed reason in the introduction, without elaborating on that reason in the body of the essay. When this is the case, the scorer should take the most elaborated reason in order to give credit to the student. Here is an example of this:

(72) “High schools, whether they are public or private, currently differ in the requirements that a student needs to graduate. Teachers across the country use different textbooks and materials to teach lessons. I believe that the U.S. government should require all high school students to study a national curriculum before entering college (SP1). First, because the student would know just what level he or she belonged in (SP1.R1). Every student would end at the same level of math for instance (SP1.R1.R1a), and when they entered into college, the next math would be already chosen for them (SP1.R1.R1b). If they excel beyond the knowledge of that course, then they could be placed in a higher level math course the next semester (SP1.R1.R1c). Second, a national curriculum can be beneficial in terms of identifying students who need extra help early (Intro.).

First, we should have a national curriculum before entering college because it helps students to know their achievement level.
Second, a national curriculum can help identify students who need extra help early (SP1.R2). If a child is struggling with the curriculum in ninth grade, then the necessary services can be provided to help the student, before he or she falls too far behind the rest of the class (SP1.R2.R1).”
In this example the student introduces her reasons in the introductory paragraph and elaborates on those reasons. Although the student elaborates more on reason 2 in the body of the essay, the student elaborates more on reason 1 in the
introduction itself. Because the rule is that we graph the most elaborated reason, the more elaborated first reason in the introduction is graphed instead in order to give the writer full credit for her argument.

**Conclusion (C)**

**Definition.** A conclusion is giving a closing to what is written, i.e., bringing everything together. If a student writes “the end,” this is scored as a conclusion. In addition, if the student writes a conclusion (e.g., That’s why I feel that students should take courses outside their major.) followed by “the end” then the entire statement is scored as a conclusion. As with any category, not all essays have a conclusion. The following are examples of conclusions:

(73) “In conclusion, the government should not require everyone to take the same classes because we are not alike and we have different aspirations. I was raised in a regular curriculum and I did not know what I wanted to do in life until my second semester of freshman year. I want students to be able to experience different curriculums which will help them in the future (C1).”

73. Conclusion
In (73), the writer uses a marker “In conclusion” which clearly shows that she is providing a conclusion. There could be other conclusion markers such as “in summary,” and “to sum it up.” However, it may be the case that the writer concludes without any markers. The following is an example:

(74) “Required university classes should go away because they do not help all individuals with their future professions. Most majors have classes that will in no way affect what the individual will do in their profession. Classes should be determined strictly by the individuals’ major. The required classes take up time that could be used to help individuals succeed at their future career (C1).”

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<th>74. Conclusion with no marker</th>
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<tr>
<td>C1 Required university classes should go away because they do not help all individuals with their future professions. Most majors have classes that will in no way affect what the individual will do in their profession. Classes should be determined strictly by the individuals’ major. The required classes take up time that could be used to help individuals succeed at their future career.</td>
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A conclusion is usually summarizing the writer’s arguments and it should always appear in the final paragraph.

The conclusion should summarize the major points that the writer addressed in the essay, and it should not introduce any new information. However, sometimes students may have new information in the conclusion. For example, they could
introduce a reason in the conclusion that might not be stated earlier in the essay. In this case, the student should be given credit for the reason in the structure of the argument. In other words, we need to pull out the reason from the conclusion and score it as a reason. See rules for introduction.

**Nonfunctional Units (NF)**

Definition. Nonfunctional (NF) elements include (a) verbatim repetitions, and (b) other information that does not appear to be relevant to the topic. Any unit that does not appear to play a role as a standpoint about the topic, reason(s) for the standpoint, alternative standpoint, reason(s) for alternative standpoint counterarguments, rebuttals, reason(s) for the rebuttal, introduction, and conclusion are scored as nonfunctional.

Verbatim (exact) repetitions are scored as nonfunctional repetitions (NF) unless they are used for emphasis or serve some function in the essay (see the example below of a repetition that is scored as a rhetorically functional repetition).

Note: Relative (e.g., poor) quality of a reason or elaboration is not a reason for scoring it as nonfunctional. Thus, any textual material, no matter how weak, that serves a purpose in the argument is scored as a functional unit.

The following is an example of nonfunctional elements:

(75) “I think this is good (NF) because we need to learn more (R1). We need to learn more (NF). So does my mom (NF).”
In this example, there are several nonfunctional units. First, “I think this is good” is scored as NF because it cannot be determined how the student feels about the proposition of taking courses outside one’s major. If the student does not clearly state a standpoint relative to the proposition, it should be scored as non-functional. Additionally, the phrase “we need to learn more” is scored as NF because it simply repeats the first reason for the proposition. The phrase, “so does my mom” is non-functional because it is not logically related to what has come before it.

Other non-functional elements include expressions of doubt without attached reasons in counterarguments or rebuttals. The following arguments represent this convention:

(76) “I think there shouldn’t be extra classes outside our major (SN1) because a lot of students will be stressful (SN1.R1). I could be wrong about that (NF).”
“I don’t think students should take courses outside their major (SN1). Other people may think they should learn more (AS1). However, I don’t think so (NF).”

Additionally, students may include statements that are incomprehensible. If this is the case, those elements should be scored as non-functional.

**Rhetorically Functional Repetitions (Rep.)**

Some repetitions are rhetorically effective, but don’t necessarily add to the breadth or depth of the argument. These rhetorically functional repetitions restate previously expressed reasons, and can repeat standpoints, as well. These repetitions should not be scored as nonfunctional. They should be graphed as a separate element with a special designation. For example:

“(78) “I believe that the university should not hold students accountable for the
behavior discovered on their Facebook accounts (SN1). First, because this information is not public information the University can not hold the student accountable for it (SN1.R1). The information the student posts on Facebook is not open for the public to see (Rep.). It is not posted on the internet (SN1.R1.R1a). It is posted in a network in which the user controls who they want to see this information and who they do not want to see this information (SN1.R1.R1b).”

In this example, the restatement (Rep.) is used to draw the reader’s attention back to the fact that the information on Facebook is not public information (SN1.R1).
It cannot be scored as a conclusion (C) because it is followed by other reasons, nor can it be considered nonfunctional (NF) because it serves a discernable rhetorical purpose.

Sometimes, the writer may not restate an idea in continuous sentences. He or she may repeat a previously stated idea after a while. For example,

(79) “I think that individuals should be more directed to spend time where they want to focus (SP1). Making a better teacher in the future would come from having more education classes (SP1.R1a). Having a lot of higher level science classes would not make me a good teacher in preschool (SP1.R1b). However, more classes in education would make me a better and more effective teacher (Rep.).”

In this example, the functional repetition re-states the reason (SP1.R1a). The following is an example of restating the standpoint.
(80) “Courses outside the major field of study should not be required (SN1). This is because every student is different (SN1.R1). There should be no required courses outside the major field of study that all students must take (Rep.).”

An Additional Rule

*Shift between standpoints.* Some writers may have more than one standpoint and offer reasons to support each standpoint. Writers may shift back and forth between different standpoints. We need to make a judgment on which standpoint the reasons support. For example, if the writer has two standpoints, she may present the first
standpoint followed by a few reasons. Then she states her second standpoint followed by some reasons. After that, she may offer more reasons for the first standpoint again. Although this is not a good organization, it may happen to students’ essays. Let’s look at the following example.

(81) “Courses outside the major field of study should not be required (SN1). If a student is enrolled in a course they know is outside their field of study and they have no interest in taking the course they will not have a good attitude about taking the course (SN1.R1). Often times when this happens, a student is forced to take the course over again (SN1.R1.R1) because they do not do well in the course (SN1.R1.R1.R1).

I think that courses outside the major field of study should be of the students’ choice (SP1). A student should be able to choose the courses they think they will need or the courses that will interest them (SP1.R1) because these courses will be meaningful to them (SP1.R1.R1).

Also, by forcing students to take required courses outside their field of study, universities are taking away from job preparation (SN1.R2) because students won’t get enough training in their major field (SN1.R2.R1).”
In (81), the student has two standpoints. The first standpoint is “Courses outside the major field of study should not be required (SN1).” The second standpoint is “I think that courses outside the major field of study should be of the students’ choice (SP1).” In the first paragraph, the writer offered a series of reasons to support her first standpoint. In the second paragraph, the writer offered a series of reasons to support her second standpoint. However, in the third paragraph, the writer shifted back to the first standpoint because the reasons presented clearly support her first standpoint.
Appendix E

ARGUMENTATION SCHEME GUIDE

Preface

Coding written argumentation schemes is a very challenging task. Perhaps the biggest challenge to coding these schemes is interpreting the major lines of argument students use to support the writer’s standpoint. Well-developed arguments usually have a clear and coherent structure that is composed of a series of argument schemes that are well developed and carefully arranged to support the writer’s standpoint. Unfortunately, many writers’ essays are not as coherent and well developed as they could be, information important to the argument may be absent, and the arguments themselves may not be especially plausible. Nevertheless, the coders must remember that their goal is to code the argumentation schemes that were used and not judge the persuasiveness of the essay, no matter how poorly it was written.

The coder must read the entire essay before beginning to code the argumentation schemes. This is an important first step for a number of reasons. First, the argument’s individual nodes are usually part of a larger structure subsumed by one or more argumentation scheme. It is often possible to code nodes that would otherwise difficult to decipher after understanding the entire structure of which the individual nodes is comprised. Second, the lack of an essay’s coherency will sometimes weaken the coder’s confidence in her judgment about the classification of a single argument node. If the coder understands the writer’s major line of argument, then she can use this knowledge to code ambiguous nodes. Third, the writer may use an argumentation scheme multiple times in an essay, and this knowledge can be used to help code ambiguous parts of an argument. For these reasons, the entire essay must be read and understood before beginning to code the individual nodes.
Argumentation Schemes

Argument from Consequences

Consider this argument:
“I believe that the U.S. government should require all high school students to study a national curriculum before entering college. If there were a national curriculum, then all seniors would have at least the minimum amount of classes. This will help them be prepared for college which begins only two months after graduation.”

The speaker is engaged in a debate over requiring all high schools students to study a national curriculum. The standpoint that U.S. government should require all high school students to study a national curriculum before entering college is supported by two reasons:
– All seniors would have at least the minimum amount of classes.
– This will help them be prepared for college, which begins only two months after graduation.
– Both reasons are positive consequences that could result from the proposed policy.

The graph of this argument’s structure is familiar. It looks like this:

Here, the speaker is using a type of argument called argument from consequences.
– The consequences that could be associated with the policy’s enactment are used to support the standpoint that it should be adopted.
– In this argument, the speaker suggests that there will be two positive consequences
associated with the policy of implementing a national curriculum. Therefore, we should require students to study a national curriculum.

Is this argument persuasive to you? Why is it persuasive or unpersuasive?
– Are these consequences likely to happen if we implement a national curriculum?
– What is the evidence to support that these consequences are likely to happen?
– Are there **negative consequences** of implementing a national curriculum that should be balanced against these reasons? Arguments that take these consequences into account are more persuasive than those that do not.

In other examples, the negative consequences of a policy may be used to support the standpoint that the policy should not be enacted. Let us look at the following argument:

“I do not feel as if a university should hold students accountable from behavior discovered on the students’ Facebook accounts. First, the university would be invading one’s privacy if it looks at one’s Facebook account. Second, holding students accountable for their Facebook accounts violates their freedom of speech.”

The **standpoint** that a university should not hold students accountable from behavior discovered on the students’ Facebook accounts is supported by **two reasons:**
– First, the university would be invading one’s privacy if it looks at one’s Facebook account.
– Second, holding students accountable for their Facebook accounts violates their freedom of speech.
– Both reasons are negative consequences that could result from the proposed policy.

Note that claim the claim about the violation of the student’s “freedom of speech” could be taken as an **Argument from Rule** (see below). However, the rule that would warrant this reason (“Bill of Rights” or “Constitution”) was not mentioned. When the rule isn’t mentioned, the violation is taken as a negative consequence of the policy.

The graph of this argument’s structure is familiar. It looks like this:
Here, the speaker is using a type of argument called *argument from consequences*.

- The consequences that could be associated with the policy’s enactment are used to support the standpoint that it should not be enacted.
- In this argument, the speaker suggests that there will be two negative consequences associated with the policy of holding students accountable from behavior discovered on their Facebook accounts. Therefore, we should not implement this policy.

Is this argument persuasive to you? Why is it persuasive or unpersuasive?

- Are these consequences likely to happen if we implement the policy?
- What is the evidence to support that these consequences are likely to happen?
- Are there **positive consequences** of implementing the policy that should be balanced against these reasons?

More Arguments from Consequences:

“I think that it is important that schools require certain core credits for each student to fulfill. Taking courses outside of the major field of study allows students to interact with peers and professors whom they may have never met before.”

“Students should not be required to take courses outside their major because it will make students overwhelmed with the workload and postpone their graduation date.”

“I do not think that Facebook should be allowed to collect and sell people’s purchasing preferences. I could almost guarantee that if Facebook began doing this, people would delete their accounts.”

“Students should be asked to evaluate their teachers because they will help teachers find out the most effective teaching strategies.”

“Kids should not be allowed to watch violent movies because it will make them violent.”

“Government should ban further construction of nuclear power plants because nuclear power produces pollutants that impact our environment and people’s health.”
“We should not receive more homework. If we receive more homework, we will be more stressed. Also, we won’t be able to participate in our after school activities.”
“I believe that the university should not hold students accountable for the behavior discovered on their Facebook accounts. There are millions of users all over the world on Facebook and most of them are students. All colleges have a network group for students who attend their college. For this reason, if universities were to hold all students accountable for their behaviors on Facebook they would have to punish almost all of their students.”
Argument from Example

Consider this argument:
“I believe that university students should be required to take classes outside their field of study. Our professor shared an instance with the class where a student who specialized in Math or Social Studies was thrown into teaching Science after graduation.”

Standpoint: I believe that university students should be required to take classes outside their field of study.
The standpoint is supported by a reason:
- Our professor shared an instance with the class where a student who specialized in Math or Social Studies was thrown into teaching Science after graduation.
- This reason is an example or an instance that illustrates a generalization to support the standpoint.

The graph of this argument’s structure looks like this:

Here the speaker uses a type of argument called argument from example.
– In this type of argument, the speaker suggests that the content information is an example that illustrates a generalization that is the standpoint.
– In this example, the speaker suggests that university students should be required to take classes outside their field of study because he knows an instance where a student works outside her major after graduation.

Arguments from example are easily rebutted
– The example may not be true (for example, the student majored in science).
– The example may really be an atypical case rather than a representative case of the general point (for example, most students will work in their major field after
graduation).
   – There could be some special circumstances present in the example that would impair its generalizability (for example, this student might graduate twenty years ago, and today’s job market is different than that twenty years ago).

Consider this argument:

“I think that Education majors should take courses outside their field. Different types of classes provide opportunities for these students to stretch their knowledge to learn something unfamiliar such as science, and history.”

**Standpoint:** I think that Education majors should take courses outside their field.
The standpoint is directly supported by **a reason:**
- Different types of classes provide opportunities for these students to stretch their knowledge to learn something unfamiliar
This reason then is supported by another two reasons:
- such as science,
- and history
These two reasons are two **examples** that are used to illustrate “learning something unfamiliar.”

The graph of this argument’s structure looks like this:

Here the speaker uses a type of argument called **argument from example.**

   – In this type of argument, the speaker suggests that the content information is an
example that illustrates a generalization that is the reason. Possible key words: for example, for instance, such as, like
– In this argument, the speaker uses two examples - science and history to illustrate the generalization that students can learn something unfamiliar by taking courses outside their major.

What questions would you ask to rebut the standpoint?
– Are the examples true? Do Education students have opportunities to learn science or history by taking classes outside their major?
– Are these example representative? Do most education students will choose to take science or history classes when they are required to take outside courses?
– Are there any special circumstances present in the example that would impair its generalizability?

More Arguments from Example:
“People should not share everything on Facebook. For example, my cousin does not use his actual name on Facebook.”
“A student may be the smartest in his or her class, participate in many extra curricular activities, and be loved by many teachers, advisors, or coaches. All of these positive attributes about a student can be forgotten if information found on the Facebook is against him or her.”
“I believe that students should not have a national curriculum because this will cause some children to fail. For example, some students will not learn the material as fast as their peers and they need a special curriculum that meets their needs.”
“Southern states tend to elect Republican candidates. For example, South Carolina elected the Republican candidate to its open Senate seat in 2004, and it gave votes to Bush in the presidential election.”
Argument from Rules

Consider this argument:
“I do not think that Facebook should be allowed to collect and sell people’s purchasing preferences. Our forefathers worked very hard to get the United States of America to be a free country. We have earned many rights through the Constitution and Declaration of Independence. In addition to our rights of freedom, we are also guaranteed rights to privacy. Therefore, it is an invasion of privacy for Facebook to do so.”

Standpoint: I do not think that Facebook should be allowed to collect and sell people’s purchasing preferences.
The standpoint is supported by four reasons:
- First, our forefathers worked very hard to get the United States of America to be a free country.
- Second, we have earned many rights through the Constitution and Declaration of Independence.
- Third, in addition to our rights of freedom, we are also guaranteed rights to privacy.
- Fourth, therefore, it is an invasion of privacy for Facebook to do so.
- All of the reasons reflect a rule that states that all the U.S. citizens have human rights including rights of freedom and rights to privacy, which indicates that any invasion of privacy is prohibited by the rule.

The graph of this argument’s structure looks like this:
Here the speaker uses a type of argument called *argument from rules*.

- In this type of argument, the speaker suggests that everyone in a particular group must not (must) act in a particular way, because it is prohibited (obligatory) according to the rule.
- A is prohibited (obligatory).
  One must not (must) do what is prohibited (obligatory).
  S must not (must) do A.
- In this example, the speaker suggests that people should have rights to privacy and invasions of people’s privacy are prohibited according to the rule, so Facebook must not collect and sell people’s purchasing preferences because it is a kind of invasion of people’s privacy prohibited by the rule.

Critical questions:
1. Is “(not) doing A” in fact what the rule states?
2. Does the rule “(not) doing A” apply to this case?
3. Is “For all x, x must (not) do A” the right rule, or should some other rule be the right one? Could there be more than one rule involved, with some doubt on which is the more appropriate one?
4. Does S have an adequate excuse, or an overriding duty?

Is the argument persuasive or not persuasive? Why?
- In this example, does the rule through the Constitution and Declaration of Independence state that people are guaranteed rights to privacy or invasions of people’s privacy must be prohibited?
- Does the rule “not invading people’s privacy” apply to this case?
- Is there any contradictory rule that people’s rights to privacy can be invaded?
- Does Facebook have an adequate excuse, or an overriding duty for collecting and selling people’s purchasing preferences?

**More Arguments from Rules:**
“Some people may argue that the university should be allowed to look at one’s Facebook because the information put out on Facebook may result in damage of the school name. However, everyone is subjected to their own opinion. If one decided to say something negative about their school experiences, then they can do because they are backed by the first amendment.”
Argument from Goal

Consider this argument:
“I believe the government should not require students to study a national curriculum before entering into college because some students want to wait to go to college. There are a few people that take a break from schooling and try to feel out the real world. If schools teach a regular curriculum then how are these kids supposed to know what they want to do in the future?”

Standpoint: I believe the government should not require students to study a national curriculum before entering into college
The standpoint is supported by four reasons:
- First, because some students want to wait to go to college.
- Second, there are a few people that take a break from schooling
- Third, these people try to feel out the real world.
- Fourth, if schools teach a regular curriculum then how are these kids supposed to know what they want to do in the future?
- This is a kind of practical reasoning in which a person has a goal to realize. In order to achieve this goal, the person has to carry out an action A. So the conclusion is that this person should carry out this particular action. The last reason is based on argument from consequences.

The graph of this argument’s structure looks like this:
Here the speaker uses a type of argument called *argument from goal*.

- In this type of argument, the speaker suggests that carrying out an Action A will help achieve a Goal G.
- Doing act A contributes to goal G.
  Person P has goal G.
  Therefore, person P should do act A.
- In this example, the speaker suggests that some people have a goal feeling out the real world. So they take an action of wait to go to college (i.e., taking a break from schooling).

**Critical questions:**
Is it realistically possible to achieve the goal?
Are there positive or negative consequences of either of the courses of action that should be taken into account?
Are there other means of achieving the goal that should be considered?
Are there other goals (possibly even conflicting with the goal at issue) that should be considered?

Is the argument persuasive or not persuasive? Why?
- In this example, is it realistically possible to feel out the real world by waiting to go to college?
- Are there any negative consequences if one waits to go to college?
- Are there other ways of feeling out the real world that should be considered instead of waiting to go to college?
- Are there other goals (important goals) that should be considered?
Argument from Administrative Authority

Consider this argument:
“Some people may argue that the university has the right to check a student’s Facebook account because we are the students of their university and they have a great deal of control over what students do over the Internet.”

Alternative Standpoint: The University should not hold students accountable for the behavior discovered on their Facebook accounts.
The alternative standpoint is supported by two reasons:
- First, because we are the students of their university.
- Second, they have a great deal of control over what students do over the Internet.
- Both reasons are meant to say that the university has the position of power to control its students.

The graph of this argument’s structure looks like this:

Here the speaker uses a type of argument called argument from administrative authority.
– In this type of argument, the speaker suggests that someone has the right to exercise command over others or make rulings binding on others through an invested office or recognized position of power
– In this example, the speaker argues that the university has the power to control its students because of its recognized position.

Is the argument persuasive or not persuasive? Why?
– In this example, does the University have the recognized position of power to control its students? If so, in what aspects? Does it include the cited aspect?

Consider this argument:
“I believe that the university should not hold students accountable for behavior discovered on their Facebook accounts. Some of the activities or behaviors that students take part in may not take place on campus and therefore have nothing to do with the university.”

**Standpoint:** I believe that the university should not hold students accountable for behavior discovered on their Facebook accounts. The standpoint is supported by **two reasons:**
- Some of the activities or behaviors that students take part in may not take place on campus.
- Therefore, they have nothing to do with the university
- Both reasons are meant to say that the university does not have the position of power to control its students in this situation.

The graph of this argument’s structure looks like this:

Here the speaker uses a type of argument called **argument from administrative authority (negative form).**
- In this type of argument, the speaker suggests that someone does not have the right to exercise command over others or make rulings binding on others.
- In this example, the speaker argues that the university lacks jurisdiction because the student’s behavior took place off campus. So, the argument negates the implied rule that “An institution has authority with respect behavior that occurs on its premises.”

Is the argument persuasive or not persuasive? Why?
- In this example, is there any evidence showing that the University has the
recognized position of power to control its students in this situation?

More Arguments from Administrative Authority:
“Once the student is home, it is the parents’ responsibility to monitor what their child does, not the university’s.”
“On Facebook there is a section in which a user can control privacy settings. If a student decides that they only want their friends to view their Facebook, then that is all that should be able to see it.”
“I control who sees my profile very carefully through the privacy settings that are easily made available. I am mandating everything that occurs on my profile.”
The Privacy Issue

1. However in addition to our rights of freedom, we are also guaranteed rights to privacy. --- consequence (the rule wasn’t stated!) (LaPorte Pretest1)
2. I control who sees my profile very carefully through the privacy settings that are easily made available. I am mandating everything that occurs on my profile. --- administrative authority (LaPorte Pretest1)
3. Finally, on Facebook there is a section in which a user can control privacy settings. If a student decides that they only want their friends to view their Facebook, then that is all that should be able to see it. --- administrative authority (Fusaro Posttest1)
4. If Facebook took it upon themselves to sell my likes and dislikes to companies, an invasion of privacy would be occurring. --- consequence (LaPorte Pretest1)
5. If the university uses their power to somehow unlock those settings, than they are denying students of their privacy rights. --- consequence (Fusaro Posttest1)
6. Second, I think that universities should not hold students accountable for behaviors that were shown on their Facebook because it is an invasion of privacy. --- consequence (Keighley Posttest1)
Disambiguating Argumentation Schemes

1. **Argument from example or consequence; argument from goals or consequences**

The following excerpt illustrates two potential ambiguities:

**Argument from example or consequences?**

In the discourse highlighted in orange, the writer argues that through courses taken outside the music major, she was exposed to other career options. These could be taken as good consequences of taking courses outside the major. However, these specific benefits to her illustrate the general benefits she sees for other students, which are described in the reasons that precede it in the structure. Therefore, the benefits for the writer are taken as arguing from *example* because they illustrate the general benefits for other students (LaPorte Pretest 2).

**Argument from goals or consequences?**

In the discourse highlighted in pink, the writer argues that the purpose of getting a college education is to come out well rounded, and that happens as a result of taking courses (SP1.R1.R1.R1.R1). While coming out well rounded could be seen as a positive consequence of taking courses outside the major, she specifically mentions coming out well rounded as purpose of college, and that taking the courses is a means to that end. For this reason, we take this node as an argument from *goals*. (LaPorte Pretest 2).

In the discourse highlighted in red, the writer also argues that coming out of college well-rounded results in being fine-tuned for what a person wants to do with the rest of their professional life (SP1.R1.R1.R1.R1.R1). The later node does not describe a means to an end. Rather, it describes a consequence of being well-rounded. For this reason, we take this node as an argument from *consequence* (LaPorte Pretest 2).
SP1
I firmly believe that university students should be required to take classes outside their field of study.

SP1.R1a
Being a music major, I spend 90% of my time during the day in the music building. We have many requirements to get through every semester and everytime it comes time to take a science, a math, etc. we all groan a little bit because it is the unfamiliar. Because I am music education, I am required to take certain classes through the education department to train me in the education part of the system in addition to my music training.

SP1.R1b
I took a class on teaching exceptional children.

SP1.R1c
and instead of that class being a burden, it ended up opening a new door for me into a minor in Disability Studies.

SP1.R1d
Another example may be that a science major may find a fascinating new experiment to write about and because of an English course, be able to write a well-written and literate thesis paper that gets published.

SP1.R1, R1a
If I was taking just my core music classes throughout college and I was never exposed to that class, I may have never really realized that I had a passion for those children and a possible career in music therapy.

SP1.R1, R1b
which would be bringing my two worlds together.

SP1.R1, R1, R1
I think one of the purposes of getting a college education is to come out as a well-rounded individual.

SP1.R1, R1, R1, R1
With curriculum in all subjects that allows that to happen.

SP1.R1, R1, R1, R1
It also might help people fine tune what they want to do for the rest of their professional life.
2. **Argument from consequences or example**

The following excerpt illustrates a potential ambiguity:

**Argument from consequences or example**

In the discourse highlighted in pink, the writer argues that when she signed up for FB, she made a personal choice when she signed up and this resulted in the release of personal information. These are consequences of that followed from her personal decision, but they illustrate the personal consequences for her. For this reason, the writer is using *argument from example* (Fusaro Pretest 1).
SP1
I believe that Facebook should be allowed to collect information about people's purchasing preferences, and then sell it to other companies.

SP1.R1
When you register for membership on Facebook, you are consequently agreeing to the terms of their service.

SP1.R1.R1a
If these terms allow the employees to use the information you give out, than it is your responsibility to carefully think about what you share on your page.

SP1.R1.R1b
It is primarily your decision to join such a communication network in which personal information is accessed by millions of people daily.

SP1.R1.R1.R1
Once you agree to the terms of service when joining Facebook, you are telling them that you have read and understand the aspects of that agreement.

SP1.R1.R1.R1.R1
I personally have a Facebook, and when I signed up, I knew that my information was now visible to many strangers.

SP1.R1.R1.R1.R1.R1
This is a choice which each individual makes when registering.

If Facebook collects information about my purchasing preferences, it is because I inadvertently gave them ideas about my style and choices that I make when buying items.
3. *Argument from example or consequences*

In the discourse highlighted in orange, the writer makes a number of arguments to support her view that students should take core courses, presumably outside the major area of study. The first argument is that she has benefited from taking such courses (SP1.R1). This argument could be taken as an example because it refers to personal benefits to the writer. This node could also be taken as a positive consequence of taking the core courses. However, the node does illustrate a personal benefit to her, and as such, is illustrates the potential benefits to others. Therefore, we take this node as an argument from *example* (Fusaro Pretest 2).

In addition, the writer supports the first argument with a second one, which describes a specific benefit to the student, i.e., having the chance to learn something unfamiliar (SP1.R1.R1). This node could also be seen as a positive consequence of taking core courses, but the benefit is specific to the writer, so we take this as an argument from *example* (Fusaro Pretest 2).

Furthermore, the writer further supports this argument with other specific benefits of core courses that accrue to her, i.e., getting a break (SP1.R1.R1.R1.R1a) and strengthening her knowledge (SP1.R1.R1.R1.R1.R1b). These reasons are further supported with two other personal benefits to the writer, i.e., the information gained in these courses was interesting (SP1.R1.R1.R1.R1a.R1a) and useful (SP1.R1.R1.R1.R1a.R1b) to learn. All of these reasons could also be taken as positive consequences of core courses, but they are specific to the writer and are therefore taken as arguments from *example* (Fusaro Pretest 2).
SP1
I think that it is important that schools require certain core credits for each student to fulfill.

SP1.R1
In my own personal experience, I have found that taking classes outside of the Early Childhood Education program to be beneficial.

SP1.R1.R1
In a way these different types of classes provide opportunities for me to stretch my own knowledge to learn something unfamiliar.

SP1.R1.R1.R1a
such as science, SP1.R1.R1.R1b
or history.

SP1.R1.R1.R1a
They give me a break from a lot of the common content taught in my major classes.

SP1.R1.R1.R1b
These extra classes strengthen my knowledge of the world around me.

SP1.R1.R1.R1a
For example, I took Geological Hazards, which has nothing to do with teaching pre school children, but I learned a lot about the weather, and disasters which have occurred and are occurring in our environment.

SP1.R1.R1.R1b
In American History I was able to become more aware of our nation’s past from the fifties on.

SP1.R1.R1.R1a.R1a
This information was not only interesting to learn, SP1.R1.R1.R1a.R1b
but it is useful to know.

SP1.R1.R1.R1b.R1
Every American should be aware of the past which brough us to the place we are now.
4. Argument from consequences or example

In the discourse highlighted in orange, the writer argues that as a result of Facebook being a public site, information shared with FB is shared with everyone (SP2.R1). Furthermore, as a result of this information being shared, FB is tailoring ads to each user (SP2.R1.R1). In both of these arguments, the writer uses words like “one” or “your,” which suggest that these may be specific examples of a generalization related to the consequences of Facebook being a public site. However, when these pronouns are used, they are meant to refer “people” who use a public social networking site. The consequence of these people using Facebook is that their information is shared and they receive tailored ads. Therefore, we take these reasons as arguments from consequences (Hicks Pretest 1).
SP2
My personal opinion is firstly, Facebook is a public site.

SP2.R1
and whatever one shares with Facebook then they are sharing information with everyone, whether or not they know the person.

SP2.R1.R1
As stated in research Facebook has been found to sell your personal preferences to other companies. If one has a Facebook they may or may not realize that on the right hand side of the website, after one has logged in, there are samples of merchandise that pertain to either their schooling or their personal likes.

SP2.R1.R1.R1
For example, Suzie goes to the University Of Delaware and she likes soccer. After she has logged in on Facebook she randomly gets information about UD's girls soccer team. Do you think that Suzie would be upset or happy to get this type of information?

SP2.R1.R1.R1a
To answer the question, some people would be excited to get information

SP2.R1.R1.R1b
and others may not be excited

SP2.R1.R1.R1a.R1
because it may seem helpful

SP2.R1.R1.R1b.R1a
because it poses the question on how did a company get this information

SP2.R1.R1.R1b.R1b
and it may lead to a person not wanting to trust the Facebook website.
7. Argument from example or goal; argument from verbal classification and its criteria; argument from consequences or morality; argument from consequences

The following excerpt illustrates 4 potential ambiguities:

**Argument from example or goal**

In the discourse highlighted in pink, the writer argues FB is used for different purposes. These three reasons (SN1.R2a - SN1.R2c) could be taken together as examples of the different purposes of FB, e.g., social networking, advertising, etc. However, the writer is enumerating different ways in which FB is used, which are related to the goals of different users. For this reason, we take these reasons as an argument from *goal* (Morano Pretest 1).

**Argument from consequences**

In the discourse highlighted in pink, the writer writes a somewhat confusing constellation of reasons that describe the effects of stealing the user’s purchasing preferences, beginning with “This not only affects the people whose information it is” (SN1.R2.R1.R1.R1.R1.R1.R1.R1a). This line of argument is confusing because some of the propositions are false. However, the entire string can be seen as consequences to the company purchasing this information and the factors that result in their wasting of information, so we take it as an argument from *consequences* (Morano Pretest 1).
APPENDIX F

IRB APPROVAL LETTER

DATE: December 17, 2018
TO: Ralph Ferretti, PhD
FROM: University of Delaware IRB
STUDY TITLE: [839181-9] The effect of revising goals on college students’ argumentative writing

SUBMISSION TYPE: Continuing Review/Progress Report

ACTION: APPROVED for DATA ANALYSIS ONLY
APPROVAL DATE: December 17, 2018
EXPIRATION DATE: December 13, 2019
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # (6, 7)

Thank you for your submission of Continuing Review/Progress Report materials for this research study. The University of Delaware IRB has APPROVED for DATA ANALYSIS ONLY your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent
form. Informed consent must continue throughout the study via a dialogue between
the researcher and research participant. Federal regulations require each participant
receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved
by this office prior to initiation. Please use the appropriate revision forms for this
procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office.
Please use the appropriate adverse event forms for this procedure. All sponsor
reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this
study to this office. Please note that all research records must be retained for a
minimum of three years. Based on the risks, this project requires Continuing
Review by this office on an annual basis. Please use the appropriate renewal
forms for this procedure.

If you have any questions, please contact Renee Stewart at (302) 831-2137 or
stewartr@udel.edu. Please include your study title and reference number in all
correspo