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## Hand writing versus Keyboard Writing: Effect on Word Recall

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**Abstract:**

This study determined how writing style affected people's recall and recognition of words. The three writing techniques used were handwriting using a pen on paper, typing on a conventional laptop keyboard, and typing on an iPad touch keyboard. A properly counterbalanced within-subjects experimental design was used, and 36 females between the ages of 19 and 54 participated. In this study, participants were given a wordlist and directed to use one of three distinct writing modalities to record words that were read aloud to them. For this study, the wordlist paradigm was applied. A person's memory for words typed using handwriting, a standard keyboard, and a virtual iPad keyboard was tested using oral free recall and recognition. For the analysis of the data, non-parametric statistics were used. Following analyses revealed that participants' free memory of words written in the handwriting condition was considerably higher than that of both keyboard writing conditions for the free recall measure. The findings demonstrate an all-encompassing influence of the writing medium. The findings also reveal that participants' free recall of terms written in handwriting was much better. There was no obvious effect of writing mode in the recognition condition. This shows that handwriting may have unique cognitive benefits that may not be completely retained while writing on a keyboard, especially concerning word memory components. One of these advantages might be word recall. The implications of the study's findings on cognition and education are investigated.

**Keywords:** handwriting; keyboard writing; ergonomics of writing; word memory; cognition; educational implications of digitization embodied

## **1. Introduction**

### **1.1 Background and motivation**

Writing is a cognitive skill that distinguishes humans from other conspecifics (Preiss & Sternberg, 2005; van der Weel, 2011; Wolf, 2007). Writing has always been a form of inscription carried out with the use of an instrument, tool, or piece of technology of some sort, and it has left traces on a concrete surface ever since it was first invented in the fourth millennium B.C. Following Johannes Gutenberg's invention of the printing press in or about 1440, manual inscription progressively gave way to its mechanical equivalent, typewriting. Currently, handwriting is used less frequently, and an increasing amount of our writing is generated utilizing electronic rather than mechanical writing tools. The emphasis on ICT (information and communication technologies) in the curriculum is growing, and children are learning to write by typing on the virtual touch-screen or traditional computer/laptop keyboards alongside traditional handwriting (see, for instance, Genlott & Gronlund, 2013; Trageton, 2003). This pattern is also visible in early writing education, as kids learn to write while simultaneously using traditional keyboards, virtual touch-screen keyboards, or regular computer/laptop keyboards. The effects of such a shift remain mostly unknown on a psychological and cognitive level, in addition to educational and social dimensions (Kiefer & Trumpp, 2012; Mangen, 2013; Mangen & Velay, 2010, 2014; Velay & Longcamp, 2013).

Reducing handwriting as a major form of communication raises some concerns about the cognitive, educational, and practical aspects of writing. According to Margaret Wilson (2008, page 382), we learn to write so that we may put our ideas down on paper. This last example, according to the author, "is arguably most intriguing for purposes of embodied cognition not so much in terms of its archive capabilities [...] but for its roles in functioning as an external memory device during active cognitive processing [...]." Writing is the pinnacle of cognitive technology since it strengthens and promotes cognition through symbols. (2008) Wilson, page 382 [footnote] In light of these reflections, it is important to consider whether digital writing tools impact how writing enhances and promotes cognition. Does it affect how well or how quickly we remember something if we type it into a computer instead of writing it by hand? Moreover, does it matter

if we type on an iPad's virtual touch keyboard or a laptop's real keyboard for our memory when we do so? It has been hypothesized that writing by hand stimulates the mind in a way that is different from typing on a computer (Chandler, 1992; Haas, 1996; Hensher, 2012; Keim, 2013; McCullough, 1996) through anecdotal evidence. How these differences exist, how frequently they happen, and what the potential cognitive and educational repercussions are have not been scientifically shown. It is necessary to complete this.

The current experiment aims to measure the effect of writing modality (i.e. We investigate if it makes a difference in people's ability to remember words whether they are written by hand or on a keyboard) and is informed by studies in cognitive neuroscience comparing handwriting and keyboard writing (Longchamp et al., 2008; Longchamp, Boucard, Gilhodes, & Velay; Longchamp, Tanskanen, & Hari; Wamain, Tallet, & Longchamp We focus on the outcomes of each of these techniques.

## **1.2 The haptics of writing and the ergonomic affordances of writing implements**

Re-examining the nature of writing as a cognitive and sensorimotor activity has become necessary in light of the ubiquitous usage of digital technologies. The haptics of writing refers to the interaction between the active movement of our hands and fingers when we write and the (passive) feeling of touch (Mangen & Velay, 2010). Changes to writing's haptics are required when switching from handwritten to keyboard writing. From the physiological and ergonomic to the cognitive and phenomenological aspects of the writing process, writing by hand differs from typing on a computer. One of the most lateralized physiological activities is handwriting; only a small percentage of people can do it equally effectively with both hands. However, when we type on a computer/laptop or touch screen keyboards, we frequently use both hands (ideally, all ten fingers). As a result, beginner writers frequently spend most of their available cognitive resources on the production of individual letters rather than on the content of what they are writing when they are first starting to write. Automating the motor patterns required in handwriting, on the other hand, frees up the cognitive ability to comprehend information (Feder & Majnemer, 2007).

Additionally, the two writing styles' physical activity and coordinated visual focus frequently differ. Expert keyboard writers are more likely to direct the majority of their visual attention on the screen where the text is shown, as opposed to less experienced touch typists who are more inclined to occasionally or constantly glance at the keyboard (Johansson, Wengelin, Johansson,

& Holmqvist, 2010). In contrast, when we write by hand, we tend to pay close attention to the pen's tip, where the text's initial traces appear. As a result, while writing by hand, visual attention and sensorimotor activity are linked and continuous over time and space, but this unity is broken when writing by keyboard (Mangen, 2013). When writing using a keyboard rather than by hand, the act of inscription might be said to be more abstract and distant from the body (Mangen, 2013).

Compared to writing by hand using a pen or pencil on paper, digital technology often requires fewer precise and less discriminating bodily gestures (Mangen & Velay, 2014). Compared to typing on a keyboard, handwriting is a more motorically controlled and supervised translation and externalization of the writer's message. Writing by hand involves more physical work than typing does. When we write by hand, we seldom create or apply an incorrect character (related to the intended letter and, given good grammar abilities, words). Nevertheless, technical errors happen regularly when we type. Perhaps the most glaring example of these variations in motor coordination and control between handwriting and keyboard writing is the frequency of technical mistakes. The digitalization of writing significantly impacts how distant and abstract the link is between the embodied, sensorimotor input—the writing process—and the produced text created by the technology. This is so that writing may be done digitally, which eliminates the embodied sensorimotor input (Mangen & Velay, 2014).

It is not easy to find studies that compare writing by hand versus writing on a keyboard about the cognitive outcomes and educational elements of the two approaches, although various technologies offer varied affordances. However, a cursory glance at the current state of writing research (e.g., Alamargot & Chanquoy, 2001, 2012; Berninger, 2012; MacArthur, Graham, & Fitzgerald, 2006; Torrance et al., 2012; Torrance, van Waes, & Galbraith, 2007; Van Waes, Leijten, & Neuwirth, 2006) gives the impression that writing is primarily, if not exclusively, a process that involves (Flower & Hayes, 1981). (Reading and altering text, for example). However, recent empirical research has demonstrated that writing also incorporates visuospatial aspects (Olive & Passerault, 2012). This is because creating text is a visuospatial activity that heavily depends on working memory's visuospatial functions.

The deft use of writing tools (such as pens, pencils, keyboards, and digital styluses) and writing surfaces is necessary for writing, a sensorimotor, tool-mediated activity. It becomes clear that writing is also a tool-mediated activity as we move from sculpting signs, letters, and words with

a pen in our hand on the surface of the paper to creating texts by tapping pre-made on a variety of keyboards (e.g., paper, cardboard, screens). Both the writing surfaces and the writing implements have distinctive ergonomic, and more particularly haptic, affordances that can change cognitive processes on various levels. As a result, more thorough research of the ergonomic aspects of writing is required, and the embodied cognition paradigm may be especially useful for achieving this objective.

## **2. Theoretical framework**

### **2.1 Embodied cognition**

It is plausible that switching from handwriting to typing on a keyboard may affect various levels, from the most basic perceptuo-motor processing to more sophisticated cognitive processes, when the embodied cognition paradigm is considered. Individuals' communication may also change (Kiefer & Trumpp, 2012; Mangen, 2013; Mangen & Velay, 2010). The idea that cognition occurs primarily in the perceptual and motor systems rather than only in a central system (Fodor, 1983) or a representation- or symbol-processing unit (Clark, 1997, 2008) has gained popularity. It is a well-known viewpoint in cognitive research. The idea is that cognition occurs outside of a central system (Fodor, 1983) or a representation- or symbol-processing unit [Clark, 1997, 2008] (Calvo & Gomila, 2008). More specifically, embodied cognition proposes that, contrary to what is often believed, the processes of perception (visual, auditory, and tactile), motor activity, and cognition are more intimately entwined and reciprocally interact with one another (cf., e.g., Gibbs, 2005; Shapiro, 2010; Wilson, 2002). A growing body of empirical evidence from behavioural and neuroscientific studies supports the notion that cognitive processes are fundamentally based on the reinstatement of external (perception) and internal (proprioception, emotion, and introspection) as well as bodily actions that create simulations of prior experiences (for an overview, see Kiefer & Barsalou, 2011). This shows that the essential foundation of cognitive processes is the restoration of internal (proprioception, emotion, and introspection) and external (perception) (Kiefer & Trumpp, 2012).

Embodied cognition is a conceptual framework that can include a range of theoretical contributions from related fields of study. The cluster, including the motor theories of perception, is the most important for this discussion. According to motor theories of perception, we can mimic movement and activity even when we can see (or hear, or touch) something. Liberman

and colleagues first developed these concepts to perceive spoken language (Lieberman & Mattingly, 1985). According to research in cognitive neuroscience and neurophysiology (Fogassi & Gallese, 2004; Jensenius, 2008; Olivier & Velay, 2009), subjects' motor areas in the brain (such as the premotor and parietal area; Broca's area) are activated when they watch someone else act as well as when they watch images of tools that require specific actions (such as a hammer, a pair of scissors, or a pen).

Because object perception is the domain in which people are most likely to be interacting with their environment, object perception is possibly the field in which the greatest number of examples of functional links between action and perception have been documented and in which the concept of embodied cognition is most obvious (Velay & Longcamp, 2013). Although alphabetic letters are not real objects, it makes sense to assume that motor-perceptual links play a role in their representation. This results from the highly unique handwriting motions associated with alphabetic letters. Creating a graphic shape that is as close as practical to the visual model that corresponds to these movements is necessary. As a result, consistent information about a letter's geographical placement is associated with handwriting motions. They are also governed by a set of exceedingly rigid principles that govern both space and time, which Goodnow and Levine (1973) called the "grammar of action" (Velay & Longcamp, 2013).

These movement simulations in mind have a particular significance to the experiment at hand since movement is a trace in everything written by hand. According to Longcamp, Tanskanen, et al. (2006), "Several psychophysical studies have demonstrated a striking ability of the perceptual system to reliably extract production-related information from the graphic trace," which is evidence that handwritten script is an "imprint of action."

To summarize, pressing keys on a keyboard includes distinct kinesthesia, clearly different from the kinesthesia involved in writing by hand. Furthermore, these procedures enable the distinctive structure of individual letters and phrases. Given this fact, it is logical to assume that handwriting's continued marginalization will have important cognitive, educational, and cultural repercussions, both for the individual and society.

## **2.2 Handwriting and keyboard writing; relationship to word memory**



According to research on writing and drawing in neuroscience and, more especially, graphonomics, writing is a process that necessitates the integration of visual, proprioceptive (that is, haptic/kinesthetic), and tactile information. Because writing entails the creation of symbols, it is a method of communication (Fogassi & Gallese, 2004). The acquisition of handwriting skills requires both a perceptual component, which means learning the shape of the letter and a graphomotor component, which entails learning the trajectory that results in the form of the letter (Van Galen, 1991). The perception, reading, and writing of letters in various languages and writing systems have been linked by distinct neural network activation patterns, such as when comparing alphabet, ideogram, and logosyllabic (such as Chinese) and Japanese writing systems. This is because vision and proprioception, the sensory modalities involved in handwriting, are so tightly related. Writing by hand requires using vision and proprioception (Kato et al., 1999; Longcamp, Anton, Roth, & Velay, 2003, 2005; Van Galen, 1991). According to brain imaging studies, the processing of various writing systems can differentially activate neural networks. Particularly in portions of the brain associated with "motor perception," logosyllabic writing systems appear to engage unique elements of the frontal and temporal lobes of the brain (Chen, Fu, Iversen, Smith, & Matthews, 2002).

The motor component, in particular, seems to substantially impact the handwriting process (Longcamp, Tanskanen, et al., 2006; Velay & Longcamp, 2013). More support for this claim can be found in the findings of neurology experiments. The process of learning letter sequences may entail writing actions according to data. For instance, repeatedly scribbling kanji characters is a practice commonly used in Japanese schools to help pupils recollect those characters (Naka & Naoi, 1995). Similarly, it has been found that mature Japanese individuals write with their fingers in the air to recognize and recall the meaning of difficult characters in their minds. In Japan, which is often known as "Kumho," this phenomenon is also well-known there (Cibulka, 2013; Sasaki, 1987). Additionally, it has been said that learning to write by hand makes it simpler for people to recall visual forms. [Reference required] (1995; Naka & Naoi).

We write every day for a wide range of purposes and in a wide range of settings. One of writing's most essential purposes is a mnemonic, which implies that we write to remember certain information (e.g., shopping lists; note-taking during reading or lectures; post-it notes). The impact of writing as a modality on memory is a topic that begs for meticulous empirical examination in light of the abovementioned role in writing. The goal of the current study was to

determine the impact of writing modality on verbal memory for content that the individuals had written, including writing by hand using a pen on paper, typing on a laptop keyboard, and using a virtual touch-screen keyboard. This was done to see which was more efficient: writing by hand using a pen on paper, typing on a laptop, or using a virtual touch-screen keyboard.

In place of conventional desktops and laptops, people are increasingly using mobile, portable digital touch-screen technologies, such as tablets and smartphones, for things including making shopping lists, taking notes during meetings and lectures, and taking notes while reading. The main distinction between touch-screen and conventional computer and laptop keyboards is their tactile and haptic feedback. Touch-screen keyboards are sometimes referred to as virtual keyboards. More specifically, a computer keyboard provides tactile and haptic feedback that is more sensory-salient than a touch-screen keyboard. There are no tactilely felt boundaries (or edges) between individual keys on a touch-screen keyboard, which reduces this sort of information to the (optional) small vibration made possible by force feedback. Therefore, compared to a touch-screen keyboard, a computer keyboard provides greater sensory-salient tactile and haptic input. We chose three writing modes to utilize in a within-subjects design to improve the ecological validity of the study. These writing techniques are as follows: writing by hand on paper using a ballpoint pen, typing on a laptop computer, and typing on an iPad touch keyboard. These writing methods were all carried out by different individuals.

The effect of writing style (handwriting versus typing) on memory functions, including retention, recognition, and recall, has been the subject of several research, the majority of which have been carried out in neuroscience. One of the behavioural studies involved youngsters, while the other involved adults (Longcamp, Zerbato-Poudou, and Velay, 2005). Participants' recollections of letters they had learned via handwriting vs typing were compared in both studies (Longcamp, Boucard, et al., 2006). Participants who had previously mastered the ability to write by hand had better memory and visual recognition later than those who had written using a keyboard in each session. These findings were confirmed by Longchamp et al. in a neuroimaging study (Longchamp et al., 2008). fMRI results showed that processing the orientation of handwritten and typed characters did not rely on the same brain areas as processing typed characters. More specifically, individuals' brain activity during the handwriting condition was more apparent in various areas linked to action execution, observation, and visualization. This activity was particularly apparent in the left Broca's area and bilateral inferior parietal lobules (Longchamp et al., 2008). These

findings suggest that the sensorimotor actions necessary for handwriting may help people remember the future characters' shape and orientation (Longcamp, Tanskanen, et al., 2006; Mangen & Velay, 2010).

All of these findings are related to learning certain letters or characters. Many typical writing applications tied to available memory or learning outcomes can be said to have limited ecological value for memory for individual letters. There is room for debate on this. To the best of our knowledge, only one study—Smoker et al. 2009.'s work—has extended this investigation to look into potential connections between various writing forms and word-level memory. Smoker et al. (2009) conducted a brief study in which participants were asked to compare their memory and recognition of words depending on whether they had been written down by hand or typed on a computer keyboard. The experiment, which was intended as a between-subjects study to examine the impact of the writing method on word memory and recall, involved 61 participants. The keyboard used was a typical computer keyboard, and the two types of handwriting utilized were handwriting with a pen on paper. The identical words from the Florida Comprehensive Assessment Test for sixth grade were read aloud to the participants in both situations (FCAT). The words were shown on a printout in the handwritten condition and on the left side of the screen in the computer condition. They were instructed to replicate the words by writing them down next to the listed words, which they may accomplish on paper or a computer. Although there was no set time restriction, the time spent on the project was recorded. A distractor task was presented to the participants after the display of the stimuli. The participants were assigned the goal of recalling as many words as they could remember in the next five minutes by writing them down on a blank piece of paper as soon as the distractor assignment was over. The memory challenge was followed by a recognition assignment for the participants to complete. Both previously used keywords as stimuli and brand-new words from the same FCAT vocabulary were included in this exam. The recognition activity's time limit was similarly established at five minutes.

The study by Smoker et al. (2009) revealed that handwritten words greatly improved memory performance on the recall task. In contrast, the impact of the writing method was significantly crucial in the recognition task. Based on these results, Smoker et al. (2009) conclude that the findings support the theory that people tend to remember words better when they have written them by hand rather than when they have written them using a keyboard because handwriting

provides additional kinesthetic information. This is so because handwriting reveals more details about the motions and posture of the subject's body.

The current study partially replicates the work of Smoker et al. (2009), but it employs a completely counterbalanced design within the subjects. We test the proposition that people are more likely to remember words when words are written as parts of lists by hand rather than when they are typed using a virtual touch keyboard or a mechanical laptop keyboard. To be more specific, the present experiment's goal was to evaluate the following two hypotheses:

The first thing we predicted was that we would discover that memorizing words written by hand was simpler than recalling words typed on an Apple iPad or a real laptop keyboard.

We also expected that the word recognition test results would differ depending on the writing medium. For example, we predicted that participants would recognize more words they had written by hand than those they had typed on an iPad or a computer's keyboard.

### **3. Method**

#### **3.1 Ethics statement**

Each participant supplied their informed written consent before participating in the study under the norms of the Norwegian Social Science Data Services (NSD), which resulted in the NSD's approval of the project.

#### **3.2 Participants and design**

A within-subjects experimental design was used in the current study, and there were three different writing conditions for each participant to complete. Thirty-six female college students and staff members from a medium-sized Norwegian institution participated in the study. Participants had to speak Norwegian as their mother tongue as a condition. Everyone was said to have normal hearing and eyesight, and no one was said to have any difficulties with their ability to read or write. Only three of the people self-identified as left-handed, yet thirteen of them claimed to be touch typists. A power analysis showed that the power to detect an effect of medium magnitude ( $f = 0.25$ ) was 0.9 in a design with repeated measurements and three distinct conditions with 36 participants.

We provide the following descriptive data for age, education, words per minute on a standard keyboard, years of experience using keyboards, and years of experience using touch screens in Table 1:

Table 1. demographics, writing experience, and writing skill level

	<b>Mean (SD)</b>	<b>Max, min</b>	<b>Median</b>
Age	25.22 (7.98)	54, 18	22
Education	15.81 (2.70)	22, 12	15
Years of experience with keyboards	12.97 (6.19)	35, 4	12
Years of experience with touchscreens	0.89 (1.04)	3, 0	1
Age when started with keyboard writing	12.25(5.32)	23, 3	12
Keyboard words per minute	61.00 (21.12)	118, 26	59

### 3.3 Instruments

#### *Word lists*

To measure the effect that the various writing modalities had on one of the key cognitive outcomes, we used a word list paradigm. Word list learning is a well-known paradigm in cognitive psychology that is frequently used to evaluate episodic verbal memory (Tulving, 2002). A type of verbal, consciously accessible memory for details related to events is called episodic verbal memory (Mayes & Roberts, 2001). Encoding, which can be thought of as the act of learning new information, retention, which can be thought of as the act of storing what has been encoded, and retrieval, which can be thought of as the act of recognizing what was encoded and stored, are all stages in the multi-stage process that is memory (Mayes & Roberts, 2001). When you display individuals previously taught words vs fresh words and ask them if it was old or new, retrieval procedures are required that place a larger strain on attentional resources than when you ask them to freely recall the contents of a previously learnt/encoded

and stored word-list. This is due to the fact that individuals had to do less retrieval effort when asked to distinguish between newly learned words and previously learned terms (Naveh-Benjamin, Craik, Guez, & Dori, 1998). Additionally, different tactics used during the encoding process may have different consequences on recognition and retrieval (Tulving & Thomson, 1973). This study includes measurements of both word recognition and free recall in order to evaluate the influence of retrieval processes on memory as linked to list-learning throughout various types of writing. This was done in order for the researchers to look at how retrieval mechanisms affect memory.

Three-word lists were used for the listening-writing part of the exercise. Each list had 28 semantically related phrases that could be arranged into one of three obvious semantic meaning divisions. The lists' three main subcategories were: (1) action verbs (for instance, "paint"), (2) animals (for instance, "dog"), and (3) food (one example: "avocado"). All of the word lists had the same number of longer words and words with one, two, or three syllables. Each word list was digitally recorded, edited, and each word was given a six-second break (from sound offset to start). Each list took around three minutes to complete as a result. Along with the 28 target words, there were also 28 distractor words on each recognition checklist that were roughly equivalent to the target words in length and level of difficulty. To ensure fairness, each checklist's order was randomly assigned.

### **Technical apparatus**

A Dell laptop and a set of KOSS SB/45 headphones were used to play audio recordings of the aforementioned three different word-lists.

A first-generation iPad running iOS 4 and the included notepad program were used to construct a touch technology keyboard. The font's size and type were both left at their default settings. We used a Dell laptop with a full-size keyboard to simulate the physical keyboard state. The participants used the standard Lucida Console 10-point typeface and the Windows XP Notepad software with the window maximized. A standard ballpoint pen with blue ink was used for the handwriting test along with an A4-sized notepad.

A digital video camera with an inbuilt microphone was mounted on a tripod that was immobile in order to record each session and make it possible to revisit earlier recall sessions.

## **Procedures**

Participants in the experiment were given the task of writing down a certain word list using their handwriting, a physical laptop keyboard, and an iPad's virtual touch keyboard. Each technique was applied in a distinct sequence. At the start of the session, each participant was given a pair of headphones so they could take part. They were informed that they will be hearing a series of words read out to them in the next seconds. They were given instructions to write down each word as they heard it, in order, as soon as possible. All three variants of this approach were applied in the same way. Participants were instructed to write down every item on a specified list before being asked to recall as many words as they could remember from the list. However, the participants were instructed that they were free to, for instance, add line breaks for each new word or organize words while writing into columns or clusters. No instructions were given on whether or not to organize the written words in order to increase memory and recall. This data was made available in response to a participant's inquiry.

The participants were then instructed to write down the words using the instrument that had been selected, while listening to a previously recorded list of words through their headphones. The participant's personal word list was put aside after jotting down every word from the list that was being read to them at the moment, and participants were then asked to recall as many words as possible from the list that was being read to them. Each listening-writing session ended with a recognition exam for the participants. The participants had to determine whether each word was contained in their list of terms they had written down or not after a lab assistant read out a list of target and distractor words. Across all of the many fields, the order of writing technology and word lists were entirely mixed up.

The participants were told to select a cozy seating arrangement in front of the laptop and notepad in the conditions that called for the usage of a physical keyboard and handwriting. When using an iPad during the experiment's iPad condition, participants had the choice of keeping the device on their lap or setting it down on the desk in front of them. The participants in the free recall condition were instructed to vocally recollect as many terms as they could. Participants were told to notify the experimenter as soon as they thought they were unable to recall any more words while being given an infinite amount of time to try to do so. The words that were remembered, the order in which these words were remembered, and any potential

interruptions were noted (words not in the list).

The subject would be read the list of targets and distractions for the recognition condition verbally by the experimenter. The participant was then asked to indicate, with a "yes" or "no," if they believed each word was among those they had noted. After finishing this task, the subject used the exact identical procedure in its entirety for the two remaining writing technology criteria.

After completing all three tasks, participants were encouraged to take a speed typing test to evaluate whether or not they were touch typists and to gauge their keyboard writing speed (available at <http://norwegian-speedtest.10-fast-fingers.com>). They were also asked to specify how long they had been using touch-screen technology and keyboards in order to reflect their keyboard writing experience. This was done so that we could evaluate how adept they were at typing.

### **Analysis**

We determined  $d'$  (d-prime), a measure of discriminating performance based on a signal-detection method. According to the percentage of false positives, the proportion of recognition hits is balanced in this method. We performed this computation to assess the effectiveness of the recognition memory (Macmillan & Creelman, 2005).

The one-sample Kolmogorov-Smirnov test was used to evaluate whether or not the data had a normal distribution. The Kolmogorov-Smirnov test revealed that a number of variables had a statistically significant deviation from normality. The word-recall in the keyboard condition had a flattened distribution ( $p=.026$ ; kurtosis:  $-0.723$ ), whereas the data from the Pad condition were negatively skewed ( $p=.001$ ; skewness:  $-1.02$ ) according to the Kolmogorov-Smirnov test. Non-parametric statistics were therefore applied throughout the entire procedure.

In order to do the omnibus analyses of the variations in ranks in the groups for free recall and recognition, Friedman's related samples analysis of variance was utilized. The Wilcoxon test for related samples was used in conjunction with paired comparisons to carry out the scheduled follow-ups. Effect sizes ( $r$ ) were calculated after applying the Rosenthal approach (Rosenthal, 1991) by dividing the  $z$ -scores by the square root of  $N$ . We also looked at the non-parametric Spearman rank-order correlations between memory function, typing speed,



keyboard usage experience, and touch-screen usage experience. The differences between touch-typists and non-touch-typists in memory performance were then examined using the non-parametric Mann-Whitney U test. The analysis of the data was done using SPSS version 22.

#### 4. Results

In Table 2, we show descriptive statistics for free recall and recognition in the three different writing modalities:

**Table 2:** Performance

	Free recall		Recognition ( $d'$ )	
	Mean ( $SD$ )	Median	Mean ( $SD$ )	Median
Handwriting	15.33 (4.67)	15.0	2.91 (0.56)	3.04
Keyboard	13.89 (3.64)	13.0	2.78 (0.51)	2.79
iPad	13.64 (4.54)	12.5	2.67 (0.78)	2.72

Sd: standard deviation;

$d'$ : d-prime

The only statistically significant omnibus group difference observed was for free recall, with a p-value of less than .049. The follow-up tests demonstrated that free recall was better in the handwriting condition than it was in the keyboard condition ( $p = .024$ ,  $r = .37$ ). The iPad condition ( $p = .050$ ,  $r = .32$ ). The effect sizes ( $r$ ) of both of these variables are deemed to be medium (Cohen, 1988). (Cohen, 1988). There were no other statistically significant findings, nor were there any patterns that suggested significance may be present.

We utilized non-parametric (Spearman) rank-order correlation analyses comparing free recall for word lists generated on the keyboard or iPad with the corresponding relevant factors to determine whether or not competence or experience with keyboard or touch technology was

connected to the free recall effect. This allowed us to establish whether or not the free recall effect was connected to the keyboard or touch technologies. We observed that the number of years of experience with touch displays was positively associated with the capacity to recall lists that were entered on the touch screen of an iPad ( $\rho = .329$ ,  $p = .050$ ). However, there was no link between years of experience with keyboards ( $\rho = -.070$ ,  $p = .686$ ), keyboard writing speed ( $\rho = -.049$ ,  $p = .785$ ), or the age of first learning keyboard writing ( $\rho = .115$ ,  $p = .504$ ) and recall for lists written on a normal keyboard. The findings of correlation analysis corroborated this discovery. There was also no significant difference in the ability to recall words typed on the keyboard between touch-typists ( $N = 13$ ) and non-touch typists ( $N = 23$ ) according to the Mann-Whitney U test ( $p = .721$ , value = 138).

## **Discussion**

The findings reveal that writing by hand is connected to the enhanced free recall of written information compared to material generated using regular keyboards on personal computers or virtual keyboards such as those found on iPads. This is in comparison to stuff authored using virtual keyboards. This lends credence to the first hypothesis (H1) tested in the study. Our data did not support our second hypothesis (H2) involving recognition memory. This was because we observed no difference between the two writing modes regarding word recognition. Therefore, the assumption that writing on a keyboard in and of itself (whether on a virtual or a traditional keyboard) reduces or affects memory for what is written does not square with the data we have acquired. However, our findings suggest that there may be specific cognitive benefits to handwriting that may not be entirely preserved in keyboard writing, and these benefits may be related to features of word recall. The present study was designed partly to be exploratory, making it impossible to provide a definitive explanation for the observed pattern.

Nevertheless, the following are some hypotheses based on relevant empirical and theoretical research on aspects of writing that are analogous to those we found. They are intended to shed at least some light on our findings. As such, they have the potential to act as a basis for further research in the future.

To begin, our findings only partially replicate Smoker et al. (2009) in showing that writing modality affects episodic memory. However, in the Smoker study, the modality effects were significant only for the recognition measure, and they were only on the verge of signing for the

recall measure. In our study, the effects of modality were significant only for the recognition measure. Furthermore, in the current study, the follow-up analyses indicated that the memory recall performance related to the iPad was related to years of experience with touch screens. On the other hand, there was no effect of skill or experience with conventional keyboards regarding a recall for word lists written on such keyboards. The fact that there is a positive correlation between the number of years of experience with touch keyboards and the number of lists that were written using the touch keyboard on the iPad is an indication that the participants' level of automaticity may have played a role, but only when using the touch keyboard input mode. All participants in our research had substantial (at least four years' worth) prior experience writing on conventional (laptop) keyboards. However, a few reported having less than a year of prior experience writing on virtual keyboards. In other words, the poor ability to utilize virtual keyboards may have contributed to this conclusion. In addition, the fact that there was an effect of experience in the touch screen keyboard condition but not in the conventional keyboard condition may be related to cognitive load because proficiency in touch keyboard writing may have enabled participants to rehearse (orally; silently) previous words. This finding was observed, although there was no effect of experience in the conventional keyboard condition.

In contrast to traditional keyboards, a touch keyboard has a spatial distribution of keys and their borders that are essentially virtual. As a result, a touch keyboard does not give any tactile input that can assist in differentiating between the keys. Additionally, many touch keyboards come with a force feedback feature (in the form of vibration). Therefore, the automaticity of skill and, thus, a reduced cognitive load may be influenced more by familiarity and expertise with a virtual keyboard that offers force feedback than by automaticity with traditional physical keyboards. This would be the case if force feedback were provided through familiarity and expertise with a physical keyboard.

However, care should be taken when interpreting these findings. More empirical research comparing the effects of various keyboard types on cognitive outcomes will help us better understand the potential effects of different keyboards' haptic and tactile affordances on the sensorimotor and cognitive processes involved in writing. Future writing research should focus on separating the precise relationships between cognitive processing, possibly cognitive load, sensorimotor affordances of input mode (i.e., writing modality), and aspects of cognitive

outcomes to address the underlying mechanisms in more detail.

There are a variety of possible explanations for why we found that participants had a greater free recall for the words they had written by hand on paper as opposed to the sentences they had typed on a laptop or an iPad keyboard, even though our results do not support Hypothesis 2. When writing by hand instead of typing on a keyboard, a range of sensorimotor and graphomotor processes are at work. This may be a factor in the outcomes of the two approaches vary. Each letter must be graph motorically formed from scratch when writing by hand, which requires the writer to create a graphic shape that is as close as possible to the conventional shape of the letter they are attempting to write. The handwriting condition of our experiment's graphomotor processes may have facilitated a more specific encoding of the words into long-term memory. The free recall measure suggests that retrieval may have improved as a result. The results of Smoker et al. (Smoker et al., 2009), who found that participants in the handwritten condition performed better than those in the keyboard writing condition, are somewhat consistent with this conclusion. Smoker et al. (2009) used one-way ANOVA to test whether memory was better for handwriting than typing and found that it was. However, whereas in the current study, the difference between writing modalities in favour of handwriting was more pronounced for the free recall measure, and there was no significant difference for the recognition measure, the findings showed an inverse pattern (see table 1 for details). When considered collectively, these results may be viewed as evidence that the embodied nature of handwriting may enhance some memory-related functions. Kinesthesia may underpin and contribute to a more solid memory trace, positively impacting recall. Kinesthesia is engaged in the sensorimotor process of molding words by hand. The sensorimotor process of writing words by hand involves kinesthesia. This, however, does not explain why there was no distinction between writing on a keyboard and by hand in the trial that we were now looking at when it came to the recognition test.

Writing by hand versus typing using a keyboard have different relationships to and combinations of sensorimotor input (i.e., the [physical] act of writing) and the visual feedback that arises from this input, which may be another reason for the better free recall of words written by hand on paper. Writing by hand and writing on a keyboard differ in how they relate to and combine the visual feedback resulting from this input. When writing by hand on paper (or any other material substrate), the locus of inscription—the tip of the pen on the material

substrate—typically corresponds temporally and geographically with the focus of visual attention. This is true regardless of whether they write on paper or another type of substance. As a result, while writing by hand, there is a spatiotemporal continuity between sensory and motor activity and (audio)visual output, which is frequently referred to as the "imprint of action" (Longchamp, Tanzanian, et al., 2006). Integrating haptic, tactile, and audiovisual information in space and time may improve cognitive processing, increasing some aspects of memory and recall. In order to write their work while using a keyboard, authors may alternate between focusing their visual attention on the keyboard (and, as a result, getting visual feedback from the characters on the keys) and the screen, depending on how automatically or proficiently they type. If they are proficient keyboard writers, most of their visual attention is directed to the screen, which is a location that differs from the "motor area" in terms of space and time (i.e., the keyboard). Therefore, one could contend that (competent) keyboard writers experience visual feedback regarding their haptic and tactile input that is distinct from what is offered while writing by hand in terms of both sort and degree. This is because keyboard writers' tactile and haptic input is tied to the visual feedback they get. One could argue that dissociations between the motor area (the keyboard) and the visual manifestation of the sensorimotor input (the screen) could lead to a stronger mental representation because there is less competition for spatial information, even though this may have an impact on certain cognitive measures, leading to a less solid mental representation of letters and (possibly) words. This would result from the brain not having to focus as much on many places at once. In any instance, these ideas fall short of providing a sufficient justification for why the benefit of handwriting was shown only in performance on the free recall test and not on the word recognition measure.

It is also important to mention the visual element. When typing on a keyboard, a person's visual attention is split between looking at the text being generated and at the keyboard they are using. From a visual-spatial perspective, a keyboard divides the "motor area" (or input region), where the letters are formed, from the visual presentation area of the letters. The input area (or "motor area") is the keyboard itself (the screen; or output area). The writer receives less sensory and visual feedback regarding their writing process while utilizing a keyboard, which might result in less reliable mental representations of the text. The writer may pay less attention to the written text and, as a result, have a weaker visual recall of the word than the handwriting

condition, in which the subject may focus close to the location where the actual writing takes place. This might be one effect of such a separation.

However, various writers have varying periods where they fixate on the keyboard. Others focus most of their visual attention on the keyboard rather than the text, whereas experienced typists spend little time gazing down at the keyboard while writing. This can be because they have not had any instruction in touch typing or because they often look back and forth between the keyboard and the screen when writing. Our experiment indirectly investigated this issue and found no relationship between self-reported "touch typist" status and free recall. This consequently reduces the plausibility of visual feedback as an explanation for our findings. In the future, researchers may be able to shed more light on this mystery by monitoring people's eye movements. This would enable them to evaluate how visual input affects people's capacity for information retrieval and memory.

The fact that all of the experiment participants were adults with experience writing in both formats is another factor that should be considered. They also learned to write by practising their handwriting rather than typing, which is how most of them did it. The situation is changing now, and in some schools, instruction in beginning writing is given digitally in addition to or as a substitute for teaching kids to write by hand. Similarly, many students write outside of school using keyboards rather than paper and pencil. The question naturally arises as to whether or not having participants who wrote "keyboard-first" would have yielded different conclusions in a study comparable to the one that is now being done. Research with Chinese children has produced some findings that are pertinent to the topic, even though there has not been much done on this subject to date, particularly longitudinal studies of kids whose language and writing system is similar to the one on which the current study is based (that is, Norwegian). Children in China are increasingly learning to use electronic gadgets based on pinyin rather than the logographic form of written Chinese, which was once the norm. Chinese phonemes and English alphabet letters are combined to form the pinyin alphabet. It does it without taking into account how Chinese logography looks. Tan et al. (2013) postulated that this might harm Chinese children's reading skills. The authors discovered that, compared to earlier reports, the overall occurrence rate of severe reading difficulties appeared to be substantially greater.

Additionally, they found a strong negative correlation between using the pinyin input technique

and children's reading scores. Children in three Chinese cities' primary schools were the subjects of the study. These results demonstrate a significant loss in reading abilities among Chinese kids while using digital writing tools and the pinyin input method: "Pinyin typing appears to be problematic in and of itself; it obstructs the process of learning to read Chinese, which is characterized by a detailed analysis of the visuographic characteristics of characters. However, practising handwriting helps kids become better readers. 2013; Tan et al., p. 1122 One can assume that using a keyboard instead of writing by hand may have a greater impact on the ability of Chinese children to recognize characters than on the ability of children to learn an alphabetic language because learning Chinese characters requires more complex and intricate visuospatial mapping as well as more repetitions. This is such that learning Chinese characters takes longer than learning an alphabetic language since it requires more repetitions. It is interesting to consider if training children to write on a keyboard rather than by hand would have the same impact on their learning outcomes if their language system is alphabetic rather than logographic.

#### **6. A summary, some cautions, and some potential future paths**

There are several issues with the existing study that must be fixed. First, the absence of variations in the recognition condition may be due to a ceiling effect. It is probable that this ceiling effect, which was most pronounced in the handwriting condition and had a negative skewness of -1.02, covered up actual recognition discrepancies amongst the other modalities. The statistical power to detect true differences will be diminished due to the ceiling effect because it will obscure true differences and reduce their effect sizes. The statistical power would be further diminished if non-parametric statistics were used. Another drawback is that the study's encoding conditions were the only ones to be altered. We did not look at the encoding specificity concept of compatibility between the encoding and retrieval conditions since an oral report was not used at any time throughout the encoding procedure.

Instead, we used an oral report to assess every component of memory performance (i.e. no oral recital of the stimuli). As a result, the study does not look at cases in which different modalities help with memory or recognition regarding the encoding process. For example, visual feedback, learning the words by looking at the growing list of words written down, may have influenced our results. It seems sensible to assume that participants who were instructed to

create their lists on a computer would have had more time to visually recall their lists than those who were instructed to write their lists by hand (where the writing process takes longer, hence leaving less time for visual memorization of written words). This subject needs to be researched more because we did not account for "time on task."

Additionally, all of the participants in the experiment were adults who had written in one of the two forms in the past. Therefore, neither for handwriting nor for keyboard writing, our findings may not apply to children or starting writers. Furthermore, writing on a computer is not covered by our findings. In a similar vein, we are unsure how this experiment's outcomes would have altered if it had been carried out on a group of individuals who had learnt to write predominantly by using a keyboard instead of by hand. The fact that we did not consider the participants' preference for spatial arrangement when they wrote down their lists is another possible weakness in our research. All forms of communication have particular benefits and drawbacks in this area. However, just one of the individuals arranged words geographically as they were writing under their semantics. Everyone else filled each line with a single word. Last but not least, even though all recall processes were executed immediately following the encoding of the data, working memory effects may have been present during the recall process.

The ongoing digitization of writing necessitates an appreciation of the importance of the shifting capabilities of writing tools and the surfaces on which writing occurs (e.g., paper vs screens). Although writing is a verbal and (visual-)cognitive act, it also involves dexterous finger and hand motions that are mediated by tools. Additionally, it includes intricate interactions with cognition, perception, and attention. In terms of the evoked sensorimotor and kinesthetic experiences, writing with one's hands using writing instruments like a ballpoint pen and paper differs from writing with one's fingers tapping keys on a keyboard. The results of this experiment show how important it is to consider the functions of the sensorimotor and kinesthetic processes involved in writing, especially given how significantly these processes differ when writing by hand versus typing. In addition, it is important to consider the embodied character of writing and how various technologies may alter cognitive results. We found that respondents had a greater free recall of the words they had written by hand compared to the iPad touch keyboard and the laptop keyboard conditions. This conclusion was reached based on the fact that individuals had a greater free recall of the words they had written by hand.



If we can assess the impact that digital technologies have had on the cognitive aspects of writing, then further empirical study is unquestionably required. According to the results of our study, it is crucial to consider the effect of the ergonomic and material features of writing technologies, particularly the connections between the sensorimotor execution, psychological processes, and cognitive consequences of writing with different modalities. Nothing in the study described here suggests that these differences are transient or that the greater performance shown in the handwriting condition in this study results from people having grown up learning to write by using a pen and paper rather than a computer. This was the circumstance employed in the investigation. More empirical research is required to determine whether and to what extent this is a generational issue, as well as whether or not something more fundamental, less temporally constrained, and generation-specific is at work here. This includes longitudinal research involving children and young adults.

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2

**Quantity versus quality Effects of argumentation in  
bad news letters**

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**Abstract:**

Does the approach used to assess negative messages differ depending on the number of reasons considered or the quality of those arguments? Two separate experiments, which involved the distribution of bad news letters, were carried out to explore this problem and find a solution. During these investigations, both the standard of the arguments and the total number of arguments were realistically varied in response to the conditions surrounding the probe. The results of the two experiments suggest that including logic in letters not only makes them appear more courteous to the reader but also increases the persuasive power of the letters. Both sets of findings from the study led in this direction. The study's findings also show that the influence of persuasive arguments is far more significant than that of arguments that are not persuasive.

Furthermore, it has been proved that the subsequent arguments contribute to reinforcing the conclusion. The findings, on the other hand, demonstrate that just one or two arguments are required to substantiate a claim. Adding a third reason does not significantly improve the results; rather, it leads to a marginal improvement in the scores.

**Keywords:** argumentation, repercussions, unpleasant news, and evaluation

## **1. Introduction**

One of the most challenging aspects of writing for professional purposes is formulating an argument in a manner that can be simply comprehended, all the while meeting the requirements of the customer and preserving the good name of the organization (De Jong, 2002; Janssen, 2007; Rothschild & Burnett, 1997). Clear communication may be a task that is relatively easy to complete when conveying positive messages; however, it is also possible that clear communication may turn into an endeavour that is challenging when business writers are required to provide information that has negative repercussions for themselves, their companies, and their customers. Bad news communication and bad news texts, in particular, have received a considerable amount of attention in a wide variety of contexts, including textbooks (for example, Bovée & Thill, 2000; Locker, 1995), teachers of (business) writing, and scholars of writing and text. This attention has been given in a variety of different ways. This attention may be found in several different places, including the following areas: There are many compelling arguments in support of taking this attitude (cf. Brent, 1985; David & Baker, 1994; Hagge & Kostelnick, 1989; Jansen & Janssen, 2010; 2011; Janssen & Jaspers, 2004; Limaye, 1998; 2001; Locker, 1999; Schryer, 2000; Sydow Campbell, 1989; Stephen et al., 2005).

The authors of negative communications have a challenging task ahead of them since they are tasked with trying to cater to the requirements set out by the message's sender and the intended recipient. When dealing with negative signals, it is especially important to keep this in mind because the sender's and receiver's goals may be utterly at odds with one another (Jansen & Janssen, 2010). To be more explicit, senders are responsible for communicating unfavourable information in a way that is easily understood without jeopardizing their reputation or bringing more embarrassment to the receiver than is strictly necessary (Schryer, 2000). Researchers in the disciplines of bad news communication and crisis communication want to understand how business writers achieve this goal and which textual aspects impact the success of bad news communications in fulfilling their study objectives. The primary finding of Jansen and Janssen (2010) was that "giving reasons," also known as "giving arguments," was the only positive politeness strategy that proved to be effective in the context of bad news letters out of all the others that were put through their paces during the testing process, is the primary finding that we are concentrating on in this investigation. In addition, "giving reasons," also known as "giving arguments," was the only positive politeness strategy that proved effective in bad news

letters. It turned out that this strategy was the only successful regarding letters containing bad news. This finding will pave the way for further investigation into a wide range of exciting new fields of study. At this point in the process, the most important factor that has to be examined is the credibility of the arguments that have been presented. If compelling arguments or counterarguments support a message to the conclusion, does this increase the reader's appreciation for the message? Conversely, do readers give less credence to the message when it is accompanied by explanations or reasons that are less compelling than the choice ultimately made?

Does it make a difference how many reasons or arguments there are to justify something? We would want to respond to this second question with our solution. Because there was only an effect of a single strategy, particularly "Give reasons," the findings of Jansen and Janssen show that combining or "stacking," as it is known, several politeness techniques do not influence the ratings that readers provide. This is because there was only an effect of a single strategy. This is because one strategy, specifically "Give reasons," had an effect. This is the reason why this is the case. This is because not even a single tactic created any observable results. The answer to the issue of whether or not combining several separate lines of reasoning or arguments has any influence on how a person reacts to disheartening material is not yet known for certain. During this research, we will utilize the verb "Give reasons" quite a bit to bridge this information gap.

In the section that is to follow, we are going to talk about the theoretical foundations of the study, which served as the foundation for our hypothesis. To begin, we will describe two studies that utilized insurance claim denials as examples of letters with bad news. Both of these studies were conducted by the same researchers. After that, we will get to certain conclusions, and then we will discuss the repercussions of those conclusions.

## **2. Theoretical background**

The theory of politeness and argumentation and persuasion are two theoretical orientations that may be used in this research. Both of these theoretical stances have a place in the discussion. Studies on politeness are significant for a variety of reasons, one being that Brown and Levinson (1984) included "Give reasons" as one of the good politeness techniques. This is only one of the many reasons why these studies are important. This is one of the primary

arguments in support of the value of research on politeness. Because it demonstrates that the sender is attempting to build a positive connection with the recipient, the use of arguments or justifications implies that the receiver is aware of this, which is necessary for successful (commercial) communication because it shows that the sender is trying to build a connection of some kind with them. Because the inclusion of reasons or explanations in a communication conveying bad news is intended to elaborate on the logic that underpins the choice, theories of argumentation and persuasion are essential in this scenario. This is because including reasons or explanations in a communication conveys bad news. The extra justifications are presented to persuade the receiver that the action chosen by the sender, although unfavourable, is not unreasonable.

According to the politeness hypothesis, unpleasant decisions, such as declining a job offer or dismissing an insurance claim, are "face threatening acts," or FTAs (Brown & Levinson, 1987). When a client makes a claim, he does so in good faith — or at least, with some hope — that the insurance company would abide by answering that his claim is accepted for payment. If the insurance company does not adhere to this response, the client's claim will not be paid. If the insurance provider does not comply with the directive, the customer's claim will not be paid. This is because when a customer files a claim, he does it honestly and forthrightly (or at the very least, with some hope). The insurance company will take the opposite course of action in the unfortunate event that the insurance company denies the claim. A letter informing the client that the company would not be able to fulfil his request was sent to the address the client provided. According to Brown and Levinson, the content included in this message is harmful to the face of the reader and has the potential to result in lifelong scarring. According to the findings of the research conducted by Brown and Levinson, one solution to this issue is to practice respect and good manners when one is turned down for a position. They present a taxonomy of many different types of courtesy, one of which is a constructive form of courtesy that demonstrates to the recipient that both the sender and the receiver are willing to work together to achieve a common goal. This taxonomy also contains a category for types of politeness in which the sender conveys politeness to the recipient of the courtesy. One of these helpful tactics in etiquette is called the art of "providing reasons," which, depending on the context, can also be regarded as explanations or arguing.

In the context of business writing, it has been observed by several authors that skilled writers are required to adhere to the conditions of the communication situation while simultaneously preserving both their face and the positive and negative aspects of the customer. This is an essential requirement for skilled business writing. This need is unique to the field of business writing as a discipline. Because it is difficult to fulfil all of these requirements simultaneously, this challenges more experienced authors (Pilegaard, 1997; Hagge & Kostelnick, 1989; Janssen & Jaspers, 2004; Ding, 2006). In addition, several studies have revealed that for professional writers to successfully fulfil the communication goals they have set for themselves, they intentionally adopt politeness strategies (Hagge & Kostelnick, 1989; Van der Mast & Janssen, 2001). For example, in their study of accountants' letters, Hagge and Kostelnick (1989) found that the accountants used a variety of indirectness (negative politeness strategies) and vagueness (an off-the-record strategy) to draw attention to the "problems" they had found during an audit (= bad news). Some examples of these strategies are as follows:

There is no guarantee that the protection records of a client will always be brought up to date with the most recent pricing information. We were supposed to retain a client protection record. However, it was revealed that a few product invoices returned to customers had been done without any trace being left in the register (Hagge & Kostelnick, 1989, p. 324).

When Van der Mast (1999) and Van der Mast and Janssen (2001) researched policy writers at their workplaces, they found several instances of courteous conduct. The initial versions of the articles lacked the polyphonic text qualities that were present in the sections of the articles that required to be changed to satisfy the concerns brought up by earlier reviewers. Even though Van der Mast, Janssen, and Van der Mast do not begin with the politeness theory, it is not difficult to analyze their instances in terms of the many politeness strategies. Authors of policies intentionally use several rhetorical strategies, such as perspective flipping, ambiguity, and personalization, to increase the possibility that their writing would be read and perceived favourably by readers (cf. Barghiela-Chiappini & Harris, 1996).

Other researchers have found successful politeness methods in professional corpora of letters that deliver unfavourable news. These letters typically include negative information. In 1984, Jablin and Krone were the ones who carried out the study that ultimately led to the discovery of constructive politeness strategies that were employed in rejection letters to job hopefuls.

According to Pilegaard (1997), letters in which business partners negotiate an order—that is, communications in which it is reasonable to anticipate that refusals would occur frequently—contain positive politeness strategies (alone or in combination). These tactics were exposed in the correspondence between the various parties involved in the order discussion. In his study on job refusals in French-Swiss businesses, Manno (1999) presents several examples of the various types of employment refusals. These examples cover a range of scenarios.

Moreover, in a corpus of 31 Dutch job refusal letters, Kok (1993) revealed combinations of two or more constructive approaches in every one of the letters. The letters were all part of the Dutch Employment Denial Letters Corpus. The corpus consisted entirely of letters that were written in the Netherlands. She advised using "Give reasons" as one of the tactics in every letter she wrote, except for one letter. There was just one exception.

Product recalls are another type of genre that is comprised of unfavourable news. Researchers Van Waes and Van Wijk (2000) investigated the effect of positive politeness strategies on product recall evaluation. They also considered various detrimental approaches as a second independent variable in their research. They carried out several experiments, and in one of them, they observed that utilizing positive politeness approaches increased people's perceptions of the content, how they thought about the issuer's firm, and how well they absorbed the terrible news. The research mentioned earlier, carried out by Jansen and Janssen, is the only one that has attempted to quantify the advantages of "Give explanations" in conjunction with the impacts of other positive techniques for improving politeness (2010). They conducted various tests utilizing letters that conveyed unfavourable information (such as denials of claims and rejections of employment applications), varying the type and quantity of politeness strategies employed in the letters. The results of these tests were analyzed, and they were compared to the findings of the research that was discussed before. They investigated how their change influenced relationship variables and persuasive elements (such as the sender's traits, perceived empathy, and organizational image) (e.g., compliance). According to Jansen and Janssen, after combining the results of the two experiments, the "Give Reasons" strategy had a positive influence on the evaluation of the letters, while the other two (positive politeness) strategies had no effect at all. This was determined by comparing the results of the two experiments (p. 2531). It is essential to pay attention to all of the factors contributing to these discoveries' exceptional nature. They begin by casting doubt on the accuracy of the guidance

offered in many textbooks, including the recommendation that students should use constructive strategies for maintaining civility. Second, they offer a way of classifying the myriad of different effects that could be brought about by the sequential application of several different procedures. This feature is quite beneficial in many situations. In the research conducted by Jansen and Janssen, the authors identified three distinct categories of models: additive, saturation, and optimal. An "additive model" is one in which each additional strategy has a positive impact on the reader's evaluation; a "saturation model" is one in which the positive impact of each subsequent strategy declines, and an "optimum model" is one in which the positive impact of all of the strategies combined is maximized. Additive models, saturation models, and optimum models are all examples of models that can be further broken down into subcategories. The reader's evaluation becomes better with each new strategy implemented in the "additive model" (adding one strategy initially enhances the effect, but adding extra strategies diminishes the effect). Since the positive politeness tactics that Jansen and Janssen utilized in their experiment proved ineffective in practice, it was impossible to interpret the data as support for or against one of those hypotheses. This is because it was not practical to do so. The experiment was conducted by Jansen and Janssen, which is why this is the case.

Third, the findings call into doubt the reliability of the politeness hypothesis. To be more specific, considering that the existence of techniques does not appear to have an effect on the replies of the readers, the bulk of these challenges are centred on the cognitive state of the politeness theory. Jansen and Janssen employ the Elaboration Likelihood Model established by Petty and Cacioppo (1984) to give a weak explanation for the test findings. Jansen and Janssen developed this model. Petty and Cacioppo conceived this model. This approach is predicated primarily on the hypothesis that the persuasion process occurs along an "elaboration continuum." This continuum ranges from low elaboration, which refers to superficial processing of the information, to high elaboration, which refers to a comprehensive analysis of the subject matter. This technique focuses primarily on the hypothesis that the persuasion process occurs along this continuum. This goes from a very low value to a very high value. One way to picture the core road of persuasion and the periphery route of persuasion as being at opposing extremes of this continuum is to say that both arguments are persuasive. This is one method. The in-depth investigation necessary for the core route processes is applied when it comes to the reasoning or logic behind the statement or conclusion. Under these conditions, readers evaluate whether

or not the argument itself is credible (based on the facts), whether the argument can support the claim, and whether or not there is any other information that may support the claim that has been withheld. In other words, readers consider not only whether or not the argument is credible (based on the facts) but also whether or not the argument can support the claim and whether or not there is any. When using the tangential route, readers analyze the proposition presented in the message by utilizing a wide range of criteria for evaluation. When deciding where they stand on the issue, they give the logic of the argument a lower priority and instead place a greater emphasis on the cues that come from their immediate environment. Examples of tangential signals that may exist are the number of images, the reputation of the sender, and the number of arguments mentioned in the text. In the latter scenario, readers evaluate this component by counting the arguments rather than examining the logic, by a common rule that suggests that the more good things there are, the better it is (cf. Petty & Cacioppo, 1984; Chaiken, 1987; Marshall et al., 2002).

According to Jansen and Janssen (2010), participants in their study tended to choose the path that traversed the geographic centre of the map. This would explain why other strategies were ineffective and why the "Give arguments" (= argumentation, the) strategy was the only successful one. Because this was the only method that made use of logic, all the other strategies were useless. We are going to continue our investigation into the subfield of inquiry that this research is focusing on, and in order to do so, we are going to incorporate argument quality into the experiment that we are conducting. For example, suppose the participants provide a better rating to the text with strong arguments than the text with weaker argumentation. In that case, we may be assured that the participants analyzed the text (at least the argumentative components of it) along the core path. However, if participants gave a higher grade to the text that included weaker reasoning than the text that contained strong argumentation, then the participants did not assess the text using the framework.

It should go without saying that we are not the first academics to be interested in the strength of the argument; in fact, we are not even close to being the first. Reinard (1988) offers a comprehensive review of the research that has been done on the part that evidence plays in swaying people's opinions. This research is pretty impressive in terms of its range and depth. Reinard's studies, for example, analyze and contrast the consequences of various types of evidence, such as statistical data vs individual cases and points of view, factual information



versus personal testimony, and so on. In his conclusion, he says that "differences created by various evidence forms have been elusive, aside from the previously described research by Petty and his associates indicating that empirical research findings and statistical information are especially persuasive among subjects who are personally involved with the topics." This research indicates that subjects personally involved with the topics are more likely to be persuaded by empirical research findings and statistical information. (p. 25).

According to a more current study on the influence of anecdotal, statistical, and causal evidence, which concluded that statistical evidence was the most persuasive, anecdotal evidence is just as uninteresting as causal evidence. The most convincing evidence was found to be statistical evidence. This information was obtained through a comparison of the three different types of evidence. Hoeken was the investigator who worked on this project from beginning to end (2001). It would appear that the fact that the participants had previously said that they viewed anecdotal evidence as less convincing in general is also essential for the evaluation of this finding as well. This is because the participants previously said they believed anecdotal evidence less convincing than other types of evidence. This is because early on in the discussion, the participants voiced the opinion that other types of evidence were more persuasive than anecdotal evidence. According to a study conducted by Van Eemeren, Garssen, and Meuffels, users of language tend to regard erroneous arguments as less acceptable than argumentation that does not involve faulty reasoning (2009). However, they did not evaluate the influence that fallacious reasoning has on the efficiency of the communication processes. This is a result of the fact that the research conducted by Van Eemeren, Garssen, and Meuffels (2009) did not investigate the specific influence that fallacious reasoning had on the level of persuasion possessed by communications. Through considerable study and publication, Orm (2010) concluded that normatively powerful arguments are not necessarily more convincing than normatively weak ones. Orm concludes that powerful reasoning that moves from cause to effect is more successful than a weak argumentation because the results are contingent on the manner of argumentation. This is because compelling arguments exhibit a greater level of comprehension regarding the connection between the two concepts.

When employing reasoning that is based on authority, on the other hand, it has become abundantly evident that this is not the case at all (p. 230).

On the other hand, the bulk of these studies concentrates on the effectiveness of arguments when they are presented in an environment representative of real-life situations. The participants in the experiment were provided with separate argumentations (argument plus conclusions), and they were then graded based on how well they presented their arguments. Even while this strategy has provided us with a great deal of useful information on the effects of the quality of the argumentation, it is not yet obvious whether or not we would receive the same results if we employed argumentation in real-world documents such as business letters. This is because it is still unknown whether or not we would have the same consequences if we were to do it again. Although we have gained a lot of valuable insights from utilizing this strategy, it is not yet obvious whether or not we will obtain the same results from using it. Since the argumentation in the bad news letters is not just based on facts but also on rules, as we shall see in the next sections, the research that deals with "evidence" (statistical, anecdotal) are not directly transferable to our work. This is the case because the reasoning presented in the letters with negative news is not wholly backed by evidence. This is because the research to get these results included both statistical and anecdotal data.

In the framework of the study, one of our primary goals is to investigate how people's use of reasoning affects their inclination to accept negative information. Specifically, we want to look at the relationship between the two. On the other hand, it seemed logical to expect that the reasons presented in negative news messages would function in the same manner as those strong arguments, given that the vast majority of the research that has been conducted in this field demonstrates that strong arguments are frequently more persuasive than weak arguments. In this regard, the research has shown that strong arguments are frequently more persuasive than weak arguments.

According to the research that Petty and Cacioppo carried out, those who had a lesser degree of interest in the topics being discussed were more impacted by the number of arguments presented (1984). In contrast to the other group, this one did not have a significant relationship with the issue. The other studies that Reinard (1988) addressed produced results that were more or less equivocal: "on the whole, research on the number of arguments suggests that there is no magic number that exists for evidence usage." (p. 40).

As a consequence, we could not uncover any research that investigated the connection between the number of reasons provided and the quality of those arguments. This presented us with a significant obstacle to overcome. We thought that the inclusion of extra weak arguments would be more beneficial to those arguments than the addition of new strong arguments would be beneficial to those arguments. This was because there is a high probability that a single compelling argument may have a knock-out impact and produce a ceiling effect.

During the preliminary stage of our inquiry, we are going to make an effort to validate the findings that Jansen and Janssen came to by supplying answers to the questions that are listed below:

For example, 1. Is it true that letters of the terrible news that include arguments are just as convincing as letters of bad news that do not include reasons?

The response that goes something like this is the one that makes the most sense:

1a. The success rate of letters of consolation that include an argumentation is significantly higher than that of letters of consolation that do not include an argument.

As we go on to the second part of our investigation, we will answer the following two questions in order to explain the impacts on processing before moving on to the next part of our investigation:

2. Does a piece of writing that gives compelling reasoning and evidence have the same impact as one that presents flimsy arguments and evidence? The following is a description of the reason behind the hypothesis:

According to 2a, texts with strong arguments have a greater probability of convincing readers than texts with poor reasons.

3. Are literary works that just present one argument as persuasive as those that present several?

The response that goes something like this is the one that makes the most sense:

3a. The presence of additional arguments increases a piece of writing's persuasiveness.

Because we do not have enough information, we cannot state with absolute confidence whether or not number and quality go hand in hand. Therefore, in the following discussion, we will use

an exploratory technique to talk about the level of quality of the arguments and the amount of them that were presented in a more experimental way.

### **3. Experiment 1: Quantity and quality of argumentation**

In the first experiment, we looked at how people's reactions to negative information changed depending on the number and quality of the arguments presented to them. Our primary aim was to determine how individuals' reactions to the material shifted in response to the provision of supplementary or improved explanations.

#### **3.1 Method**

In the same vein as Jansen and Janssen, we cited insurance claim denials as typical instances of bad news letters (2010; 2011). The realization that using this particular approach of disseminating unfavourable information led to ecologically sound conclusions and was helpful to educators and other specialists in the field were the factor that had the most impact on our choice to make this selection. This was because previous research had shown that this method produced ecologically valid results and helped to field instructors and other specialists. This was the reason why this strategy was chosen. In addition, given the frequency with which rejection letters are sent, each individual who participated in this research endeavour had at least some prior exposure to reading such correspondence. This is because all participants read one or more letters throughout the activity. We assumed that the participants' previous experiences would make it easier for them to relate to the person who would be getting the letter of denial and that this would result in a positive outcome because of the positive impact on the participant's ability to relate. Therefore, the letter, which is often only one page long, is an excellent alternative for use as stimulation material because its length, typically just one page, makes it an ideal choice. Not to add, because we used the same stimuli in both this experiment and the one that came before it, we were able to place the results of this trial within the greater framework of the study that came before it because we utilized the same stimuli in both experiments. We will come full circle when we finalize the outcomes and discuss this subject again.

The letters we used in our experiment were fabricated to seem genuine, and we obtained them both from Kok (1993) and a well-respected Dutch insurance company. Furthermore, every single paragraph was written in the formal style of business letters, including the inclusion of

the firm logo and all of the pertinent contact information. In general, there were 186 words in the length of a letter (min. 180, max. 191).

It was claimed that insurance firms were the ones who issued the letters, although the identities of these organizations were completely fabricated. This was done to eliminate the possibility of the readers' preexisting impressions about a certain company being altered by the content they received (see appendix A for an example of the body of one of the four Dutch letters, which has been translated into English.)

### **independent elements**

As was mentioned earlier, the purpose of this study was to replicate the findings from Jansen and Janssen (2010) and to determine whether or not there was a significant difference in evaluation between letters that contained reasons or arguments and letters that did not contain either of those elements (also referred to as "Bald On-record" in terms of Brown and Levinson, 1987).

In addition to this, it was essential for us to have an understanding of the distinction between weak and powerful arguments. Although the empirical nature of our study prevented us from delving deeper into the theoretical challenges in normative argumentation theory, a few remarks on how we picked which arguments to define as weak and strong are in order. In our research, we ranked the persuasiveness of arguments based on whether or not they were supported by evidence. We categorized arguments as either strong or weak. Experiments and studies that are analogous to the one being discussed here have, to the best of our knowledge and understanding, used two unique approaches to evaluate the persuasiveness of an argument. The first approach is known as normative argumentation theory (Van Eemeren & Grootendorst, 1992), and it distinguishes between valid argumentation and adhering to the rules for rational discourse, as well as between the appropriate application of argumentation schemes and the so-called fallacies. Van Eemeren and Grootendorst developed this approach. This hypothesis was developed by Van Eemeren and Grootendorst (Van Eemeren, Garssen, & Meuffels, 2009). This theory seems less applicable to our circumstances due to questions about the ecological validity of its assumptions: insurance denial letters do not use typical logical errors to justify not paying out a claim for reimbursement (cf. Woods & Walton, 1982). In addition, it is not always easy to differentiate, for instance, between the use of an authority-based argumentation scheme in a

fallacious manner and the justifiable use of the same argumentation scheme based on certain normative principles. This is because it is not always clear which of these two uses of the scheme is more valid. This is because it may be difficult to differentiate between the two distinct applications of the system, which is the reason behind this. This difference is especially vital in cases where readers need to consider unique situations. When considered in the context of claim denials, all arguments are essentially the same when seen from a normative perspective; more precisely, they are all versions of the rule-based argumentation scheme. (see Schellens & De Jong 2004). The following definition of this system makes use of the language developed by Toulmin in 1985 (for more reference, see Lunsford 2002):

According to the statistics, the customer's claim possesses the Xth characteristic listed below. (For example, it has been around for more than a year.)

Justification of primary or fundamental significance: As stated in the phrasing of the policy, claims that fulfil the requirements of criteria X shall be denied.

Argument or conclusion: As a direct consequence of this, we consider it our duty to rebut the argument that you have presented.

Because this line of reasoning is valid for all of the different arguments mentioned in reimbursement denial letters, it is impossible to evaluate quality in terms of distinctions in normative argumentation schemes. As a result, this evaluation method is not practicable.

Using empirical evidence is the second approach for determining which arguments are convincing and which are not. This strategy is used to discover which arguments are persuasive and which are not. In the experimental tradition of ELM, in which the argument's validity is contingent on the perspectives of the target group itself, this strategy has proven to be effective in the past and is employed by many persons today. The arguments' selection must always occur in two distinct stages per this long-standing tradition. The researchers kick off their inquiry by compiling a list of anticipated strong and weak arguments to use in their examination. This constitutes the first stage of the research process. In the second step of the process, the arguments are given to a cross-sectional representative sample of the same population they want to use for their experiment. Following this step is the phase in which the findings are analyzed. Finally, they pose a question to this group, asking them to make a list of the reasons and arguments they

find to be the most convincing and the least compelling. Following that, the selected arguments are incorporated into the experiment that was carried out after this one. Arguments are so feeble that it is debatable whether or not they would even be recognized as arguments if the weak arguments are the outcome of the greatest discrepancy in the quality of the various arguments. The scenario with the lacklustre arguments is as follows: As a direct consequence, the method's contribution to our overall performance in achieving our goal was significantly diminished.

This directly influenced how we handled the situation, resulting in a very different outcome. Even though we used the second phase when we were protesting the argumentation in our experiment, we still preselected the strong and weak arguments by using Schellens' (1987) norms for rule-based argumentation (see also Schellens and De Jong, 2004) in conjunction with a third criterion that we called normative-analytical. This allowed us to determine which arguments were likely to be convincing. Because of this, we could determine the arguments that had the best chance of swaying the audience's opinion. As a direct consequence, we could ascertain which arguments have the most potential to persuade the listeners.

When all three of the following were true, we thought an argument had a good chance of succeeding:

1. The reasoning behind the choice, or the idea that lies underneath it, was articulated in a way that was clear and easy to comprehend.
2. The specific promise did not include qualifiers or caveats that expressed the insurance provider's ideas or interpretations; rather, it made direct reference to the insurance policy's terms. This was the case because the specific promise did not contain any qualifiers or caveats that expressed the insurance provider's ideas or interpretations. As a result, there were no limitations placed on the guarantee.
3. Because there was no room for interpretation, the receiver could rigorously apply the rule. This demonstrated that the policy provisions directly justified the rejection and that there was no disagreement over how the rule should be implemented in the particular circumstance.
4. The regulation was followed exactly by the receiver, leaving no room for interpretation.
5. The receiver followed the regulation accurately and transparently (cf. norms for rule-based argumentation in Schellens & De Jong, 2004).

If an argument lacks strength, it is likely because one or more of the three qualifications presented earlier were not met. Therefore, we reached out to 15 of the top insurance companies in the country and requested that they supply us with some claim denial forms, letters, and samples. Regarding travel insurance claim denials, we were especially interested in knowing more about them. Our objective was to identify insurance-related arguments that were plausible and pertinent to the situations that existed. After examining the remarks, eleven distinct arguments were selected and using the criteria set earlier, we determined whether or not each was persuasive. Therefore, if you find yourself in a position where you need to file a claim for your travel insurance, the following are three excellent examples of compelling justifications:

1. You stated it more than a year ago when you made that statement. (According to the insurance policy terms, any and all claims must be filed within one calendar year of the date on which the theft was purported to have occurred.)
2. You did not make a report to the authorities regarding the occurrence. (Before making a claim, it is required that a report be made with the appropriate law enforcement agency regarding the conditions of the insurance policy.)
3. The break-in occurred in a part of the world that is not in Europe. (The insurance policy you purchased will only pay for damages sustained while travelling within the European Union's borders.)

The following is an example of acceptable policy language, with the facts (data) serving as the starting point and the claim being rejected serving as the conclusion:

Based on the facts and the reasoning, which is more than a year old, your assertion is now outdated and cannot be supported.

Important and basic requirement: the conditions of the insurance indicate that all claims must be filed within one year of the date on which the theft was allegedly committed. The deadline for filing a claim is one calendar year after the date of the claimed offence.

Argument and conclusion: As a result, we are under the impression that we have no choice but to refute your assertion.

The following illustrations provide evidence of the weak reasons that were given in the letters:



1. The amount you say you paid for the portable computer is much higher than what the computer is currently worth on the market. According to the information we now possess, the laptop's price was reported to be € 678.30.
2. The fact that the form was completed is evidence that you abandoned your laptop in the pool area while you used the pool itself. Consequently, you do not have any further grounds for requesting a return.
3. Our database shows that you have already filed three claims for the current year.

Even though they are not as convincing as the strong arguments, the first thing to remember when thinking about the weak arguments is that they are not incorrect in the sense that the word is typically understood to have. This is the case even though they are not as convincing as the strong arguments. The first thing you should remember when responding to weak arguments is this. However, they are open to criticism because it is not made clear in any of these instances that there is a connection between the contention and the allegation being refuted by referencing the pertinent policy language in a warrant. This is one of the reasons why they are subject to criticism. Because of this, they are susceptible to being criticized.

Consequently, the arguments are less convincing (the normative analytical criterion). In addition, in both the Schellens (1987) and the Garssen (2001) methods of evaluating argumentation, weaker arguments give rise to credible counterarguments, which is the primary necessity for weaker argumentation. This is because weaker argumentation is more susceptible to being disproved. This is the case despite the method that may or may not be utilized to evaluate reasoning. Therefore, both of these approaches to analyzing arguments consider this criterion as one of the factors to analyze.

The author argues that the reasons that supported the decision presented choices for interpretation and discussion by pointing out that, in arguments (2) and (3), respectively, "the form affords evidence" and "our record suggests." These were the phrases that were used. The first premise's plausibility is called into doubt because the prices of consumer goods are known to shift and vary from one place of business dealing in retail to another. If it is found that the cost of the claim is extravagant, the insurance company may opt to refund a lesser payment rather than entirely reject the claim. This is because it is more cost-effective for the insurance

company. The second argument is unconvincing for several reasons, the most important of which is that policy terms (and, by implication, the reasoning in the arguments) are rarely that precise. This is the most ineffective part of the argument. "Owners should take good care of all objects under cover" is a provision that may frequently be seen in insurance policies. In a scenario like the one just described, the meaning of this word may or may not encompass behaviours such as plunging into the pool while leaving your laptop on the table. This is something that may be debated.

We fully realize that this normative-analytical technique for evaluating the validity of an argument has certain characteristics that have a more subjective nature and that these aspects might vary from person to person. Therefore, to assess whether or not actual facts may support this analytical perspective, we carried out a pilot study with 15 participants whose ages ranged from 24 to 50. The outcomes of the study indicate that individuals placed a higher weight on the more convincing explanations than the less compelling ones.

The number of arguments was the second component we had some control over, and it successfully achieved that objective. We came up with a total of six different letters, and each one had an argument that was successful or unsuccessful, depending on the letter. To put it another way, there were no instances in which there was a combination of evidence that was persuasive and evidence that was not convincing. In the experiment, the strong condition employed claim denial letters with one, two, or three compelling reasons, whereas the weak condition used letters with one, two, or three insufficient justifications. We went with the strong condition rather than the weak one since the strong one produced more reliable results. The following is the explanation that was given in the version that included the most details and three strong reasons:

It is with deep sadness that we must inform you that, following an exhaustive examination of your claim, we will be unable to offer you compensation for the injury that you have sustained. The following three reasons can account for this: Your initial claim was filed a certain amount of time ago, and the amount of time that has gone since then is the first consideration you need to consider as a factor. Under the terms and conditions of your insurance policy, you will no longer be covered for the alleged theft if you do not file a claim within one year of the date you believe you were a victim of the theft and submit it within one year of the

date you believe you were a victim of the theft. The second reason is that you are in breach of the terms and conditions of our insurance policy since you did not report the alleged theft to the local police station when it was required of you to do so. A requirement was imposed on you when you purchased the insurance coverage, and you were expected to comply. Therefore, this stage of the study's implementation was essential to the process. The third potential reason is that because the harm occurred outside of the European Union, it was not covered by your insurance policy.

In light of the information presented, we have concluded that we will not be able to pay you.

The version without any arguments, the version with one argument, the version with two arguments, and the version with three arguments included only the choice. We highlighted the enumeration in two separate ways by using argumentation markers so that the differences between the versions with one, two, or three reasons would be easy to spot. This was done so that the differences between the versions that featured one, two, or three reasons could be shown more clearly (cf. Van Eemeren et al., 1989). In the course of the conversation, these argumentation markers were utilized as follows: This was brought to the reader's attention by the insertion of the term "for X reason(s)" at the beginning of the sentence (cf. Kamalski et al., 2008). Because it is generally accepted that terms such as "the first reason," "the second reason," and "the third reason" are the phrases that most readily suggest a list structure, the second thing that we did was to use them (cf. Sanders & Noordman 2000). When confronting problems with insufficient justifications, we did what came naturally and continued with our old strategy. The following is the version of the argument that is the most compelling and only has three weaknesses:

It is with deep sadness that we must inform you that, following an exhaustive examination of your claim, we will be unable to offer you compensation for the injury that you have sustained. The following three reasons can account for this: The first justification is that, in our opinion, you have exaggerated the amount of financial loss you have sustained; according to our findings, the price of that particular laptop computer was €678.30. The second reason is that, in our opinion, you have requested compensation for more than the real amount of damage that was caused. The second possible justification for this is that you did not present enough amount of proof to back up your argument. The second justification is that the form provides

evidence that while you were gone, you left your laptop computer close to the pool. Because of this, you will lose the right to be reimbursed for the money you have already spent and will no longer be eligible to do so. The third rationale is that, according to our information, you have already submitted three separate claims for the current year. This argument is based on the data that we have.

In light of the information presented, we have concluded that we will not be able to pay you.

Again, the version with one argument included only the initial justification, but the one with two arguments included the initial three reasons, and so on.

We improved the likelihood that participants evaluating the conditions with two or more arguments (both weak and strong) would view the argumentation as independent by using convergent argumentation, also known as many argumentations in normative argumentation theory. This is because convergent argumentation is also known as many argumentations. Both of these phrases are used to refer to how these arguments are presented. It is impossible to tell which kind of thinking these individuals employed to form their opinions on the events (Snoeck Henkemans, 2000). We sought to get at this interpretation by beginning the presentation of each argument with the traditional cue used for this form of deductive reasoning, which is to declare what the (first/second/third) argument is. This allowed us to get closer to our goal of reaching this conclusion. We conducted these tests to conclude that this interpretation is appropriate (Snoeck Henkemans, 2000). Because of the acrimonious environment surrounding the denial of an insurance claim, it is nearly hard to recognize the several arguments related to one another (or complimentary coordinative). This is a result of the fact that each breach of the policy criteria serves as sufficient grounds for the denial of the refund. However, we cannot completely rule out the possibility that some readers may have interpreted the arguments as pointing in the same direction that the author intended (cumulative). Using one's own experiences as a resource for research into this topic will be expanded upon as the discussion continues.

Every letter adhered to the same uncomplicated style, beginning with the conclusion before going on to the facts that supported it. In addition to that, the points were presented in a different order within the dialogue itself.

### **Dependent variables**

In the course of our investigation, we made use of an approach to judging that has in the past demonstrated its dependability in the course of our prior investigations (Jansen & Janssen, 2010). Once more, we concluded that it would be best not to include any direct questions on the quantity and quality of the arguments provided in the questionnaire that we distributed (available via WritingPro.EU). As a result of our discussion, we came to the opinion that it is extremely important for the participants to be uninformed of the researchers' intentions. This was done to prevent the participants from accidentally framing the discussion and to prevent the participants from making comments that would be considered socially acceptable. It was necessary to do this in order to prevent participants from making statements that would be accepted by society as being suitable.

Furthermore, we did not want them to focus either on the fact that there were no valid arguments or on the act of reasoning in and of itself. Instead, we questioned the participants to learn more about their thoughts and feelings on the quality of the letters. In addition, we were interested in their assessment of the expressive aspects of the letters as well as the relationship features of the letters because these are significant factors that determine how compelling the message is. In the end, we arrived at the realization that it would be beneficial to utilize a method that was less complicated in order to evaluate the perceived persuasive power. In order to do this, we decided to make use of a proposal that inquired for details about both the anticipated compliance and the perceived rationale.

We used a questionnaire as the apparatus for the study, and the participants could offer feedback on the letter through their usage of the questionnaire (see Appendix A). The individuals who participated in the study were initially prompted to provide an overall report assessment for the level of the message's quality. As is common practice in the Netherlands, this evaluation was carried out using a scale that ranged from 1 to 10. After then, a comprehensive investigation of the standard of communication was carried out. After that, the participant was asked two open-ended questions, to which they were required to provide an answer to evaluate the participant's initial response to the message. Finally, to carry out a more in-depth analysis, we utilized Likert scales that each included seven distinct points (ranging from 1 disagree to 7 agree).

Some of the ideas were discussed from a positive point of view, but other ideas were discussed in a more pessimistic manner. This is standard practice for research of this nature. This was done to lower the likelihood of semi-automatic responses, which are rather prevalent in studies of this nature. Before carrying out the remainder of the tasks, the participants were asked to express their general impressions of the overall quality of the letter. By Dutch custom, a report grade was given to the entire text, and the possible values for that report grade ranged from 1 to 10. After the participants had completed the Likert scales, they were questioned about three demographic factors: their age, gender, and degree of education they had acquired. The final item on the questionnaire questioned the participants' understanding of the ecological validity of the letter they had written in response to the previous questions concerning whether or not they had ever made an insurance claim and the number of justifications or counterarguments had been included in the letter. Before going on to questions evaluating how many reasons or arguments were included in the message, the questionnaire's last question inquired about the ecological validity of the letter ("this letter may have been sent to a customer"). These questions were designed to establish whether or not the contents of the letter affected the participants' recollections of the event.

The primary objective behind developing the Likert scales was to investigate how our manipulation influenced respondents' perceptions of the claim denial's agreeability (warmth and empathy) and persuadability (compliance and persuasiveness). This was the primary impetus behind the development of the Likert scales that were used in the study. In order to determine whether or not this assumption was correct, we carried out a factor analysis (principal component with Varimax rotation), and the findings revealed that four factors were significant. These four factors, when combined, accounted for 64 per cent of the total variance. This allowed us to demonstrate that our initial theory was correct. Because Cronbach's alpha for the two items that make up the fourth component was only .51, we were forced to take this cluster out of further consideration because of our study because of its significance. This occurred because the fourth component contains two different items. The last three pieces were joined together with the assistance of components with factor loads over .50.

The latter three considerations each pertain to a unique measure for determining civility and a unique metric for determining persuasiveness. However, unfortunately, the data did not support our established difference between persuasiveness and compliance.

When analyzing the impact that a variety of circumstances have on one's ability to persuade, we utilized the following scale:

1. In order for the reader to have a good chance of agreeing with the author's conclusion, the author's argument that they present in the section has to be convincing (Cronbach's alpha =.81).

To investigate the effect that these factors have on people's conceptions of politeness, we made use of two separate measures, namely the following:

2. A warm and welcoming demeanour, as evidenced by feedback such as "The writer is helpful" and "The writer is lovely" (Cronbach's alpha =.72).

3. Compassion, including but not limited to, for example, The author gives the impression that they are engaged in the subject matter and in utilizing me as a discussion topic.

### **Participants**

For this investigation, 175 individuals volunteered their time, with 88 men (representing exactly half of the total) and 87 women participating (50 per cent). As a direct result of this, we were able to get the participation of 25 individuals willing to test each of the several scenarios that we considered. Attendees ranged in age from 23 to 73 years old, with 38 being the median age of those present (SD 14,7). Randomization tests showed that participants were randomly assigned to each condition with an equal distribution of their age and gender. The results of the tests confirmed this. It was discovered that this was, in fact, the situation. Among those who participated in the survey, 83 individuals, equivalent to 47 per cent, had finished some secondary vocational education; 61 people, equivalent to 35 per cent; and 30 people, equivalent to 17 per cent, had obtained a master's degree. A standard analysis of variance (ANOVA) was performed, and the findings revealed that the degree of education had no impact on any of the variables being analyzed (p values greater than 0.05). The vast majority of participants, who accounted for 61.7 per cent of the total population, had previous experience processing insurance claims. Because each person is working or has in the past held employment, they all have at least a fundamental awareness of the challenges associated with obtaining insurance coverage.

They were all natural Dutch speakers who had no trouble reading the language and had a solid cultural foundation in the Dutch language as well as the traditions of the Dutch people.

Nobody who volunteered their time agreed to take any cash in exchange for it, not even another volunteer. The remaining participants gave their consent to take the examinations as they were riding the train to their respective workplaces. The vast majority of participants came from inside their own families and existing social networks.

### **Design and procedure**

For the experiment, the variables of quality and quantity were organized into a between-participant 2x4 factorial configuration (weak versus strong arguments, zero, one, two, or three arguments, and weak versus strong arguments). In other words, it was expected of every participant to provide input on a letter sent in response to one of the scenarios. Each letter was read and analyzed by a total of twenty-five different people.

The following scenario was then presented to the visitors in order to get the party started:

You took a vacation in Sri Lanka when you were younger, in March of 2006, while you were there. Before boarding the aeroplane that would take you out of the nation, you purchased travel insurance from Solar Travel Insurances Ltd.

Your Acer Aspire 9301 AW5Mi laptop computer was taken from a hotel room adjacent to the pool on March 14, 2006, while you were on vacation for two weeks. At the time, you were on a trip.

You took the choice to finally file a report about the theft of your laptop computer on June 15, 2007, after waiting for more than a year and completing the necessary documentation. The incident included the loss of your laptop computer. Therefore, you are required to complete the form, indicate the date and location of the loss, as well as the sum of 1,475.69 Euros, and submit it.

The letter that Solar Travel Insurance Ltd. will be sending to you on June 20 will be addressed to you as the recipient of the letter.

Because of the circumstances, the letters spontaneously shifted into a different shape (see: Independent variables). On the other hand, the introductory and concluding paragraphs remained unchanged no matter what the circumstances were.



### **Opening**

Please accept my greetings, Mr. or Mrs.

The complaint of the theft of the Acer Aspire 9301 AWSMi laptop computer was received on June 15 and was filed using the form that you provided. You mentioned in your letter that you misplaced your laptop on March 14, 2006, in the vicinity of the swimming pool when you were on holiday in Sri Lanka. This took place when you were present there. In addition, you cited the cost, which was 1475.69 Euros.

After receiving your letter and considering the guidelines and conditions of your insurance policy, we investigated the item in issue. Because of this, we could establish whether or not your situation warrants monetary compensation.

### **Body**

#### **Closing**

We are sorry to be the ones to break this disappointing news to you. You have the option of submitting a formal written protest if you disagree with the judgement that was reached. If you do not agree with this verdict, you have this option available to you. Before July 30, 2007, you can contact the customer care section of Solar Travel Insurance by sending a letter to Postbox 16520, 2500 KB The Hague. If you require further information, please refer to the booklet with the heading "You do not agree with a decision?" that is included in the envelope containing this letter or the website at [www.solar.nl](http://www.solar.nl). Thank you for your time and consideration. Please refer to the booklet, which may be found at any location if you do not agree with a decision that has been made.

We put much effort into compiling this information for you, and we sincerely hope it will be sufficient. Sincerely, and from the bottom of my heart, respect (...)

Every letter was realistically laid out and adhered to the accepted criteria for the writing considered professional business writing. There were maybe around 170 words in total (see

Appendix B). They were instructed to state that they had just claimed the item that had been lost after they received the instructions that were supplied to them. The participants were given instructions under the guise that they had recently discovered the whereabouts of the missing item. The next thing that they did was read the rationale for why the claim was denied. At this point, however, they were unaware of the particulars of the questionnaire. Reading the letter took me around five minutes of my time. After the participants had finished all the reading necessary for the assignment, they continued on to the questionnaire. They are at liberty to review the letter as often as necessary before reaching conclusions. On average, the participants completed the workout 13 minutes after it began. This represents the total amount of time that was recorded in the log.

### 3.2 Results

What kind of an influence do the quantity and quality of the arguments have on how the evaluation of the bad newsletter is carried out? Table 1 displays the mean scores and the standard deviations for the reporting mark and the other dependent variables. These scores are broken down according to whether or not there were arguments over the marks.

**Table 1.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables

(1 = negative evaluation, 7/10 = positive evaluation), according to argument presence

	- Arguments	+ Arguments
Overall (report mark)	5.6 (1.4)	7.0 (1.1)
Politeness variables		
Friendliness	3.8 (1.3)	4.6 (1.1)
Empathy	2.8 (1.1)	3.6 (1.2)
Persuasion variable		
Persuasiveness/compliance	2.3 (1.3)	4.8 (1.1)

The findings demonstrate beyond a shadow of a doubt that thinking had a significant role in the occurrence that was the subject of the inquiry. The overall average marks for the claim denial letters that included reasons obtained higher values, whereas the overall average marks

for the letters that did not include arguments received lower values. During the process of doing a multivariate analysis of variance, it was discovered that the presence of argumentation had significant effects across a wide range of distinct parameters. It was demonstrated, with the use of Hotelling's trace statistics, that argumentation had a substantial impact on the variables that were under investigation ( $T = .46$ ,  $F(4, 169) = 19.3$ ,  $p = .001$ ,  $\eta^2 = .31$ ). Separate analyses of variance indicated significant associations between three personality traits: friendliness ( $F(1, 172) = 30.9$ ,  $p = .001$ ,  $\eta^2 = .15$ ), empathy ( $F = 11.4$ ,  $p = .001$ ,  $\eta^2 = .06$ ), and persuasiveness ( $F(1, 173) = 64.3$ ,  $p = .001$ ,  $\eta^2 = .06$ ).

As a direct consequence of this, the capacity to persuade as well as the capacity to present unwelcome information in conjunction with an argument were regarded more positively. Given that the quality of the arguments does, in fact, matter, it will be extremely interesting to find out whether or not the quality of the reasoning has any affect at all, since this will be a really exciting discovery. This is due to the fact that we are now aware that the caliber of the arguments really does make a difference. In order to determine whether or not such an influence is there, we split the second column and conducted another MANOVA analysis (see Table 2 for the results).

**Table 2.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables (1 = negative evaluation, 7/10 = positive evaluation), according to argument quality

	<b>- Arguments</b>	<b>Weak</b>	<b>Strong</b>
Overall (report mark)	5.6 (1.4)	6.8 (1.0)	7.2 (1.1)
Politeness variables			
Friendliness	3.8 (1.3)	4.4 (1.3)	4.8 (0.9)
Empathy	2.8 (1.1)	3.4 (1.2)	3.9 (1.1)
Persuasion variable			
Persuasiveness/compliance	2.3 (1.3)	4.4 (1.5)	5.1 (1.2)

In this study, the overall evaluation, courtesies, and persuasiveness served as the independent factors, while the persuasiveness of the argument, overall assessment, and other aspects served as the dependent factors. In order to provide our readers a starting point for comparison, we only offer the mean scores from the bald-on-record letter. Because doing so would lead this analysis to partially repeat the results shown in Table 1, we concluded that it would be best not to include the claim rejections that were issued without an accompanying explanation in this investigation.

According to the data in Table 2, the quality of the arguments that were put out did appear to matter. When the participants were exposed to the weak argument in the other condition, their scores on all dependent factors were lower. However, when they heard the powerful argument, their scores increased, which was the case for all the dependent variables. Through the utilization of a multivariate analysis of variance, it was determined that there is an effect that may be attributed to the utilization of argument force. We were able to conclude, with the assistance of Hotelling's trace statistics, that the argumentation strength had a significant influence on the variables that were the focus of the inquiry ( $T = (4, 144) = 20.1, p.01, 2 = .09$ ). This outcome was accomplished by concluding that the two had a significant relationship with one another. Separate ANOVAs demonstrated that the strength of the argument affected how the bad news letter was regarded in general ( $F (1, 147) = 4.1, p = .04, 2 = .03$ ), for perceived friendliness, empathy, and persuasiveness ( $F = 8.3, p = .005, 2 = .05$ ), as well as for perceived friendliness and empathy ( $F = 5.9, p = .02, 2 = .04$ ).

When we included the letters without argument in our multivariate analysis and performed an additional Post Hoc Tukey HSD, we found a significant difference between the mean scores on the letters with strong arguments and the mean scores on the bald versions. This was the case even though we included the letters without argument in our multivariate analysis. Furthermore, this was the case with every one of the dependent variables that were under investigation by us. This was shown to be the case because the p-value for this comparison was lower than—0001, which is the threshold for statistical significance. The only areas in which there was a statistically significant difference in mean scores between the version without reasoning and the one with weak argumentation were the categories of persuasion ( $p.001$ ) and the overall rating. These were the only two areas in which there was a version without reasoning ( $p .001$ ).

Since we have a better knowledge of the consequences of the arguments' quality, we can now concentrate on the quantity. The clusters of dependent variables for the number of arguments are included in Table 3, along with the average scores and standard deviations for the whole evaluation.

**Table 3.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables (1 = negative evaluation, 7/10 = positive evaluation), according to number of arguments

	<b>- Arguments</b>	<b>One</b>	<b>Two</b>	<b>Three</b>
Overall	5.6 (1.4)	7.1 (1.0)	6.9 (1.1)	6.9 (1.3)
Politeness variables				
Friendliness	3.8 (1.3)	4.6 (0.9)	4.5 (1.3)	4.7 (1.0)
Empathy	2.8 (1.1)	3.4 (1.1)	3.6 (1.1)	3.9 (1.2)
Persuasion variable				
Persuasiveness/compliance	2.3 (1.3)	3.9 (1.5)	4.9 (1.1)	5.5 (1.1)

The protocols for the bald-on-record letter were included in the letter for the sole purpose of acting as a reference for the reader. This has already happened once, and it will happen again. After analyzing the data, we ignored any communications that contained any dispute and did so for the same reasons as stated earlier. Once again, the findings of the multivariate analyses of variance revealed that there is a discernible impact. Using Hotelling's trace statistics, we were able to conclude that the quantity of reasoning had a substantial impact on the variables in which we were interested ( $T = .367$ ,  $F(8, 284) = 6.5$ ,  $p = .001$ ,  $\eta^2 = .16$ ). As a direct outcome of this investigation, the following findings have been uncovered: According to the findings of many separate analyses of variance (ANOVAs), persuasiveness was the only factor that had a significant impact ( $F = 21.0$ ,  $p = .001$ ,  $\eta^2 = .21$ ). This factor was the only one that had a significant influence. There were no additional discoveries that had substantial repercussions on the number of the population. According to the findings, a post hoc Tukey analysis demonstrated that letters including two or three reasons were perceived to be more compelling than those letters containing only one explanation. This was the case even though it was generally believed that letters with only a single argument were more convincing. There did not appear to be any apparent decline in the overall quality of the arguments between rounds two and three. That is to say; the letter did not become more persuasive by incorporating more than two points in its body; rather, it remained the same.

In addition, we found that the amount and quality of the arguments had an interaction impact on a politeness measure referred to as friendliness ( $F(2, 144) = 4.6$ ,  $p = .01$ ,  $\eta^2 = .06$ ). The quality in question is commonly referred to as a courtesy. This had a significant impact. When only one weak argument was added, the assessment was the same as when adding two ( $M = 4.5$ ;  $SD = 0.8$ ), but when both were included, the evaluation was  $M = 3.8$ ;  $SD = 1.5$ . The evaluation did not change ( $M = 3.8$ ;  $SD = 1.5$ ) whether or not two arguments were added or whether or not

only one argument was added. (The mean values were 4.7, and the standard deviation was 1.3.) This consequence did not exist in the scenario with compelling grounds for what happened. There was no connection between the frequency with which people argued with one another and the degree to which others considered them impolite.

### **3.3 Conclusion**

This experiment supported the researchers' idea by demonstrating one of the findings from the research that Jansen and Janssen (2010) had previously undertaken. The findings demonstrated that offering arguments or reasons to justify bad news had a considerable beneficial influence on the assessments provided by the readers. This indicates that providing arguments or reasoning for unfavorable news is extremely important. People believed that letters containing arguments, regardless of how strong or weak the rationale was, were more courteous and convincing. In addition, the inclusion of logic contributed to a rise in overall reader happiness with the content, which increased overall satisfaction.

The findings also imply that it is essential to investigate the persuasive arguments offered in bad news letters. We discovered that strong arguments were more effective in convincing the reader to agree with the conclusion when compared to weak arguments in the claim denial. This was the finding we came to after comparing the impacts of strong arguments to those of weak ones. After analyzing the results of strong and weak arguments, we came to this conclusion as a result of our findings. In addition, the availability of compelling arguments helped improve how the general public viewed the organization. When such organizations respond to negative news with strong reasons rather than weak ones, the audiences that these organizations are trying to appeal to regard those organizations as friendlier and more sympathetic; on the other hand, the significance of these effects, according to our investigation, was not even close to being on par with the significance of thinking in general. It was discovered that the impact sizes that were linked with the presence of an argument were significantly larger than those that were connected with the efficacy of an argument.

When we examined the impact of the number of arguments, we discovered that adding one argument to a bald-on-the-record claim denial benefited the claim's rejection. This was one of the findings that we made. This was one of the findings that emerged from our analysis on the influence of the total amount of time spent debating. The effect of the second argument was not

as stunning as the first, but it was still helpful. In the vast majority of cases, the total number of arguments had very little of an impact on the overall rating of the letter or the readers' evaluations of the politeness of the letter.

On the other hand, it impacted how compelling people found the message to be. When I added a second justification to the letter, it immediately became much more convincing, but including a third justification did not improve the message's content. In conclusion, the findings demonstrated that the sense of civility between the participants was negatively impacted when there was also a second weak argument in the discussion. The findings of the first experiment showed that participants processed the information more centrally in terms of the elaboration probability mode when it was shown to them on the periphery rather than in the center of the screen. The results of the experiment proved this. According to Petty and Cacioppo, central processing is present when there is a systematic difference in the evaluation of strong and weak arguments, but not when there is a systematic difference in the evaluation of one, two, or three arguments. We discovered a pattern that may be utilized to differentiate between the validity of strong and weak arguments regarding their level of persuasiveness (1984). Despite this, we believed that it was extremely important to give an opposing position for various reasons, detailed below. Because the experiment only involved one message, we could not ascertain whether or not the effects that were seen were specific to the particular letter because the experiment only involved one message.

Consequently, we decided to conduct a second experiment with the same fundamental layout as the first, but this time with a different letter containing unfavorable information. In addition, we need further information that would have provided us with a clearer comprehension of the specific qualities that are unique to the reading processes of the participants, as well as a more profound comprehension of the degree to which elaboration was utilized. Therefore, in order for us to accomplish these goals, we required further data.

#### **4. The second experiment involves replication and processing.**

The second experiment was devised in such a way that it would concurrently achieve two distinct objectives. First, we wanted to see whether the first experiment's results could be replicated using a different letter so that we could determine how relevant the findings of the first experiment are to the actual world and whether or not they can be used to make predictions.

Second, we were interested in better understanding how individuals exposed to communications that include unfavorable news process the information they take in. In order to have a clearer picture of their approach to weighing the merits of various arguments, we inquired more about their process.

#### **4.1 Approach**

Both the dependent variables and the methods used in the second experiment were somewhat comparable to those used in the first experiment. The material underwent various changes to accommodate the adjustments, and it is the independent variable in this instance. When we sent out our letters informing them of the terrible news, the structure we utilized for our rationale and presentation was the same. The goal was altered from recovering a stolen laptop computer to recovering a digital camera made by Olympus that had a lower value on the market (€ 149), and the holiday destination was moved from Sri Lanka to Egypt. The investigation into the theft of a laptop computer was also refocused to concentrate on a digital camera as the primary object of interest. This information has been modified to correspond with the new sender, which is now known as Global Travel Insurances Ltd. It has also been included on the letterhead. Both sets of letters used in this experiment and those used in the one that came before it was the same length, and the arrangement of the letters used in both sets was relatively comparable. Once more, we opted for a setup in which the participants would be surrounded by 2x4s placed in the center (weak and strong arguments, and the presence of zero, one, two, or three arguments).

In the first experiment, all participants were given the instructions to read and asked to evaluate the letter. In contrast to the first experiment, the second one had them do those two tasks in addition to a third one handed to them. This was the second time the basic plan needed to be modified. Through the use of a method known as thought listing, we could acquire a deeper understanding of the central or peripheral path that our participants traveled as they were processing the information included in the letter (Petty & Cacioppo, 1986). In 1967, Brock and Greenwald developed a technique called "thought listing." (1968).

Along with Cacioppo, Von Hippel, and Ernst, Cacioppo, and Petty (1981) were the first to successfully use thought listing. In 1983, they made a few minor adjustments to the procedure and published their findings (1996). The idea listing approach is a strategy for calculating and



categorizing the one-of-a-kind assessment each participant provides on a piece of writing. In order to do this, open-ended questions will be asked.

Researchers Cacioppo, Von Hippel, and Ernst refer to these evaluations as "mental contents" in their work (1996). "Mental contents" was described by Cacioppo, Von Hippel, and Ernst (1996) as all quantitative verbalizations of an individual's thoughts, feelings, ideas, expectations, judgments, and representations. The findings of the research conducted by Petty and Cacioppo indicate that participants will elaborate their expressions of themselves when they are placed in situations requiring a high level of participation. This may be deduced from the observation that people's cognitive reactions tend to be more intense when placed in particular circumstances. Deceptively simple, the core assumption of the thought listing approach states that the more meaningful thoughts participants can recollect and verbalize, the more in-depth their reading-related processing must have been. The thought listing process revolves mostly around this central concept. The participants were given the instructions for the thinking list after they had finished reading the letter and the instruction, but before filling out the questionnaire. This was carried out before the participants were given the directions for the concept listing. This was done so that the participants would not become overly enthusiastic about what would happen after this point. They were advised to put both the questionnaire and the letter to the side without even looking at either document first. After that, we followed up with an email that contained a form, along with five empty boxes and the following instructions:

After reading the letter, it would be helpful to jot down some notes on what you were thinking and feeling and then enter that information into the relevant spaces on the form. To put it another way, the contents of the first box should be your first thought, the contents of the second box should be your second thinking, and so on. Of course, no one who responded to this inquiry is either completely accurate or completely wrong.

You are under no need to fill out all of the boxes, and you do not need to be concerned about using good spelling or grammar in the responses you provide. You have access to anywhere between three and five minutes at this time.

The questionnaires were examined jointly by a research assistant and one of the authors, although neither knew the details of the experiment or the circumstances in which the participants were put. The comments that the participants wrote down on the forms were coded

according to their content (whether or not they addressed the content of the letter, such as "the arguments"), valence (whether or not they were positive, such as "good letter," negative, such as "very accusatory," or neutral, such as "I would reread the terms and conditions"), and content.

Agreement (are the comments in Agreement with the judgment in the letter; for example, "my claim was refused lawfully" or not; for example, "why don't they pay € 155 then? "), irrelevant," or other features; for example, "very straightforward") Agreement (are the comments in Agreement with the judgment in the letter; for example, "my claim was refused lawfully" or not; for example, "why don't they pay € 155 then?

Moreover, I thus consent (are the remarks in Agreement with the decision in the letter; for example, "my claim was denied legitimately," or other aspects; for example, "very direct").

Are unimportant," or some other quality (for instance, "extremely straightforward")). and Agreement (these are the sentences contained inside the letter that represent the choice that was made; for instance, "my The programmers collaborated until they concluded the soundtrack that every single one of them accepted.

The questionnaire utilized in this experiment was derived from the questionnaire used in the study that came before this one. Once more, the ratings received for dependability were rather good. The Cronbach alpha coefficient for agreeableness was .80, the alpha coefficient for empathy was .79, and the alpha coefficient for persuasiveness was .87.

## **Participants**

The study included a total of 131 male participants, equivalent to 58.2 percent of the total, and 94 female participants, equivalent to 41.8 percent of the total. 1 The ages of the participants ranged anywhere from twenty to seventy-five years old, with 35.4 being the mean age (SD 13.7). The randomization was checked, and the results showed no significant difference in the gender or age distribution of the participants across any of the conditions. In forty percent of the studies, participants possessed master's degrees, in thirty-three percent of the studies, bachelor's degrees, and twenty-six percent of the studies, secondary vocational education. There was a refusal on the part of three individuals to reveal any information about their previous school experience. Once again, there was a reasonable mix of persons from various educational backgrounds throughout the various scenarios. Sixty-four percent of the people who participated

in the study have had direct experience working in the field of insurance claims. This aspect of the event represented the vast majority of the attendees. Everyone who took part in the discussion was either now employed or had just been, and they had all had experience working in the field of travel insurance at one point in their careers. A total of 200 people took part in the experiment; one hundred were assigned to the strong condition, while the other hundred were assigned to the weak condition. They could all speak, read, and write Dutch as their first language and shared a cultural heritage heavily influenced by their Dutch forebears. Participants in the research were not compensated in any way, nor did they get any other advantages for participating. The vast majority of the participants consented to participate in the research when they were commuting to work in one of two major cities. One of our research assistants could locate the other participants by contacting their relatives and friends.

#### **4.2 Findings**

When we analyzed the results of the two studies, we discovered that while there were some obvious similarities and some modest differences between the two sets of data, there were also some subtle differences between the outcomes of the two trials. The format utilized in Experiment 1 will serve as the foundation for our presentation of the data, which will be exactly the same as that used in the first experiment. As can be seen in Table 4, disagreements affect a wide range of different aspects of discourse.

The findings are in line with the general trend that was discovered in the investigation that came before. Once again, the mean scores of the letters that did not include any arguments were given fewer points than the mean scores of the denials of the assertions that included reasoning. In this circumstance, each of the letters that were scored appeared. It was discovered through the analysis of variance that the presence of arguments had a significant influence on several distinct features, and this discovery was made. It was determined through the utilization of Hotelling's trace statistics that argumentation had a considerable impact on the variables that were the focus of the research ( $T = .303$ ,  $F(4, 152) = 11.5$ ,  $p = .001$ ,  $\eta^2 = .23$ ). However, the results of independent analyses of variance revealed that the inclusion of arguments had only a significant impact on the overall evaluation ( $F = 12.3$ ,  $p = .001$ ,  $\eta^2 = .02$ ) and the persuasiveness ( $F(1, 155) = 37.8$ ,  $p = .001$ ,  $\eta^2 = .20$ ). However, the presence of argumentation had a marginally

significant influence on empathy ( $F(1, 155) = 3.4, p = .06, \eta^2 = .02$ ), although it had little to no statistically significant impact on friendliness ( $F = 2.5, p = .12, \eta^2 = .02$ ).

**Table 4.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables (1 = negative evaluation, 7 = positive evaluation), according to argument presence

	<b>- Arguments</b>	<b>+ Arguments</b>
Overall (report mark)	6.0 (1.2)	7.1 (1.3)
Friendliness	4.0 (1.3)	4.7 (1.3)
Empathy	2.8 (1.0)	3.3 (1.2)
Persuasion variable		
Persuasiveness/compliance	2.4 (0.9)	4.7 (1.8)

In light of this, Brown and Levinson do not believe that claim rejections supported by reasoning are more "pleasant;" nonetheless, these types of rejections are rated higher in terms of overall assessment and persuasion. This is done in order to allow claim denials that are supported by evidence to more successfully defend their position. In respect to the impacts of the argumentation level, is there anything further that needs to be mentioned that hasn't already been expressed? We separated the second column and performed another MANOVA in order to gain a deeper understanding of the ways in which the quality of the product effects the output it ultimately produces (see Table 5 for the results).

**Table 5.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables (1 = negative evaluation, 7/10 = positive evaluation), according to argument strength

	<b>- Arguments</b>	<b>Weak</b>	<b>Strong</b>
Overall (report mark)	6.0 (1.2)	6.7 (1.3)	7.5 (1.1)
Friendliness	4.0 (1.3)	4.3 (1.2)	5.1 (1.3)
Empathy	2.8 (1.0)	2.9 (1.1)	3.5 (1.4)
Persuasion variable			
Persuasiveness/compliance	2.4 (0.9)	2.4 (0.9)	5.7 (1.2)

In this study, the overall evaluation, courtesies, and persuasiveness served as the independent factors, while the persuasiveness of the argument, overall assessment, and other aspects served

as the dependent factors. Therefore, we only share the average scores on the bald-on-record letter for comparison and informative purposes. Because doing so would (in part) mimic the consequences indicated in Table 1, we decided against including claim rejections that were given without supporting explanation in this study. This decision was taken because making a choice would (in part) have the same consequences as those listed in Table 1, leading to this choice.

According to the data presented in Table 5, the quality of argument presented by each participant did vary, which is consistent with the findings. When the participants were exposed to the weak argument in the other condition, their scores on all dependent factors were lower. However, when they heard the powerful argument, their scores increased, which was the case for all the dependent variables. Through the utilization of a multivariate analysis of variance, it was determined that there is an effect that may be attributed to the utilization of argument force. We concluded that the variables that were under consideration were substantially impacted by argumentation strength after applying Hotelling's trace statistics ( $T = .713$ ,  $F(6, 338) = 20.1$ ,  $p = .001$ ,  $\eta^2 = .26$ ). This was the finding that led us to the conclusion. Comparing the mean values of the two sets of statistics led to this discovery. Separate analyses of variance revealed that the persuasiveness of the argument ( $F = 17.5$ ,  $p = .001$ ,  $\eta^2 = .12$ ), perceived friendliness ( $F = 37.4$ ,  $p = .001$ ,  $\eta^2 = .23$ ), and empathy ( $F(1, 127) = 5.0$ ,  $p = .03$ ,  $\eta^2 = .04$ ) of the bad news letter are all influenced by the argument's strength. These findings are supported by the fact that the argument's strength was significantly associated with significant levels of all three variables (1, 127). When we used a MANOVA and an additional Post Hoc Tukey HSD to compare the mean scores of the weak and strong conditions to the bald-on-record condition, we discovered that the letters with strong arguments differed significantly from the letters without arguments ( $p = .001$ ), whereas the letters with weak arguments had no effect on the dependent variables. The letters with weak arguments did not affect the dependent variables. This was discovered when we compared the mean scores of the bald-on-record condition with those of the weak and strong conditions. When we compared the mean scores of the weak and strong conditions to those of the bald-on-record condition, we found that this was the conclusion we arrived at.

Since we have a better knowledge of the consequences of the arguments' quality, we can now concentrate on the quantity. The clusters of dependent variables for the number of arguments are included in Table 6, together with the average scores and standard deviations for the whole evaluation. When we looked into how many arguments influenced the outcome, we observed

that it was similar to what we had seen in our first experiment. This was something we found out when we investigated how many arguments impacted the outcome (see Table 6).

**Table 6.** Means scores and standard deviations (*SDs*) of the clusters of dependent variables (1 = negative evaluation, 7/10 = positive evaluation), according to argument quantity

	<b>- Arguments</b>	<b>One</b>	<b>Two</b>	<b>Three</b>
Overall (report mark)	6.0 (1.2)	6.9 (1.2)	7.3 (1.0)	6.9 (1.6)
Friendliness	4.0 (1.3)	4.8 (1.2)	4.7 (1.3)	4.5 (1.4)
Empathy	2.8 (1.0)	3.3 (1.0)	3.4 (1.3)	3.2 (1.3)
Persuasion variables				
Persuasiveness/compliance	2.4 (0.9)	3.9 (1.9)	3.9 (1.9)	5.0 (1.6)

The protocols for the bald-on-record letter were included in the letter for the sole purpose of acting as a reference for the reader. This has already happened once, and it will happen again. The findings of another multivariate analysis of variance demonstrated that the outcome was subject to a substantial amount of influence. We could discover a link between the quantity of reasoning and the components that depended on it by utilizing Hotelling's trace statistics ( $T = .442$ ,  $F = 20.1$ ,  $p = .001$ ,  $\eta^2 = .128$ ). This relationship was statistically significant—the number of arguments presented affected the variables reliant on them. A secondary analysis of variance showed that there was only one significant impact and that influence had to do with persuadability ( $F(2, 127) = 7.9$ ,  $p = .001$ ,  $\eta^2 = .11$ ). This finding was supported by the findings of the first analysis of variance. This effect impacted the ability to persuade. There were no additional discoveries that had substantial repercussions on the number of the population. A post hoc Tukey analysis showed that letters with two or three reasons were seen as more convincing than those with only one justification. This was the case despite the common belief that letters containing only a single point of argument were more convincing. There did not appear to be any apparent decline in the overall quality of the arguments between rounds two and three. The letter was not more persuasive because it had a greater number of arguments; rather, it was more persuasive because it included two justifications instead of just one. In other words, the inclusion of more reasons did not make the letter more convincing. Experiment 1 revealed the presence of the same pattern, which had been identified for the first time in Experiment 0. Nevertheless,

during this second experiment, we could not find any confirmation that there is a connection between the number of arguments and the quality of the arguments.

#### **4.3 Conclusion**

Even though a new letter was used in the second experiment, the results showed that some of the effects observed in the first experiment were still present. This was demonstrated by the fact that the similarities between the first and second experiments acted as proof. Again, the data imply that offering reasons or reasoning for truly unpleasant news has a favorable influence on readers' opinions of the news. This is because when information is supported by evidence, readers are more inclined to trust the information being presented. On the other hand, the influence was significantly more limited to general evaluation and persuasion during the second trial. The impacts that Experiment 1 had on politeness traits and those that Jansen and Janssen had discovered in a previous study could not be replicated by our team (2010).

The findings of this experiment demonstrated that the findings of the first experiment regarding the quality of the arguments offered in topics related to bad news letters were comparable to the findings of this trial. In this claim denial, we discovered that strong arguments had a stronger impact on persuasion, overall evaluation, and perceived politeness than weak arguments. This was the case regardless of the topic being discussed. When we compared the findings of the most persuasive arguments to those of the least compelling arguments, we found that this was indeed the case. Customers tend to think that companies are kinder and more caring if they include comprehensive arguments in letters that they send to give terrible news rather than weak justifications.

Once more, the range of possibilities for how many things may have an influence was narrowed down. In most cases, the total number of explanations provided did not affect the final grade or the overall perception of how courteous the letter was. On the other hand, the number of arguments that were presented in the letter did have some influence on how convincing it was. For example, when I added a second justification to the letter, it immediately became much more convincing, but including a third justification did not improve the message's content.

#### **4.4 Thought listing results**

This second experiment was meant to be quite similar to the previous one. Its primary purpose was to gather further data about how readers of negative news letters interpreted the reasoning offered to them. Because of the results of the method that included the use of thought-listing, we were able to get a more in-depth comprehension of the processing involved in creating the many versions of the text. Because we were able to contrast and compare our outcomes, this was made possible.

**Table 7.** Thought listing results according to presence of argumentation

	<b>- Arguments</b>	<b>+ Arguments</b>
<b><i>Content/non content</i></b>		
Remarks about content	0 (0%)	125 (63%)
No remarks about content	25 (100%)	75 (27%)
<b><i>Agreement with decision</i></b>		
Agree	2 (8%)	81 (40%)
Disagree	2 (8%)	73 (37%)
Neutral	21 (84%)	46 (23%)
<b><i>Valence</i></b>		
Positive	13 (14%)	147 (21%)
Negative	37 (40%)	158 (23%)
Neutral	43 (46%)	392 (56%)
<b><i>Total</i></b>	<b>93</b>	<b>697</b>

Table 7 also compares the presence of argumentation as a factor in the content evaluations and the lack of argumentation as a factor. It is clear from this that explaining leads to a statistically significant rise in the number of comments made after reading the letter ( $\text{Chi}^2 = 13.28; \text{df} = 2, p = 0.01$ ); also, the increase in comments is statistically significant ( $\text{Chi}^2 = 13.28; p = 0.01$ ) In addition, it would appear from the percentages in Table 7 that the inclusion of the explanation encouraged the audience to adopt a stance, either in support of or in opposition to the decision made by the insurance company.

Is there any evidence to suggest that the incorporation of logic has increased the attention paid by the readers? The findings that are presented in Table 7 indicate that the participants who evaluated letters with argumentation were significantly more focused on the content of



the text than were the readers of the Bald On-record letter (without argumentation), which resulted in more distinct opinions ( $\text{Chi}^2 = 32.67$ ;  $\text{df} = 1$ ,  $p 0.01$ ). The findings also indicate that the participants who evaluated letters without argumentation were significantly less focused on the content of the text than were the readers of the Bald On-record letter (without argumentation. The findings also show that participants who evaluated letters without providing any reasoning were significantly less engaged with the material presented in the text than readers of the Bald On-record letter who also did not provide any argumentation for their interpretation of the letter's contents. These findings, given below, compare those individuals who did not read the Bald On-record letter against those who did. The readers of letters that did not provide any reasoning tended to have a more neutral attitude towards the conclusion; however, the readers of letters that did provide argumentation voiced more clear reasons for opposing or supporting the choice that was presented in the text ( $\text{Chi}^2 = 39.55$ ;  $\text{df} = 2$ ,  $p 0.01$ ); readers of letters that did provide argumentation tended to voice more specific reasons for opposing or supporting the choice that was presented in the text.

When we break the + argumentation category down into its two subcategories—weak argumentation and strong argumentation—we are presented with a perspective that is even clearer regarding the impact of argumentation on the way in which the text is processed. Compared to the frequencies that might be projected if  $H_0$  were true, the thought-listing forms resulted in 15 percent more positive remarks and 34 percent fewer negative remarks created due to compelling arguments. Additionally, the thought-listing forms resulted in 34 percent fewer negative remarks. The frequencies that are displayed in Table 8 reveal that this is the case when compared to the frequencies that might be expected if it were the case that  $H_0$  was correct. In the illustration with a weak argument, the circumstances developed very differently; to be more precise, there were 16 percent less favorable comments and 37 percent more negative remarks.  $\text{Chi}^2 = 26.42$ ;  $\text{df} = 2$ ,  $p 0.001$  indicates that every difference is statistically significant.

**Table 8.** Thought listing results according to strength of argumentation

	<b>Strong</b>	<b>Weak</b>
<i>Content/non content</i>		

Remarks about content	69 (69%)	56 (56%)
No remarks about content	31 (31%)	44 (44%)
<b><i>Agreement with decision</i></b>		
Agree	68 (68%)	13 (13%)
Disagree	11 (11%)	62 (62%)
Neutral	21 (21%)	25 (25%)
<b><i>Valence</i></b>		
Positive	88 (24%)	59 (18%)
Negative	54 (15%)	104 (31%)
Neutral	220 (61%)	172 (51%)
<b><i>Total</i></b>	<b>362</b>	<b>335</b>

Another one of the questions centered on the connection between the level of consideration that the audience provided to the argument and the level of persuasion that the argument possessed. The comments were spread in a manner equivalent across each scenario, as in table 8, which makes this point crystal clear. Because of this, we could not determine whether there were any significant differences in the qualities of the letters that the thought-listing remarks alluded to, regardless of whether or not such components were connected to the content of the letters. This was the case regardless of whether or not such elements were connected to the letters' contents. The third line of investigation focused on the connection between the level of acceptance and argument received and the degree to which it was able to persuade its audience (see again Table 8). (please refer back to Table 8)

According to the findings reported in Table 8, the quality of the argument presented substantially impacts the degree to which an individual agrees with a given assertion. Readers of the version that included convincing arguments provided 68 percentage points more comments indicating that they agreed with the result, and they provided 69 percentage points fewer comments indicating that they disagreed with the selection—readers of the version that did not include convincing arguments provided any comments at all. In the instance of a gap in the argument, the circumstance seemed to take on a quite different form. Furthermore, the results are quite

significant ( $\chi^2 = 73.32$ ;  $df = 2$ ,  $p = 0.01$ )

The results of the thought-listing exercise demonstrated, therefore, that the presence of reasoning, as well as the quality of argumentation, had an influence on the quantity as well as the type of statements that the participants made. This was demonstrated by the fact that the presence of reasoning and the quality of argumentation were shown to have an effect. The fact that the strength of the arguments had an impact on the statements made by the participants was evidence that this is the correct interpretation of the data. These findings suggest that the reasoning presented in the texts is analyzed in depth and that discrepancies across the conditions should be attributed to changes in the level of elaboration presented in the texts. Contradictions between the conditions should be attributed to differences in the level of elaboration presented in the texts. Disagreements between the contradictions between the conditions ought to be attributed to distinctions in the amount of elaboration offered in the texts. contradictions between the conditions, disagreements between the

## **5. General conclusions and discussion**

According to the findings, it is typically a good idea to offer justifications for a decision in a way that suggests undesirable outcomes for the person who is receiving the information. Doing so communicates that the decision will not be in the recipient's best interest. This is because the findings show that it is more probable that the receiver will refrain from selecting the choice that is up for debate. When individuals are confronted with negative information supplied with no context, they place less weight on that information than when presented with negative information that is offered with an argument alongside it. The findings of the two experiments provide support for hypothesis 1a, which states that "bad newsletters that include argumentation are more effective than bad newsletters that do not include argumentation," and provide a satisfactory replication of the finding of Jansen and Janssen (2010), which states that including argumentation in a letter is an effective strategy. These findings support hypothesis 1a, which states that "bad newsletters that include argumentation are more effective than bad newsletters that do not include argumentation." The outcomes of both of these studies provide credence to hypothesis 1a, which asserts that "bad newsletters that include argumentation are more successful than bad newsletters that do not include argumentation."

In the first experiment, we explored the influence of employing logic on the overall rating, how

courteous the letter was considered, and how convincing it was. Specifically, we looked at how the overall rating was affected by using reasoning. The findings showed that arguments led to increased compliance and improved the connection between the client and the firm. This was proved because the argument led to a better outcome. However, the second investigation could not demonstrate the same impact on politeness as in the first study.

On the other hand, one's skill to present an argument in such a way that it is compelling might influence how polite they are seen to be. This is something that we uncovered during our research. There may be a distinction in the degree to which one is being imposed upon, which may be one of the reasons why there is no more general politeness effect. Another explanation may be that there is a distinction in the degree to which one is imposed. In the second experiment, the amount of the claim that was not accepted was 145 Euros, but in the first trial, the amount of the claim that was not accepted was 1475 Euros. It is reasonable to anticipate that methods that emphasize politeness, such as "give explanations," would have a bigger effect on the end outcome when there is a higher need for them. Additional research and experiments will be required in order to prove that the claims made in this argument are correct.

The results of the thought-listing assignment used in the second trial demonstrated that including an argument led to more elaboration and, as a result of this, deeper processing. The conclusion of the experiment and the most significant discovery was reached here.

When we moved our focus to the quality of the reasoning, the data showed that readers place a greater value on letters with excellent arguments than letters with weak reasons. This is because readers believe that good arguments are more convincing than letters that have bad reasons. When we shifted our focus to the soundness of the argument, we came to this understanding as a result of that shift. In every one of our experiments, we found statistically significant impacts on the participants' overall judgment, persuasiveness, and politeness, and these effects varied from experiment to experiment. In addition, we found that these impacts varied from experiment to experiment. In each of the studies, a more favorable evaluation was given to compelling arguments compared to those less convincing. The overall assessment and the letter is perceived politeness and capacity to persuade the reader were used as measuring sticks for the impacts. Also utilized was the reader's capacity to persuade others. These inferences are bolstered further by the findings derived from the thought-listing exercise's data above. There was a perceptible

increase in the number of positive comments and indicators of agreement and obedience as a direct result of the persuasive arguments. The results of this study provide evidence that lends credence to the veracity of hypothesis 2a, which argues that "texts that have good arguments have a higher influence than those that have bad arguments."

Even though this influence was restricted to the reader's ability to be persuaded, the sheer amount of the arguments had a favorable effect that was apparent and quantifiable on the conclusions drawn by the readers. This effect was beneficial. The rejection letters that included two arguments were seen as more convincing by the readers than the letters that provided only one point of argument. The addition of a third reason would not have been able to affect the result in any way, shape, or form. The client's overall evaluation of the letters and the client's perception of the connection between the insurance company and themselves were not in any way affected by the inclusion of new reasons in the correspondence. The client also did not perceive any difference in the connection between the insurance company and themselves.

Unfortunately, the many restrictions placed on our research were a significant barrier to its completion. To get things rolling, we all did select a category of depressing information and placed it in a single setting. As a consequence of this, there was not a great deal of variety; however, the fact that there was not a great deal of variability makes the data more relevant for future research on the many different types of bad news (for example, declining an invitation or a marriage proposal, refusing to lend a person a certain amount of money) (e.g., turning down an invitation or a marriage proposal, refusing to lend a person a certain amount of money). The manipulation of the significance of the negative news through a more intentional method can prove to be highly rewarding in the long run.

Two, the scientific experimentation technique requires the creation of artificial conditions as an essential part of the process. It is not yet clear whether or not our participants have reacted in the same manner as readers in real life who are more involved because the unfavorable news directly affects their interests. However, it is becoming increasingly likely that our participants have reacted like readers in real life. On the other hand, it is abundantly evident that our participants' responses do not reflect the readers' responses in the actual world. Contrastingly, experimenting may raise doubt about the ecological significance of the data produced from that experiment. On the other hand, it is difficult for us to think of alternative ways to acquire data

systematically for the research questions presented here. This is because there are a variety of different research questions that are being offered here. This is because there are a wide variety of distinct types of research inquiries. Third, the design of the experiment, in particular the manipulation of the argument quantity conditions (0, 1, 2, and 3 arguments), makes it difficult to attribute with absolute certainty the effects that we discovered in the respective conditions to argument quantity. This is because the experiment was designed to manipulate the argument quantity conditions. This is because the order in which the reasons were added was prearranged, which led to the situation we are in now. Because this is the case, we cannot rule out the possibility that the contradicting findings may indicate significant disparities in the quality between the groups of strong and weak arguments (see also Jansen & Janssen 2010). (see also Jansen & Janssen 2010). Fifth, the distinctive language and cultural background of our participants, who are native Dutch speakers residing in the Netherlands, offers a possible danger to the results' external validity. Our participants are all Dutch and were all born and raised in the Netherlands. A significant number of our participants are from the Netherlands constitutes this danger. Are the results relevant to mail written in languages other than English to the same extent as they are applicable to mail written in English? There is a good chance that the response that we give in response to this inquiry will be positive. One would be surprised to learn that the Dutch and the Anglo-Saxon culture are not nearly as distinct from one another as one might initially believe. In addition, there is not much evidence to suggest that people from other cultures react to reasoning differently. See Siegel for an opposing opinion on the other hand (1991). (1991).

## **6. Discussion**

When we look over our findings, we cannot help but think of them as strong indications that the people who participated in the experiments — the recipients of the bad news letters — evaluated the letters using central rather than peripheral processing. We cannot help but think of this because we cannot help but think of our findings as strong indications of something. Because our findings are such strong signs of something, we cannot help but think of this as a possibility because we cannot help but think of it as a possibility. This takes up a significant amount of mental space for us. Therefore, this essay will discuss only two of the most significant indications in depth. The first piece of evidence that indicates the direction of the presence of central processing is the observation that persuasive arguments have an impact that is invariably

preferred to that of weak arguments. This observation was made about the effect that weak arguments have. We would not have been able to identify an influence of the quality of the reasoning if the readers had just focused on the fact that arguments were presented when determining their overall score since this would have been the only factor they had taken into account. Second, there is evidence against the usage of peripheral processing in that the addition of a third argument did not have any consistent consequences. Even though we did not discover any overall influence of argumentation amount, we would have found such an effect if the readers had followed a general rule of thumb such as "more is better." Despite this, we did not find any overall influence of argumentation quantity.

On the other hand, we could not locate such a general rule. Additionally, it is possible that recipients of bad newsletters, such as claim denials, would be much more motivated to thoroughly absorb the content because reading the text is in their direct interest. This hypothesis is supported by the fact that reading the text is in their direct interest. This idea is backed by the fact that it is highly plausible that genuine recipients of bad news letters would be considerably more driven to completely digest the letter's content. As a consequence, it makes perfect sense to us that the factors we altered would have the same effect on actual readers as they did in the experiment we conducted. According to the findings of our investigation, incorporating (substantial) argumentation in claim denials can either strengthen or, at the very least, maintain the connection that already exists between an organization and its customers, which may, in turn, result in increased compliance. The second question that needs to be answered pertains to the finding that presenting only two reasons is sufficient to achieve saturation for some dependent variables, but presenting additional arguments has no further influence than presenting the initial two reasons. This is the second question that needs to be answered. The reader is probably scratching their head, wondering how to deal with these new arguments on earth. The operation of the ELM model distinguishes between the processing of information, the central processing of information, and the processing of information at the model's periphery. The overarching principle underpinning this discussion is that data processing will never occur across any of these channels unless and until a predetermined list of requirements is first met. Despite this, it is not unimaginable that readers could evaluate just one of several compelling reasons and arrive at the conclusion that this one argument is sufficient to support the conclusion, even though there are several other compelling arguments from which to choose.

This would be the case even though there are several other compelling arguments to choose from. A "single argument fallacy" would be depicted in this particular scenario. As a direct consequence of this, they may conclude that it is no longer required for them to do centralized evaluations of any new ideas. This may be something that they come to realize. This would explain why it is only necessary to present a single strong argument to reach saturation. [Cause and effect] To verify this theory's accuracy, more tests, such as making a list of one's thoughts, will have to be carried out.

In conclusion, even though our normative-analytic approach to selecting high-quality and low-quality arguments was successful (after all, we found strong effects of argument quality), it needs to be implemented more thoroughly in future experiments. First, this is the best way to determine which arguments are of high quality and which are of low quality. This is because doing so is the most effective method of determining which arguments are of high quality and which are of low quality. This may be accomplished by maintaining a level of consistency about the presence of warrants across all circumstances, despite varying the explicitness and complexity of the warrants themselves.



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**Learning history by composing synthesis texts: Effects of  
an instructional programme on learning, reading and  
writing processes, and text quality**

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**Abstract:**

It's possible that reading and writing are two of the most effective ways to learn about a subject. The incorporation of these procedures into what are now commonly known as "hybrid activities" has been shown in earlier research to have significant educational benefits. Instead of reading first and then writing, these activities demand interaction between reading and writing on the part of the individual. These assignments' reader and writer roles can be utilized to show how they have epistemic potential. By adopting techniques that teach students to analyze and synthesize texts, the current study aimed to encourage text-based learning. To do this, students were instructed to finish the two of the duties that were specified above. Such writings demand interaction between reading and writing with a purpose in mind, and in order to be digested, this interaction must take place. There were 62 students who took part in the study during the sixth grade. Of those students, 33 were given roles in the experimental group, while 29 were given roles in the control group. The results of an experiment-1 program were analyzed by employing a pretest-

posttest design with a control group in order to evaluate (a) the amount of learning that was reached, (b) the quality of the written texts that were produced, and (c) the synthesis text-processing activities (in a sub-sample of 32 participants). The experimental group was given instruction in the techniques required in writing a synthesis using two expository texts about the narrative via a strategy-oriented software. In contrast, the control group worked on the same material using the more conventional assignments in their normal text book. Both groups were given the same amount of time to complete their work. The students were provided with two separate pieces of expository writing on the topic as part of the curriculum so that they could learn how to put together a synthesis. According to the results of the study, the experimental group fared significantly better than the control group on a test of deep learning content processing. Additionally, the experimental group created better written sentences and demonstrated habits of processing material in a more complicated manner.

**Keywords:** Synthesis text; text quality; writing processes; reading processes; strategy training.

## 1. Introduction

Students nowadays may easily access a wide range of information drawn from several sources, the majority of which frequently provide information that is in conflict with one another. To handle this flood of fresh information, students must develop their critical thinking skills. Teaching pupils to start, lead, and make decisions on their own in order to reach one's own self-determined learning objective is one of the most difficult problems confronting education today (Goldman, 1997; Martn & Moreno, 2008; Mateos, 2001; Swartz, Costa, Beyer, Reagan, & Kallick, 2008). One of the biggest problems in the realm of education right now is this.

Specific learning techniques, like reading and writing, have the ability to promote critical thinking when used within this framework. Due to their significance from an epistemological standpoint, these acts have the potential to alter knowledge (Bereiter & Scardamalia, 1987; Olson, 1994). Metacognitive control—reflection on the current process—directs and regulates this information transformation. However, research at various academic levels has shown that reading and writing are frequently used primarily

for the purpose of reproducing knowledge (Castelló, 1999; Goldman, 1997; Langer & Applebee, 1987; Mateos, Villalón, de Dios, & Martn, 2007; Solé et al., 2005; Mateos et al., 2005; Mateos, Villalón, de Dios, & Martn, 2007; Solé

As stated by The three acts of reading, writing, and research together offer a greater chance for additional epistemic development (Moran & Billen, 2014; Tierney & Shanahan, 1996; Tynjala, 2001). Jobs requiring both reading and writing are referred to as "hybrid" vocations by Spivey (1997) because they necessitate intricate interaction between the duties of reader and writer rather than sequential reading followed by sequential writing. This is due to the complex interactions between the duties of the reader and writer that hybrid vocations need. According to Anmarkrud, Brten, and Strms (2014), Langer and Flihan (2000), O'Hara, Taylor, Newman, and Sellen, as well as other authors, an internal discussion is crucial. (2002). Students are able to achieve their full academic potential since they alternate between reading and writing in these kinds of tasks. This type of internal debate is present in both outstanding writing and enjoyable reading (Morrow, 1997). (Klein, 2014). The mental dialogue between the reader and writer roles usually starts in a way that is quite natural while working on a task that requires reading in order to be finished. Contrarily, not all hybrid activities result in the same levels of complexity in corporate learning and operations. As a result, integrating information from several sources requires more mental effort than, say, summarizing information from a single document. It is possible to make the process of creating a basic summary of a single textual item significantly easier by using a "knowledge-telling method." Prior to putting together a synthesis, it is important to compare, arrange, and order the concepts taken from the many source materials around a main topic. The creation of a unique, original work requires the fusion of this information with knowledge that has already been obtained. To create a synthesis from a range of source texts, this is done (Mateos et al., 2014; Segev-Miller, 2004). Additionally, Spivey (1997) claims that the three interrelated subprocesses of choosing, organizing, and connecting are what contribute to a synthesis work's epistemic potential. These supporting procedures, which are cyclical in nature and geared toward accomplishing a certain goal, can be led and governed by the learner. During the selection process, the students assess the content of the sources and, based on their assessments, choose the ideas they think are most important to incorporate in their own work. The way



the students organize their material is by looking for hints in the sources that will help them link the ideas. When people write their ideas down, they create their own categories as well as previously unidentified clusters of ideas and logical sequences. They may change the content as a result of connecting the various information tidbits they have learned from the source texts with one another and with knowledge they already know. They build connections between the numerous facts they have learned from the source texts at this level by connecting them to one another. Three main high-level steps must be carried out while composing a synthesis text based on several sources: The reader must compare, contrast, and abstract the presented information in order to: (1) read the sources integratively, which necessitates switching between texts and developing semantic relationships between them; (2) constantly switch between the source texts and the developing synthesis while writing the written text; and (3) compare, contrast, and abstract the information presented. The results of Flower et al. (1990) show that a simplified representation aids students in choosing certain material and including it in their work in a way that is consistent with the logic of the sources. In other words, this kind of representation is advantageous to pupils. They do not seek to use a special framework to incorporate ideas that originate from many sources. A excellent example of this diminished task representation may be seen in the works that were directly generated as a result of it. There are two distinct categories of low-quality works, according to Mateos and Solé (2009): those that juxtapose summaries of the sources and single texts that switch between many sources without integrating the topics offered in each source. The great majority of studies on these synthesis techniques have focused on students as their subjects (Flower et al., 1990; Gil, Brten, Vidal-Abarca, & Strms, 2010; Mateos). Fewer parents have children in lower grades (Lenski & Johns, 1997; Spivey & King, 1989). The results of all of these research show that large numbers of students at all levels find synthesis exercises difficult. The results of a 1989 study by Spivey and King show that more experienced reader-writers are more prepared before writing, think through what they will say and how they will say it, and spend more time creating a synthesis. These results are the result of study that was done with sixth-graders, eighth-graders, and tenth-graders, respectively. Conversely, students in lower grades don't make plans and devote less time to their work. They have less accountability, which explains this. When six eighth-graders were asked to write a report using the materials for a multiple case study, Lenski and Johns looked at the reading-

to-writing strategies they used (1997). No matter how the material was given in the study—sequentially, spiraling, or recursively—reading and writing happened later in the process. Depending on the order in which the treatments were applied, these patterns were influenced in various ways (Lenski & Johns, 1997, p. 25). The great majority of research participants followed a spiral pattern that can be summed up as "search-read-write," and they kept doing so until the intended outcome was achieved. One out of the six trial participants showed no symptoms that may be linked to a repeated pattern. Others didn't, though. The authors also discovered that the only person who generated an integrated synthesis was the one who displayed a recursive pattern, in contrast to the spiral-based syntheses, which were essentially copies or paraphrases of the original texts. This was true since this person's integrated synthesis was the only one that was created. Only this one individual was capable of creating an integrated synthesis. With a total of nine 15-year-olds in their sample, Mateos, Martn, Villalón, and Luna (2008) conducted their investigation and came to very similar conclusions. Only one of the nine articles made sense; the other eight either verbatim copied the content or paraphrased it, and only a small portion of the key points raised in the sources were covered in the articles. When all nine pieces were combined, just one made sense. Participants also tended to blend data from different sources sparingly or combine data from many sources into a single source. The most typical kind of integration was this one. The following describes one of the most often used uses of the participants' data. Before proceeding to the next phase, they went over the text they had completed up to this point and made a few changes. Even when they did make changes, they never in any way organized what they had written. The vast majority of students failed to keep any drafts of their assignments or any notes for their study. The students that displayed a pattern of reading and writing activities that was a little more flexible and recursive, according to the findings of the study that Mateos and her colleagues conducted, were the ones who produced the most successful syntheses. This demonstrates that the subprocess activation does not occur in a random manner, but rather adheres to some kind of internal order. The subprocess demonstrates that random processes are not followed. The degree of success that will be attained with the text and the order in which the process' steps are completed are clearly correlated (Flower et al., 1990; Rijlaarsdam & van den Bergh, 1996; 2006). It would seem that adopting synthesis writing that draws from a variety of sources and adhering to a cyclical pattern of actions directed and controlled by

metacognition are two ways to achieve great knowledge acquisition. One might effectively broaden their knowledge base in this way.

The study on how to build a synthesis didn't assess how much was learned about the subject; instead, it made assumptions about how much was learned about the material based on the techniques used and the caliber of the texts produced. On the other hand, in a recent research by Solé, Miras, Castells, Espino, and Minguela with children aged 15, the level of learning was added as a final measure. This study was conducted in Spain (2013). In order to assess the participants' capacity to (1) retrieve information from the sources, which corresponds to low-level learning, and (2) interpret and integrate ideas from the sources (one or more texts), which corresponds to high-level learning, they used a test that was created to gauge the participants' level of content reading comprehension. These two skills are correlated with various learning levels. The written synthesis texts' degree of structure, along with the texts' selection, elaboration, and integration, were all elements that were considered and graded (including coherence and cohesion). Both a linear and recursive dimension as well as a direct and mediated dimension were used to examine the processes. Additionally, direct and mediated dimensions were used. Following a planned sequence of tasks and using a variety of activity orders that were based on the demands of the work are two examples of what are considered to be within the "dimension of linear/recursive" in the context of the linear/recursive dimension. Based on whether certain tasks, such as revising or drafting a rough draft to create the final synthesis, are completed, it is possible to distinguish between the direct and the mediated components. These tasks have to be finished in order to build the final synthesis. This study demonstrated a relationship between learning performance, text quality, and activity patterns generated from individual audio-video registrations made during the task completion. The parameters that affected the caliber of the final text and the learner's level of accomplishment were the degree of mediation and recursion in the process, as well as the volume of mediation that occurred.

The study's findings imply that individuals with a variety of intrinsic talents encounter challenges in their academic endeavors. This has been demonstrated to be true. They encounter problems and are unable to adequately carry out either of those tasks when they attempt to engage these processes in a recursive manner or when they attempt to synthesize information employing the complex mechanisms required in doing so. One way to

overcome these challenges is to start assisting with reading and writing teaching at the youngest possible grade level, with the main goal of fostering knowledge integration. In the event that this occurs, they could be able to translate information more quickly.

The effectiveness of interventions designed to help students enrolled in higher levels of education acquire the abilities necessary to build syntheses has only been the subject of a small number of research. Boscolo, Arfé, and Quarisa devised and assessed their intervention in 2007, which involved using academics to revise the synthesis papers that undergraduate students had produced. Researchers Boscolo, Arfé, and Quarisa were responsible for this study. The participants' ability to synthesize, according to the authors, was strengthened by both the intervention itself and their active participation in it—discussing the various instances and thinking back on their own experiences. In other words, the authors think that the intervention improved the participants' capacity for synthesizing. Despite the absence of a control group, the authors of this study assert that the intervention and the participants' active participation in it increased their ability to synthesize. Similar to this, Segev-Miller (2004) focused on educating university students on the crucial techniques that would help them with their synthesis (presentation and explanation, demonstration, and practice). She assigned them the responsibilities of creating process logs of the execution of two distinct synthesis tasks, contrasting the processes and results of the two logs, and creating process logs for the two various synthesis tasks. Segev-Miller came to the conclusion that the post-intervention synthesis had significantly improved based on the results of the content analysis that was carried out on both the process log and the products. The findings led to the conclusion that was made.

Only a small number of intervention studies have been conducted thus far. Kirkpatrick and Klein (2009) gave students instructions on how to construct their writings in a compare-and-contrast format before they began writing their own texts. This was done so that the structure of compare-and-contrast texts would be more clear to the pupils. They were mostly concentrating on the sixth and seventh graders. These authors claim that as a result of the intervention, the quality of the texts that were created was enhanced both in terms of their general quality and their structural quality. By combining a variety of instructional methodologies, Wray and Lewis (1997) created an intervention for teaching upper primary school kids how to read and write information texts. By instructing students on how to read

and write information texts, this intervention was able to meet its aim of achieving strategic learning of reading and writing as learning tools. The intervention's main goal was to teach pupils how to read and write a variety of instructive texts. The curriculum was assessed using a variety of methods, and the results were generally encouraging; students used explanatory texts effectively to understand the subject matter.

The outcomes of several interventions that were intended to improve the fluid integration of reading and writing in order to acquire knowledge reveal the benefits of encouraging young people to study strategically. On the other hand, the reported therapies haven't really addressed the implications of the knowledge that was taught, focusing more on how to make reading and writing better as learning tools. We believe that reading and writing should be taught within the context of domain-specific learning tasks in order to give students the chance to experience reading and writing as a means of supporting the learning of particular subject matter and promoting the learning that occurs within the respective domains. This will provide students the chance to see how reading and writing may help their understanding of particular subject matter and advance their learning within their individual areas (Bazerman, 1992; Bean, 2000; Vacca & Vacca, 1996). The learning of reading and writing is approached holistically in this study, with a focus on synthesis processes, products, and content-based instruction.

The students who take part in our Strategies for Writing Syntheses to Learn (SWSL) program will learn how to effectively employ the abilities they have already attained in the fifth and final year of elementary school. The two methods of reading and writing may be applied to the goal of learning about a number of topics. One of the course's main objectives is the integration of the many techniques needed to create a synthesis work that is based on a variety of source sources. The technique is based on the integrated use of both of those tactics in addition to strategy training in reading and writing, claim Graham and Harris (2005), Graham, Harris, and McKeown (2013), Mateos (2001), Sánchez, Garca, and Rosales (2010), Torrance, Fidalgo, and Garca (2007), and Zimmerman. Mateos and (Wray & Lewis, 1997; Raphael & Englert, 1990).

The main goal of the SWSL curriculum is for students to develop their reading and writing abilities by choosing, extending, linking, and integrating content from a range of

books in order to have a thorough comprehension of the issues that are covered in each book. As a direct result, in order to create the intervention, we were compelled to modify concepts from earlier studies on reading and writing abilities. The final product was a curriculum with instructions for the four main reading-writing activities and a strategy-focused teaching method. In this context, the program constitutes a whole new area of study within the study of instructional approaches. The main goal of this study was to assess how the SWSL program affected three crucial areas: (1) the depth of information obtained about a topic; (2) the caliber of the writing produced; and (3) the organization of reading and writing assignments.

## **2. Method**

### **2.1 Design**

A quasi-experimental design with a pre-test, a post-test, and a control group was created in order to conduct research on the subjects that are the focus of our investigation. In this study, the educational program served as the independent variable since it was designed to help students develop their epistemic reading and writing processes. It has two distinct levels of implementation, either yes or no. The study that was done looked into both of these levels. The dependent variables for this study were the results of the participants' topic learning, their task-process patterns, including the reading and writing assignments they were assigned, and the caliber of their syntheses. We looked at prior historical knowledge as well as reading comprehension to assess the initial differences between groups that were allocated to different conditions on important parameters and to be able to test for generalization of the effects across learner characteristics. As a result, we were able to assess the early variations between the groups that were allocated to diverse circumstances. This allowed us to analyze any early differences that appeared across groups that were exposed to various circumstances.

### **2.2 Participants**

62 students in the sixth grade who attended elementary schools participated in the research. Four classes made comprised each of the experimental and control groups, with two full classes coming from each of the two schools. Classes were divided into the

experimental and control groups at random. There were 33 volunteers in the group conducting the experiment, compared to 29 in the control group. Each of the 58 kids was 10 years and 8 months old on average. There was a total of 28 men and 34 women present.

A subsample of 32 people allowed us to get information on the students' thought processes as well. Two groups of eight students each were formed from the entire sample, and on the two pre-test components of prior knowledge and reading comprehension, 16 students from each group performed badly while 16 students from each group performed well. Students who did well on the test were assigned to the experimental group, while those who did badly were placed in the control group (the same number of students from each school). Only the students who were part of the subsample actually completed individual assessments before and after the treatments, despite the fact that every student in the class participated in the interventions.

Participants in the study received no compensation or benefits in exchange for taking part in the study. We made the choice to enroll our kids there because of their accessibility to our houses. There was absolutely no proof that the research participants were following any criterion.

## **2.3 Instruments and materials**

### **2.3.1 Intervention programmed**

There are twelve sessions in the program, each of which lasts for 60 minutes and occurs three times a week. Each of the three portions that made up these sessions had four different lessons. One learning topic, two source texts, and one synthesis task made up the bulk of each part.

These educational institutions' regular history curricula served as the basis for the courses, which focused on issues including the Industrial Revolution, capitalism, and rural and urban life in the 19th century. Table 1 lists the key elements of the intervention program in order of importance. For each of the three different types of learning activities that were part of the experimental program, the same five techniques of instruction were used. These techniques included highlighting key ideas from the original writings, adding details, rearranging the text, merging old and new content, and incorporating information from both

of the original works' sources. Both integrated and recursive teaching tactics were used to transmit the strategies. We only went over previously covered material when it was absolutely necessary; otherwise, both sets of information were provided at the same time. The techniques were taught through a variety of instructional approaches, including: (1) instructor modeling; (2) collaborative activities; (3) guided activities; (4) individual student activities; and (5) the assistance of a printed guide, according to the study's findings (Wray and Lewis, 1997). (For further details, see Table 1.) This has been demonstrated and tested in research that, for the most part, focuses on self-regulation and is strategy-oriented (Fidalgo, Garca, Torrance, & Robledo, 2009; Graham & Harris, 2005; Graham, Harris, & McKeown, 2013; Zimmerman, 2000). The idea was to progressively give the students greater decision-making authority rather than the teacher. The creation of a written guide that was intended to help with the procedure was one of the most crucial components of this program and a direct result of the earlier work done by Gárate and Melero (2004). This software is made to benefit kids both now and, in the future, when they will be able to complete tasks on their own and without adult supervision. We work together with the kids to create a road map for them that has each step presented as a question. The students feel more in charge of their own learning process as a result, which strengthens their sense of empowerment. What direction do we want this to take? What for? and other such questions and sentences may be found throughout this book. What other situations does this take place in? These are instances of questions that are more explicitly along the lines of, "How can I build a map or scheme linking the themes in the texts?" It is important to stress that the directions in the manual are not intended to be followed in the precise sequence that they are given at any particular moment. This handbook wouldn't be given to the students all at once; instead, it would gradually cover each level over the course of the sessions before being put together into a manual at the end. It was initially planned to present it to the pupils all at once. After that, the synthesis exercises gave students the chance to apply this knowledge and use it as a resource.

The initial training phase placed a lot of emphasis on modeling as well as learning from scenarios that were seen and imitated. The lecturer led the students through each stage of the crucial processes in the right sequence throughout these sessions. In order to promote group learning and writing during the second period, students spent the entire time with the



lecturer in groups of four. During the third and last session of the block, students finally worked independently under the guidance of the instructor and the printed guide.

The educational program provided by SWSL, including its goals, tactics, class schedule, social organization, and curriculum, is succinctly summarized in Table 1.

<b>General aim</b>	<b>Specific aims</b>	<b>Strategies and techniques</b>	<b>Session, social organisation and material</b>
To perform a first synthesis task composing a text based on two expository source texts --through researcher modelling of the processes employed	To perform a first synthesis task --composing a text based on two expository source texts --through researcher modelling of the processes employed	Joint reflection Negotiation of aims Modelling Guided collaborative activity Guided questions	Sessions 1-4 Whole class Pair of texts about the industrial revolution
To perform a second synthesis task in which the students have a little more autonomy than in the previous one through group	Prior knowledge activation Global/local comprehension of texts Selection of main ideas Link between prior knowledge and text information	Guided collaborative activity in small groups and with the whole class Joint reflection with whole	Sessions 5-8 Whole class and small groups (4 students) Pair of texts about social
work	Organisation of ideas from texts Elaboration of the information from texts linked to prior knowledge and aims Integration of prior knowledge with new knowledge Integration of the information within and between the two texts Writing of final text	Class Individual activity	and political organisation under capitalism
To perform a third synthesis task in which the students do the activities	Prior knowledge activation Global/local comprehension of texts Selection of main ideas Link between prior knowledge and text	Guided individual activity Joint reflection with whole class	Sessions 9-12 Whole class and individual Pair of texts about rural

individually, with aids	information Organisation of ideas from texts Elaboration of the information from texts linked to prior knowledge and aims Integration of prior knowledge with new knowledge Integration of the information within and between the two texts Writing of final text Elaboration of a written guide of the process		and urban life in the 19 <sup>th</sup> century
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**2.3.2. Assessment of reading comprehension**

IDEA, or "Instituto de Evaluación y Asesoramiento Educativo," was responsible for developing and endorsing the reading comprehension test that was used to determine reading scores (González Nieto, 2002). This test was meant to gauge how effectively the pupils had comprehended the material. The test's dependability score was 0.60 and it was made up of multiple-choice questions. There were a total of 35 questions. A variety of readings, including a tale, an explanatory text, an instructive text, and a newspaper piece, were provided to the pupils. After reading through each chapter, the participants were given tasks to complete that addressed text structures, general understanding, language issues, and comprehension strategies.

**2.3.3 Evaluation of the educational material**

The three separate synthesis activities' respective discussion topics, which have not yet been raised by the instructor of the class group leading the class group at this moment, are not yet known. The degree to which the students had understood the historical concepts offered throughout the study project, in addition to those presented both before and after the program's launch, was assessed using a test that was developed (Martnez, 2012). This directly led to the use of the same tool throughout the whole operation to achieve two distinct objectives that were wholly unrelated to one another. Using the test that was administered before to the start of the intervention, we were able to assess the students' prior knowledge on each of the areas that would be covered throughout the intervention.

Prior to the start of the intervention, this test was given. As a result, we were able to establish whether or not there were any notable variations in the situations. Second, the amount of learning that the participants obtained as well as the degree of success that the intervention had in respect to this particular area were evaluated using the scores that the participants earned on a test of their prior knowledge. The goods included all three of the components, each of which was a component of a professionally created instructional program with a historical theme. There were a total of 17 questions on the test where students had to decide whether or not a specific proposition that was given to them was true. In addition, there were five questions that asked students to complete incomplete phrases by choosing the proper second half of a phrase after being provided the first half of the phrase. To aid the pupils in this identifying process, the first half of a sentence was presented to them. None of the weights varied even little from one another (1 point for a correct answer). This survey's test-retest reliability index scored 0.62, indicating that it satisfied the standards for being considered excellent.

This exam was created to allow for the simultaneous evaluation of two distinct learning and comprehension phases. It simultaneously embraced previous paradigms that prioritized understanding and learning from a single book in addition to a variety of readings. In other words, it gave the one book precedence over the other reads (Kintsch, 1998). (Perfetti et al., 1999). The students were tasked with determining whether or not the concept under discussion could be inferred from the details provided in the texts they had read for each specific case. One the one hand, the reader was not expected to make any form of inference from what was being said because six of the statements were just paraphrases of concepts that were offered in specific publications (low-level learning). One of the comments, for instance, discussed whether or not the working class benefited from the capitalist system. This data was taken directly from the source material, which was a single paragraph. However, sixteen of the questions (true/false questions like "the steam engine had an influence on both the industrial and the transport sector.") needed in-depth knowledge since they required drawing inferences from the material in the book or combining facts from other sources. In this instance, one source described how the steam engine affected industry, while the second source focused on how the steam engine affected the transportation business. You were made aware of both of these effects by the

sources. When a specific student has come to the conclusion that although the true claims cannot be inferred from the texts, the correct assertions cannot be obtained from the texts, the suitable replies are provided as a result. When a student thinks that the texts can be used to deduce the facts, this is what happens. Two certified experts independently assessed the items that were included in each examination category, allowing the categorization of the test items to be verified. Pre-test reliability indices for these portions of the questionnaire were 0.60 and 0.70 for low and high levels of dependability, respectively, while post-test reliability indices for those levels were 0.58 and 0.62. (during the posttest).

### **2.3.4 Tests and assignments for synthesis texts**

Only two of the five separate synthesis papers that the students were required to submit could be used for the tests. The intervention was to be conducted using the other three publications. Each of these inquiries got off to a different start using a mix of primary and secondary sources. I concurred with the students' teachers that the data from the five book pairings ought to be connected to various sections of a specific teaching module on contemporary history that hadn't yet been taught in the classroom. Nothing like this has ever been done before. Before enabling the students to pick their readings from a broad variety of textbooks produced by a number of different publishers, it was crucial to ensure that they had a firm knowledge of the structure of the books as well as the level of difficulty that they posed. This was done to make sure the children could choose acceptable readings from the selections given. The participants' regular teachers assessed the sources' degree of difficulty and decided that the texts were appropriate for their pupils to read based on their findings.

In addition to the material provided in the other collections, each collection of papers included information on a number of historical topics. They were equally separated from one another by the same amount of space (with a mean of 256 words, ranging from 235 to 280). To choose which of these five people would be utilized for testing and which for the intervention, we adopted a technique of selection based on randomization. The person receiving the therapy would be the test subject.

### **2.4 Exercise**

screening technique in its early phases Only two of the five separate synthesis papers that the students were required to submit could be used for the tests. The intervention was to be conducted using the other three publications. Each of these inquiries got off to a different start using a mix of primary and secondary sources. I concurred with the students' teachers that the data from the five book pairings ought to be connected to various sections of a specific teaching module on contemporary history that hadn't yet been taught in the classroom. Nothing like this has ever been done before. Before enabling the students to pick their readings from a broad variety of textbooks produced by a number of different publishers, it was crucial to ensure that they had a firm knowledge of the structure of the books as well as the level of difficulty that they posed. This was done to make sure the children could choose acceptable readings from the selections given. The participants' regular teachers assessed the sources' degree of difficulty and decided that the texts were appropriate for their pupils to read based on their findings.

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<b>Sessions</b>	<b>Experimental group</b>	<b>Control group</b>	<b>Topic</b>
Session 1	Reading comprehension and Previous Knowledge tests	Reading comprehension and Previous Knowledge tests	Liberalism and Absolutism (Political systems)
Session 2*	Performance of the pre-test synthesis task individually without any help	Performance of the pre-test synthesis task individually without any help	Liberalism and Absolutism (Political Systems)
Sessions 3-6	Performance of the first synthesis task through the strategies of modeling and observational learning	Work with texts and activities from the textbook (conventional Method Performance of the	Industrial and Agricultural Revolution

		first synthesis task individually and without help	
Sessions 7-10	Performance of the second synthesis task through the strategy of collaborative writing with instructor support	Work with texts and activities from the textbook (conventional Method Performance of the second synthesis task individually and without help	Capitalism
Sessions 11-14	Performance of the third synthesis task through the strategies of individual practice supported by the instructor and the written guide	Work with texts and activities from the textbook (conventional method) Performance of the third synthesis task individually and without help	Urban and rural lifestyle in 19 <sup>th</sup> century
Session 15*	Performance of the post-test synthesis task individually without any help. Topic knowledge test	Performance of the post-test synthesis task individually without any help. Topic knowledge test	Liberalism and Absolutism (social life)

\* To use the subsample in the recordings they created, Sessions 2 and 15 each developed their own unique movies of it.

Both participant groups in the study read the same kinds of books, concentrated on the same kinds of historical subjects, and worked on the same kinds of synthesis projects throughout the three stages of the study, which occur before, during, and after the intervention. This should be pretty obvious to everyone (traditional or SWSL). The experimental group approached the tasks for the three synthesis activities in the instructional units in a variety of ways (modeling, collaborative activity, written guide support, etc.), whereas the control group, who had previously learned the themes through the conventional method, wrote the tasks for the three synthesis activities independently and without assistance.

**2.4.1 The process for assessing the value of education in a certain field**

Calculations were used to establish the two scores for the two most significant aspects of the learning (high- and low-level learning). Abad, Olea, Ponsoda, and Garca (2011) claim that these scores were determined by first adding up all of the points for exam questions that were properly answered, and then deducting those questions from the final weighted score.

**Products**

We examined the pre-synthesis texts and the post-synthesis texts with relation to selection, elaboration, intra-textual integration, intertextual integration, and title complexity in light of the work that we had already completed (Martnez, Martn, & Mateos, 2011; Mateos et al., 2008; Mateos). These criteria acted as pertinent elements that were taken into account while calculating an overall score, which was based on that score. & Solé, 2009). The evaluation of the kids on the aforementioned factors was done by two trained experts, neither of whom were aware of the circumstances surrounding the students. The complexity level of the components ranges from simple to difficult (see Table 3).

The numerous levels of excellence that may be given to each of the five textual variables are summarized in Table 3, which is available right now.

<b>Selection</b>	Does not select Includes important and unimportant ideas Includes all or most important ideas, but also unimportant and repeated ideas Includes all the important ideas and none, or only one, unimportant or repeated idea
<b>Elaboration</b>	Copies Copies and paraphrases Copies, paraphrases and some unimportant elaboration Copies, paraphrases and some important elaboration
<b>Intratextual integration</b>	List of unconnected ideas List of ideas with connectors copied from the source texts At least one attempt at connection Connected ideas
<b>Intertextual integration</b>	Two separate texts Two juxtaposed summaries Integration of both texts with one idea Integration of several ideas from both texts
<b>Title</b>	No title or summary Copied title Sum of titles Integration of titles with new information added

In order to determine whether or not the collection of criteria was referring to a singular idea—more particularly, the quality of the synthesis as a whole—we carried out a reliability test. This

allowed us to check that the set of criteria was, in fact, referring to this idea (Cronbach, 1951). The alpha values for the task completed before the intervention were 0.60, whereas the alpha values for the work completed after the intervention were 0.89. We opted to compute the average mean of the scores on all five criteria rather than separately calculating them since there was a significant and positive relationship between each criterion. This was done because the scores on each criterion were positively correlated with one another. Our decision was affected as a direct result of this.

The two raters used the overall quality criterion that was supplied to provide a score to each of the 124 pieces of synthesis writing that were included in both the pre-test and the post-test. This score was based on the criteria that was provided. The value of the kappa index was .70 for the pre-intervention task, while the value was for the post-intervention task; both values were high and significant ( $p.05$ ). 71.

### **The participation of the youngsters in a wide array of cognitive activities**

We created a visual pattern recording of each action, complete with start and end times, in order to code the events that were caught on the audio-video recordings. These recordings were used to retrieve the events (for more information regarding the technique, see section 2.4). In addition to this, we go at the written work and references that each individual student has prepared. The classification method was developed using the findings of other studies (Mateos and Solé, 2009; Solé, Miras, and Gràcia, 2005; Solé et al., 2013); for further information, see Table 4.

Table 4 provides a categorization scheme for the different extracurricular activities that the students participate in outside of the classroom.

<b>Category</b>
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Reads source text (source text 1, 2 or both)  
 Reads and underlines source text (source text 1, 2 or both)  
 Reads and takes notes on source text (source text 1, 2 or both)  
 Refers to synthesis guidelines/material  
 Makes rough draft while referring to source text (source text 1, 2 or both)  
 Writes final text while referring to source texts (source text 1, 2 or both)  
 Writes final text while referring to rough draft  
 Revises rough draft and makes changes  
 Revises final text without making any changes  
 Revises final text and makes changes  
 Writes final text without referring to source texts or rough draft  
 Makes rough draft without referring to source texts

The visual representations of two of the graphic patterns that illustrate the techniques that we created may be found in Figures 1 and 2, respectively. The above statement provides an illustration of these patterns. Figure 1 displays a range of colors and patterns that were used to depict the various behaviors that were seen while the participants were engaged in the exercise. These behaviors were observed while the participants were carrying out the activity.

	Reads		Reads and underlines source text
	Reads and takes notes on source text		Refers to synthesis guidelines/material
	Makes rough draft while referring to source text		Writes final text while referring to source text
	Writes final text while referring to rough draft		Revises final text without making any changes
	Revises rough draft and make changes		Revises final text and makes changes
	Makes rough draft without referring to source texts		Writes final text without referring to source texts or rough draft

**Figure 1.** a description of the method in which the reading and writing tasks for each case were illustrated in their respective reading and writing formats.

On display in Figure 2 is a protocol explanation of the pre- and post-tasks that a participant in the control group was required to complete. This description can be found in the figure itself. This participant followed the same pattern throughout all of the tasks; however, in order to complete the post-test, they needed five more minutes in addition to the time it took them to complete the pre-test. Figure 3, which may be located at this location, depicts the progression that a subject makes during an experiment. Both the pre-tasks and the post-tasks are extremely distinct from one another in this regard. The participant went through the process of studying the strategy guide several times, taking notes on the source materials, reviewing those materials at various stages throughout the process, and amending their answers both before and after the examination. In addition to that, in comparison to the time they spent on the pre-test, they spent a significant amount of time on the post-test.

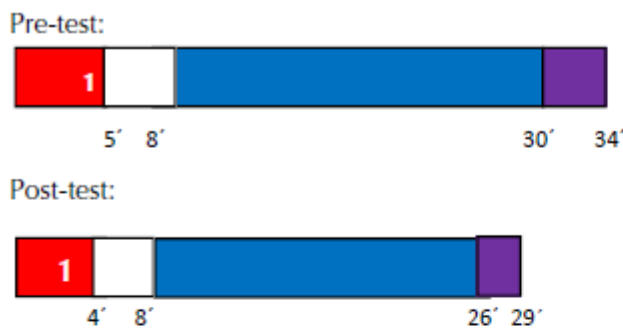


Figure 2. Graphic of a control group participant on the pre and post tasks.

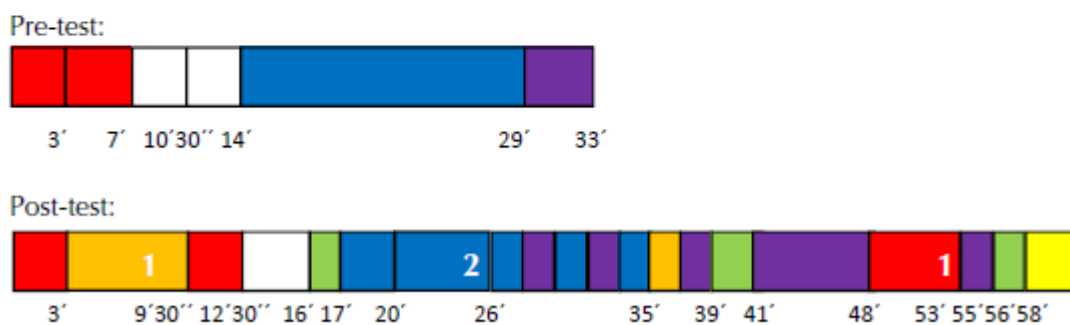


Figure 3. Graphic pattern of one experimental group participant on the pre and post tasks.

We were able to derive two indicators from these visual patterns, which in turn enabled us to conduct an analysis of the many different process components that the students utilized in order to complete the task. The students' use of these process components was necessary for them to be successful in completing the task.

1. The length of time that is allocated to the completion of the project by each individual student, and 2. The range of reading, writing, and editing tasks that are required.

In addition, we were able to corroborate the existence of three more factors, which is in line with the findings of earlier research (Martnez et al., 2012; Solé et al., 2013). (For further information, see footnote 5 in the table.)

Twenty percent of the operations, which was the total number of surgeries, were rated by two specialists who were unaware of the student's condition. The results obtained for the Cohen's kappa index were broken down as follows: 0.76 for the interactions between the student's text and the source texts; 0.80 for the review variable; and 0.84 for the initial reading of the source texts. These ideals were extremely influential and significant in our culture (p.05). After then, one of the specialists, who was also the principal author of the study, assigned ratings to the students who were still there. The criteria mentioned up top served as the foundation for these evaluations.

The variables that were used in the technique are listed in Table 5, along with the various degrees of explanation that may be provided for each variable.

Interactions	Moves backwards and forwards between the source texts and the student's own text in short periods (less than 30 seconds) Moves backwards and forwards between the source texts and the student's own text in long periods (more than 30 seconds) In addition to level 2, adds a longer rereading that breaks the backwards and forwards sequence and/or occurs during revision
Revision	Does not revise or rereads final text only for a few seconds Revises and makes small changes Revises and makes substantial changes
First reading of source texts	Parallel reading Serial reading

### 3. Results

The first phase in this approach consisted of utilizing ANOVAs and Chi-squared tests to validate the hypothesis that neither the control group nor the experimental group had any significant differences in any of the pre-test variables. Repeated-measures ANOVAs with two factors—a between-subjects (group) component and a within-subjects (time) factor—were performed for all variables, with the exception of the Chi-square test for the analysis of the first reading of the source texts criterion, which contained two different levels. Repeated-measures ANOVAs with two factors—a between-subjects (group) component and a within-subjects (time) factor—were performed. Due to the fact that the criterion consisted of two different levels, this test was carried out.

Both groups began off on an equal basis from the very beginning (paragraph 3.1)

We did not find any early differences in the seven traits that were being examined between the experimental group and the control group, as well as between boys and girls within each of the groups. This was the case both for the experimental group and the control group (Table 6).

The descriptive statistics on the parameters that were first evaluated for each group are shown in table 6, which may be found below.

	N	Control		Experimental	
		M	SD	M	SD
Reading comprehension	62	17.17	3.22	17.67	4.83
Low-level prior knowledge	62	1.57	1.96	1.52	2.57
High-level prior knowledge	62	2.55	3.48	1.76	2.95
Time (mins.)	32	36.13	5.57	37.81	10.18
Number of activities	32	3.38	1.26	3.31	1.25
Interactions (1-3)	32	1.19	0.54	1.25	0.48
Revision (1-3)	32	1.25	0.58	1.50	0.82

Overall quality (1-4)	62	1.70	0.43	1.68	0.50
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### 3.1 Effects of the intervention on content-learning

The mean score and standard deviation for each group's performance on the content-learning criteria are presented in Table 7 at a number of periods during the research project. As was noted before, the scores were determined by taking the total number of responses that were proper and subtracting it from the total number of responses that were incorrect. This resulted in a total score.

The results of both the pre-task and post-task evaluations of each participant's knowledge of the issue are presented in Table 7, together with the group averages and standard deviations for each of the two types of tests.

		Control				Experimental			
		PRE		POST		PRE		POST	
	N	M	SD	M	SD	M	SD	M	SD
Low-level learning (max6)	62	1.57	1.96	3.29	1.50	1.52	2.57	3.02	1.96
High-level learning (max. 16)	62	2.55	3.48	4.04	3.07	1.76	2.95	6.27	6.27

#### 3.2.1 Low-level learning

During the course of this investigation, it was discovered that the variables of time (pre-test and post-test) and group (control and experimental) did not have a significant interaction with one another ( $F(1, 60) = .15, p > .05, 2p = .002$ ). In spite of the fact that a significant time impact was discovered ( $F(1, 60) = 30.29, p = .001, 2p = .34$ ), the scores of both groups improved between the pre-test and the post-test activities.

#### 3.2.2 Education beyond the level of the high school diploma

Because the scores of the two groups developed in distinct ways over the course of the investigation, the findings of the study demonstrated that there was a significant interaction between the within- (time) and between-subject components ( $F(1, 60) = 9.48, p.05, 2p = .14$ ). This was demonstrated by the fact that the results showed that there was a significant interaction between the within- (time) and between-subject components. The findings of the post-testing job revealed that the experimental group had a superior performance in relation to the basic effects ( $F(1, 60) = 8.98, p.01, 2p = .13$ ). This was shown by the fact that the F statistic was significantly higher than the other value. The scores of the individuals in the experimental group changed over time, but the scores of the participants in the control group did not substantially differ between the two tasks ( $F(1, 32) = 57.83, p.001, 2p = .64$ ; see Figure 4 for more details).

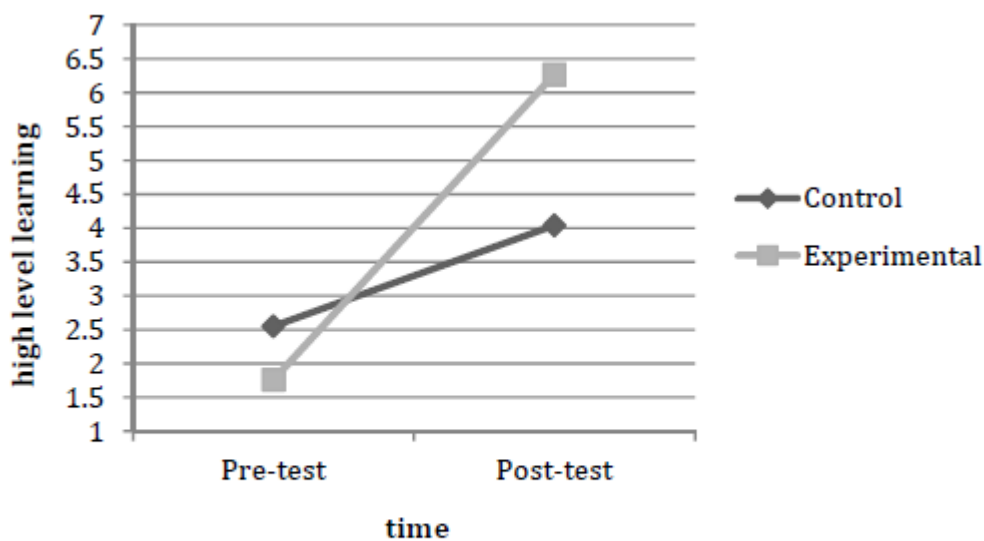


Figure 4. High-level learning score for each group on the pre and post tests.

### 3.3 Effects of intervention on product quality.

Table 8 gives a summary of the findings of the study on the overall product quality. This summary includes the averages as well as the standard deviations for each group throughout the various stages of research.

Table 8 presents the pre-task and post-task evaluations of the overall product quality criteria, together with the group averages and standard deviations for each of those evaluations. In addition, the table also includes the results of both evaluations.

		Control				Experimental			
		PRE		POST		PRE		POST	
	N	M	SD	M	SD	M	SD	M	SD
Overall quality (min. 1 - max. 4)	62	1.59	0.43	1.72	0.33	1.58	0.46	3.01	0.64

It was demonstrated that there was a significant difference in performance as a result of the interaction of time (pre-intervention task versus post-intervention task) and group (experimental versus control) ( $F(1, 60) = 13.15, p.001, 2p = .63$ ). [Citation needed] We did not discover any differences between the two tasks carried out by the control group when we looked at each group on its own ( $F(1, 32) = 181.01, p.001, 2p = .85$ ; see Figure 5), but we did detect differences when we compared the control group to the experimental group (see Figure 5).

### **3.4 Aspects of the intervention's impact on the processes**

The results of the pre- and post-intervention synthesis tasks, as well as the relevant means and standard deviations for the scores on the process variables, are presented in Table 9 for each of the groups.

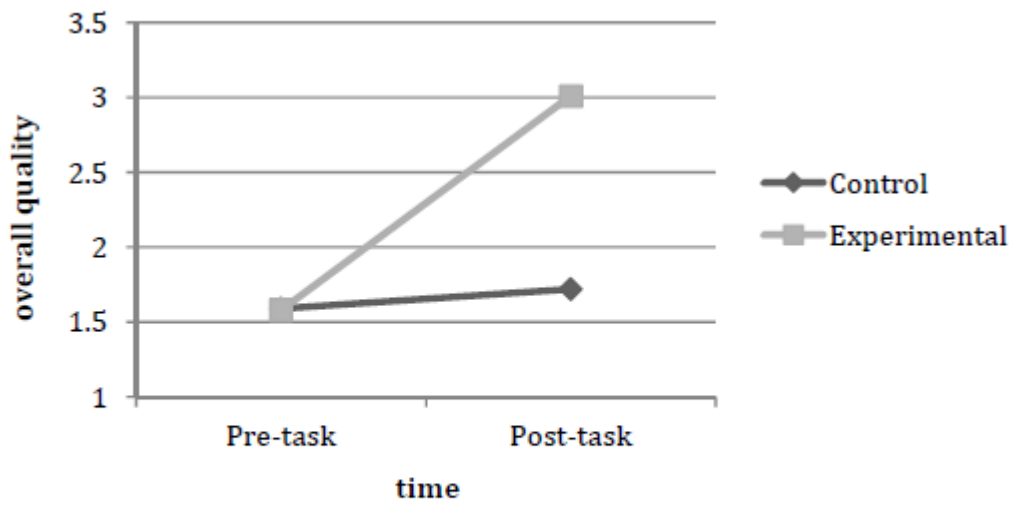


Figure 5. Overall text quality score for each group on the pre and post tasks (overall quality max. 4).

**Table 9:** The pre-task and post-task evaluations of the corresponding averages and standard deviations of process variables are presented in the following table for each of the groups that participated in the assessments.:

	N	Control				Experimental			
		PRE		POST		PRE		POST	
		M	SD	M	SD	M	SD	M	SD
Time spent on task	32	36.13	5.57	28.13	7.75	37.81	10.18	51.44	8.99
Number of different activities	32	3.38	1.26	2.56	0.63	3.31	1.25	5.06	1.61
Interactions between source texts - student text	32	1.19	0.54	1.00	0.00	1.25	0.45	1.88	0.81
Presence and nature of revision	32	1.25	0.58	1.13	0.50	1.50	0.82	1.88	1.02



### **3.4.1 Processing Time**

It was demonstrated that there is a substantial correlation between the two variables of time and group (the  $F(1, 30) = 47.44$ , which is statistically significant, and  $2p = .61$ ). [Citation needed] When comparing the two groups' mean scores on the post-intervention task, there was a statistically significant disparity between them ( $F(1, 30) = 61.71$ ,  $p.001$ ,  $2p = .67$ ). The control group's average time to finish a task decreased with time ( $F(1, 15) = 18.73$ ,  $p.01$ ,  $2p = .56$ ), but the experimental group's average time to finish a task increased over time ( $F(1, 15) = 28.82$ ,  $p.001$ ,  $2p = .66$ ). These results were found using a factorial design with 15 participants. Both of the groups went through a period of change during the course of the investigation, albeit in different ways.

### **3.4.2 various activities**

While the students were working on the synthesis project, they were given a variety of obligations, which are detailed in Table 4. This table provides a breakdown of these responsibilities. It was proven that there is a substantial correlation between the number of tasks completed and the learning environment ( $F(1, 30) = 33.22$ ,  $p.001$ ,  $2p = .53$ ). This was demonstrated by the following: When compared to the pre-intervention task, the experimental group participated in a greater number of activities during the post-intervention task ( $F(1, 15) = 23.71$ ,  $p.001$ ,  $2p = .61$ ), in contrast to the control group, which participated in a smaller number of activities ( $F(1, 15) = 9.64$ ,  $p.01$ ,  $2p = .39$ ). In order to arrive at these conclusions, a multivariate analysis of variance was carried out (ANOVA).

### **3.4.3 The links between the main texts and the completed work**

We found that there was a significant interaction between time and group in terms of the interactions that took place between the source texts and the texts that were created by the students ( $F(1, 30) = 13.00$ ,  $p.01$ ,  $2p = .30$ ). This was the conclusion that we came to after doing the research. After conducting the investigation, we came to the conclusion that this was the case. In order to provide evidence of this, the statistical model that was applied is as follows: When the effects of each group were studied independently, it was discovered that the performance of the experimental group improved throughout the duration of both

of the tasks, but the performance of the control group did not change at all ( $F(1, 15) = 12.10, p.01, 2p = .45$ ). During the course of the process of assessing the precise direct findings obtained by each group, it became abundantly evident that this was the case.

#### **3.4.4 Strategies and approaches for the revision**

For the revision, there was a significant interaction between time and group ( $F(1, 30) = 6.32, p.05, 2p = .17$ ) - for a description of the data, see Table 9 -. Time and group interacted in this way significantly. The results of the two groups on the post-intervention task were statistically different from one another ( $F(1, 30) = 6.92, p = .01, 2p = .19$ ), despite the fact that the scores that the two groups obtained on the pre-test did not differ from one another in a way that would be considered statistically significant. After breaking down the components of this interaction effect, it was found that the post-intervention performance of the two groups was statistically distinct from one another.

#### **3.4.5 The investigation of the main sources in their original form**

The frequency with which different kinds of score changes occur is presented in Table 10, which is organized in line with this criterion. There were two distinct choices to select from in accordance with the grading strategy that was utilized for this characteristic. Reading in parallel and reading in serial were the terms used to describe them. As a part of the evaluation, the following actions were carried out: (3) The expression "go down" referred to the direction in which the reading changed, and it was used to represent the change from parallel reading to serial reading. This change was represented by the phrase. (1) The phrase "no change" was used to characterize scenarios in which the student read the texts in the same way for both tasks, which, depending on the circumstances, might have been either parallel or serial reading. (2) The expression "go up" refers to scenarios in which the student moved from parallel to serial reading for the pre-task to the post-task. This transition took place during the transition from the pre-task to the post-task. This modification took place all through the process of moving from the pre-task to the post-task state.

Table 10 shows the corrected standardized residuals as well as the number of students in each group who had a change of opinion as a direct result of reading the source texts for the first time.

	Control			Group	Experimental		
	Down	No change	Up		Down	No change	Up
First reading of	7	9	0		1	10	5
source texts CSR	2.4	-4	-2.4		-2.4	-4	2.4

When the adjusted standardized residuals have a value that is more than 1.96, they are shown with a shade of grey that is darker than the normal one. If the value is more than -1.96, black numerals will be displayed; else, numbers will be shown in a light grey color.

These findings ( $2(2) = 9.55, p.01$ ) indicate that the student scores of the experimental group's students on this measure increased more than would have been expected, whereas the student scores of the control group's students decreased. This suggests that the experimental group's students performed better than the control group's students. These are the data that make up Table 10, and you can find them here.

#### **4.Discussion**

A SWSL program that was established to increase learning by offering strategy training in text-digestion through the construction of synthesis was the focus of this research. The major objective of this study was to evaluate the efficacy of the program. Reading and writing activities need to communicate with one another in order for this type of learning to take place. The training was given to the students who were a member of the experimental group, and as a consequence, they attained greater levels of comprehension. This provides some evidence that they were more adept at receiving and processing information that was communicated to them at a greater distance. This demonstrates how providing students with instruction on the processes essential to construct syntheses (selection, elaboration, organization, and integration) aided them in learning in a manner that enabled knowledge transformation rather than simply the repetition of fundamental content. Previous research has demonstrated that the efficiency of the learning process may be significantly improved by combining the knowledge obtained from a variety of various

sources into a single, distinct, and original presentation (Miras et al., 2008). This new study expands the prior research by providing an evaluation that is both direct and thorough of the three fundamental criteria that affect the performance of the synthesis. This is accomplished by delivering a direct assessment of the features. The degree to which an individual is aware about the subject at hand, the caliber of the written work that is produced, and the frequency with which an individual is needed to read and write are the three aspects that make up this consideration.

This study makes a contribution to the existing body of knowledge about the ways in which education may encourage the cognitive growth of older students as they engage in synthesis reading and writing (Martinez et al., 2011), as well as the ways in which this method of instruction can be used with younger children as long as the appropriate scaffolding is in place. Specifically, this study focuses on the ways in which education may encourage the cognitive growth of older students as they engage in synthesis reading and writing.

The cognitive processes that students go through as they perform synthesis exercises in order to arrive at a conclusion was another major issue that received a lot of attention in this study that was centered on the findings of this research. According to the findings of earlier studies (Lenski and Johns, 1997; Mateos et al., 2008; Martnez et al., 2011; Solé et al., 2013), participants in this experiment exhibited a propensity to initially stick to rigid, linear patterns. This conclusion is similar with the findings of other studies. Mateos et al., 2008; Martnez et al., 2011; Solé et al., 2013). After the intervention, it was discovered that there was a discernible improvement in the performance of the experimental group when compared to their performance on the pre-intervention tasks. This was shown in the post-intervention tests. In general, this was how things turned out to be. This information came to light after the intervention had already been carried out.

The members of this group, all of whom were in agreement with the discoveries reported by Spivey and King, may be found here (1989). Specifically, they increased the length of time that students spent working on the project, as well as the number of different activities that they took part in. There is still a possibility that the project will not be completed, despite the fact that it will take a materially longer amount of time and that there will be a materially greater number of things to do. The continuation of connections that were

established between the works produced by the students and the primary texts probably made it possible for the expansion of the ideas that were eventually incorporated into the final product. This was the case because the ideas were eventually incorporated into the final product. In addition to this, we discovered that the qualities of these pursuits differed from one another in a qualitative sense. Students who first studied the material on their own quickly became fluent enough to read it aloud to their classmates. Some of these students even referenced back to the main sources when they were polishing their own distinctive works, which demonstrates how important independent study is. After investigating the significance of the participants' repeated readings of the sources during the process of developing the synthesis, Solé and her colleagues (2013) came to the conclusion that these findings are congruent with what they uncovered. They came to the realization that carrying out such an activity was advantageous for the participants in the experiment.

On the other hand, the viewpoint of one particular individual was that the alterations need to have a behavior that was distinct from the one that was commonly recognized. Despite the fact that there was an obvious tendency toward development, the outcomes of this exercise were not particularly significant. This conclusion is in keeping with the findings that Torrance, Fidalgo, and Garca arrived at (2007). This conclusion could be explained by the difficulties that first-year students face while rewriting their papers, particularly when trying to notice crucial faults that are different from grammatical and spelling issues, such as significant misunderstandings or a lack of ability to organize information, etc (Graham & Harris, 1996; 2000; Martnez et al., 2011; Mateos et al., 2008). Graham and Harris are the ones who initially brought forward these discoveries. Even though the students who took part in the program began reviewing their papers, when they had not done so in the past, it appears that the intervention was not effective enough to enable the students to review with the intention of doing something other than just correcting spelling and grammar errors. According to Torrance et al. (2007), another factor may be the fact that students spent a substantial amount of time preparing their comments before giving the most polished English they were capable of creating all at once. This was done in order to demonstrate that they were competent to do so. Because the author may have already made the necessary modifications when reading and writing the material, reviewing the content may not be as crucial in certain instances to increasing the overall quality of the work that

was created. This is because the author may have already made the necessary adjustments. It would appear that the students did not feel it essential to make any changes to their work once they had completed the draft that they had been working on; nevertheless, they had previously been working on this document. It's probable that the environment conducive to learning in the classroom is to blame for this situation. According to Mateos and Solé (2009), students prefer to assess their writing more if the context dictates refining the content, such as when it will be viewed by an audience. For example, students prefer to analyze their writing more when it will be seen by an audience. This study lends credence to the idea that students are more likely to be motivated to review their writing in response to external variables if they find that their findings are supported. On the other hand, this was one of the areas in which the previous research did not perform enough. Even though the students were given explanations of the editing process, it is likely that they did not feel compelled to improve their writing in order to fulfill a particular task. This is because the students were supplied with explanations of the editing process. Because the intervention had such a profound impact on the standard of the text as a whole, it is extremely unlikely that any more modifications could have had an effect on the end result (about three standard deviations).

Because of these facts, we are in a position to make the reasonable conclusion that the post-intervention tactics that the students used to address the issue followed a range of basic patterns. This is something that we are able to do because we are in a position to do so. Reading and writing activities that were given to participants in the experimental group were designed to be more pliable and recursive. These activities were delivered to the participants. These behaviors included devoting more time to the task at hand, engaging in additional activities, revising and significantly altering their texts, and returning to the texts repeatedly over extended periods of time in order to elaborate on the information that they had read and integrate it into their own texts from the beginning in an integrated manner. Additionally, these behaviors included revising and significantly altering their texts.

Not only did the manner in which the intervention was carried out have a beneficial affect on the learning outcomes of the students, but it also had a positive influence on the products that the students made and the activity patterns that they formed. As a direct result of this, it would seem to indicate that the methods that were used throughout the sessions were

successful. The software that was developed by Wray and Lewis (1997) was used as the basis for this approach, which also contained other resources for methodological support, such as the textual guide. This method was published in 1997. We have shown that this kind of action has substantial ramifications for the educational system, and those repercussions have been proved. Children who are better able to read and write are more able to adapt to changing circumstances and engage in recursive mental processes. Students are able to create superior texts that contain vital concepts that are presented in a manner that is consistent throughout as a direct result of this, and as a consequence of this, students obtain a deeper comprehension of the subject matter.

According to the findings of past studies, a significant portion of the written synthesis that is produced by students is not of an adequate level (Lenski & Johns, 1997; Mateos et al., 2008). They relied on paraphrases or copies of the text gained from the sources, they failed to correctly integrate the material obtained from the two sources, they excluded crucial elements, and they followed a structure that was illogical. It was not surprising to notice that the two groups' performances on the post-intervention task were considerably different from one another given the findings of the study that had been carried out by Martinez and her colleagues (2011). In contrast to the output of the control group, which did not significantly improve at all, the experimental group showed significant progress in the writing of synthesis texts through their participation in the experiment. When employing the two sources that were mentioned earlier in this paragraph, the experimental group shown a significant improvement in concept selection, elaboration, coherence, and integration. This was the case throughout the whole paragraph.

In closing, we would like to bring your attention to some additional potential lines of inquiry that have developed as a direct result of either the findings or the limits of the study. When each of the tactics that were utilized at various points throughout the intervention was taken into consideration, it became obvious that the intervention was successful in terms of the program design that it was attempting to implement. In the not-too-distant future, a novel strategy for doing research may be put to the test. In this newly designed structure, compartmentalizing the course into its multiple educational methods might also prove to be advantageous. It will be possible, as a direct consequence of the findings of our research, to acquire additional knowledge on the specific ways in which each instructional strategy

contributed to the benefits that were discovered. The intervention was carried out over the course of a period of four weeks, and it was only put into practice within the confines of a single instructional unit that was centered on a specific subject matter. Are these findings capable of being extended to other sorts of units, subjects, and texts, particularly ones that do not complement one another in any way? A whole new research field has emerged as a direct result of the discovery of benefits related to certain illnesses that were not previously known. Students need to learn how to rework the work that they have already completed in order for them to be able to conduct a more in-depth study of the material that they have written. Only then will they be able to accomplish this. This is just another aspect of the situation that has to be looked at more thoroughly. In the end, the researcher came to the conclusion that the best way to take into account the personal lives of the lecturers would be to make use of the program. As a consequence of this, it is feasible that the effects of the therapy were misunderstood to be those of the instructor. This is because the researcher does not have a strong familiarity with the students and may not have as much expertise as the normal professors who are in charge of the control groups. The reason for this is due to the fact that the researcher does not have a strong familiarity with the students. The creation of strategies for teaching regular educators how to make use of the software is one of the prospective foci of research that may be conducted in the future. This would accomplish two goals: first, it would make it possible to evaluate the performance of the program in an environment that is more comparable to its natural environment; and second, it would eliminate factors that may skew the findings. Both of these goals would be met if this were to take place. If this were to be done, then we would have accomplished both of these goals. In the end, one of our goals is for teachers to be able to successfully implement this program in their own classrooms, and for it to be seen as a dependable and beneficial resource within educational settings. Another one of our goals is for students to be able to successfully implement this program in their own classrooms. As a result of this, the primary objective will be able to be completed successfully.

When attempting to quantify the process of acquiring new knowledge, there are typically two challenges that come up. Throughout the duration of the intervention, the learner was questioned with questions taken from each of the six books that were covered in order to ascertain how effectively they had internalized the information that was being presented.



We made use of this information because we had the impression that the kids were able to learn in a new way as a result of the intervention as a whole, and we were able to confirm this feeling. On the other hand, the fact that learning is subject-specific hints that the relatively low reliability may have been the consequence of a test that had questions derived from six different sources of knowledge. It would be beneficial to devise a test that is directly connected to the information that was acquired via the text pairings that were utilized in the pre- and post-synthesis activities in research that is analogous to the one that we described in this paper.

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**4**

**Epistemological and writing beliefs in a first-year  
college writing course: Exploring shifts across a  
semester and relationships with argument quality**

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**Abstract:**

This study's purpose was to analyze 164 first-year students who had previously participated in another study. Attended a writing course on their rhetorical writing skills and epistemological viewpoints. At the start and conclusion of the semester, students had to complete epistemological and writing belief scales. The argumentative writing assignment that was due after the semester was also gathered. In a sixteen-week semester, correlational studies demonstrated a significant link between students' writing perspectives and their epistemological beliefs. The findings of the research revealed that the students' epistemic viewpoints on how quickly they may learn new information and the particular knowledge they already had experienced considerable change over the semester. In addition, during the semester, the student's perspectives on writing constantly evolved. as a final product, its role

in resolving disputes changed considerably. The calibre of the rhetorical writing students creates intimately related to their beliefs about writing. The study examines the students' writing philosophies and contrasts them with their writing abilities.

**Keywords:** Knowledge beliefs, task-specific beliefs, freshman comp position, rhetorical writing, persuasive writing, audience awareness

As they advance through their studies in higher education, students usually develop fresh perspectives on various subjects, including how they define the connection between education and knowledge. If everything goes as planned, college students see a significant shift in their worldview during their academic careers, according to studies of students' epistemic viewpoints (e.g. Magolda, 2001; Hofer & Pintrich, 1997; Kuhn, Cheney, & Weinstock, 2000; Perry, 1970; Schommer, 1993). There is a possibility that the students' perspectives on information and education, as well as their attitudes about academic responsibilities such as writing and research, might shift during the year (Berkenkotter, Huckin, & Ackerman, 1991; Curtis & Herrington, 2003; Haas, 1994; Haswell, 2000). This investigation looked at the connection between students' more general epistemological views and their writing beliefs to establish whether students' writing and epistemological beliefs influenced their ability to write rhetorically (Schraw, 2013).

The type of writing emphasized in many of the first-year college composition courses that students are required to complete places emphasis on the rhetorical situation, audience awareness, examination of alternate views via counterargument and rebuttal, and writing as a means of self-construction. Students are also expected to complete this style of writing. This is congruent with the shift that has taken place in first-year writing instruction over the past many years, most notably in the United States. (Lunsford, Wilson, & Eberly, 2009). (Elbow 1991; Bartholomew 1986). Because they call on the writer to examine diverse points of view, a crucial aspect of so-called "epistemological sophistication," activities in rhetorical writing resonate with the idea of epistemological beliefs. By emphasizing a process model of writing and texts as active components within larger discourses, these composition seminars for first-year undergraduates hope to change students' attitudes away from writing as a product and texts as static things. These courses alter students' viewpoints (McMillen & Hill, 2004). Yancey (2002)

This study initially examined that to have a complete understanding of the link between knowledge and writing beliefs. Therefore, it is necessary first to establish the connection between the two. After that, it tracked how students' writing styles and epistemological viewpoints evolved over a single academic semester. This was done in order to have a better understanding of the connection that exists between knowledge and the act of writing beliefs. Next, the students' past knowledge and their viewpoints on their writing were evaluated compared to the final course assignment, which required argumentative writing. This comparison served as the basis for the student's grades. Last, a study of the students' qualitative writing characteristics about their writing beliefs was carried out.

## **1. Theoretical Framework**

People's attitudes on education and knowledge, as well as their epistemological concepts and beliefs about certain activities, such as reading and writing, have all been the subject of previous research. This body of research implies that certain epistemological and task assumptions may be related to how well students do academic tasks like writing and that students' epistemological development might happen throughout their stay in college.

### **1.1 General Thoughts and Ideas**

Educational psychologists have seen a movement in the knowledge perspectives of college students from an absolute (right vs. incorrect) perspective to an openness to other people's points of view ever since Perry (1970) made this observation. This pattern has been seen by educational psychologists that specialize in the field. Even though college is not likely to have a monopoly on the process of epistemic maturity, there is evidence to suggest that it has a unique influence on students' epistemological development. Researchers have examined this tendency in several ways, including conducting interviews with students that were both organized and open-ended (Magolda, 2001; King & Kitchener, 1994). Through semi-structured and extended interviews with students, these studies have uncovered a pattern in how students' perspectives on knowledge and knowing change throughout their education. Some time, continued access to the participants and complex scoring processes to study the possibility of student viewpoint shifts. This was because the interview measures themselves were qualitative.

A major advancement in the field of epistemological belief research was made with the creation of The Schommer Epistemological Belief Questionnaire is available here (1990; Schommer-Akins, 2004). This is because the survey measures a phenomenon using pen and paper. That was previously investigated through interviews. Studies that applied this criterion in academic contexts reveal a favourable association between levels of education and the existence of more created and contingent attitudes about knowledge (Schommer, 1998). In addition, studies of people's epistemological views have indicated relationships between people's ideas and their performance, and these associations have been seen in populations other than undergraduate students. For example, students who subscribe to the philosophy of rapid learning tend to exaggerate their levels of comprehension, score worse on reading comprehension tests, and have lower grade point averages, according to research conducted by Schommer (1990 and 1993). These studies have also shown that people's views can shift in reaction to new experiences and information that comes their way. For example, research on teachers' epistemological views using Schommer's measure has been carried out by preservice and in-service teachers at various grade levels and academic institutions. (e.g., Brownlee, Walker, Lennox, Exley, and Pearce, 2009; Cheng, Chan, Tang, and Cheng, 2009; Jena & Ahmad, 2013). Academic journals have reported the results of these investigations (e.g., Fives & Buehl, 2008; Hillocks, 1999; Maggioni & Parkinson, 2008). These investigations often showed connections between instructors' knowledge-related views and learning-related beliefs, as well as relationships between these epistemological beliefs and instructional decisions; this suggests that teachers' knowledge-related views influence behaviour.

### **1.2 Task-specific beliefs**

Numerous empirical research findings indicated that students' opinions regarding particular academic tasks were typically favourable. In one of this research, The Reading Beliefs Inventory (RBI) was used by Schraw (2000) to determine whether or not students thought that reading was important in their lives. It was primarily a transmission or a transactional activity. This was done to make it possible to interpret the study's findings. High performers on the RBI's transmission subscale strongly emphasized understanding and absorbing the author's intended meaning in their views.

Contrary to transaction views, which focus on the procedure of gleaning meaning from a text, this is the case. Students' reading views and the calibre of their writing, as shown in the paragraphs they wrote in response to the study's prompt, were correlated by the Reading Behavior Inventory (RBI). For readers with strong transactional and low transmission views, the writing exercise, including replies to the reading content, took substantially longer and was far more crucial.

Research that was carried out comparably and made use of the Writing Beliefs Inventory (White & Bruning, 2005) found that students' reading and writing beliefs had a significant impact not only on the quality of the writing that they produced but also on the degree to which they were interested in the work. This was the case regardless of whether or not they were interested in the work. Those participants who reported having strong transactional attitudes about writing, i.e. beliefs that writing is an act of communication as opposed to a demonstration act, reported feeling more successful about their writing. (Shell, Colvin, & Bruning, 1995). In addition, their findings demonstrated that students might have high transmission views about writing and strong transactional views about writing simultaneously. Those who do so, however, run the risk of approaching writing duties in a manner that prevents them from incorporating both essential information and their own opinions while generating prose. Even though students may simultaneously have high transmission and transactional perspectives about writing, this was the case. (p.182).

### **1.3 The Role of Beliefs in the Performance of Academic Tasks**

According to research linking students' views on epistemology to their writing skills, some characteristics of students' epistemological viewpoints might predict how well they would do on a task that required them to write a paragraph (Kardash & Scholes, 1996; Mason & Boscolo, 2004; Schommer, 1993b). The quality of students' conclusion paragraphs may be predicted by their attitudes toward specific facts, as well as the importance of cognition and prior ideas of the issue, according to research by Kardash and Scholes (1996). According to a study on college students, students' epistemological stances and how well they fared on a test where they had to write a conclusion paragraph had a correlation (Schommer, 1993b). These results showed that the students' oversimplified conclusions were related to their beliefs about speedy learning and precise knowledge. Additionally, eighth-grade students' epistemological

viewpoints were found to be predictive of their ability to construct arguments in opposition to contested readings by Mason and Scirica (2006).

Mateos, Cuevas, Martin, Echeita, and Luna (2011) conducted more studies on the connections between college students' reading, writing, and epistemological notions and their level of success in an argumentative writing job. Based on the short synthesis essays the students had written regarding the contentious readings assigned as part of the project, their writing was graded. They discovered that only transactional reading beliefs were a valid indicator of how well the students portrayed various points of view in these so-called "perspective" essays. Correlational studies turned up this information. Writing beliefs or epistemological ideas were not significantly correlated with writing performance. However, they did discover a substantial link between writing abilities and reading attitudes.

These studies show a substantial association between task beliefs and rhetorical writing by linking task beliefs to argumentative writing by assigning participants a paragraph writing task. The idea of a connection between argumentative writing and one's beliefs was raised by a research study that included various data on student writing, including longer pieces of course-based writing. Researchers examined student writing to assess the rhetorical quality of the writing and the students' epistemological stance (Hays, Brandt, and Chantry, 1988; Hays & Brandt, 1992). Their qualitative investigation revealed a strong relationship between undergraduates' epistemic perspectives and the calibre of their writing. Essays with alternate perspectives and convincing arguments were more frequently written by students who adhered to constructivist epistemologies than by students who held other epistemologies. In this situation, the only source of information for classifying epistemological views was the papers the students had written. No further measure was used. Although a separate beliefs test was not included in the study's design, the researchers' work provides an important avenue of inquiry into the relationship between beliefs and the "in vivo" undergraduate writing projects students completed during the semester.

#### **1.4 The Aims and Scope of This Particular Research**

The following questions were addressed during this research in order to investigate the connection that exists between epistemological views, writing beliefs, and course-based rhetorical writing:

### **Part One**

§ What connections exist between students' attitudes about writing and their beliefs about knowledge? Do the connections between writing beliefs and epistemological beliefs vary from the start to the conclusion of a semester?

Do students' knowledge and writing beliefs significantly alter over the semester?

### **Part Two**

Are students' writing views, epistemological beliefs, and effectiveness in rhetorical writing related?

### **Part Three**

What distinguishing qualities may be found in the writings that students who adhere to different writing philosophies have prepared?

## **2. Introduction and Part One: The Epistemological and Writing Beliefs of First-year College Students Across Composition**

This study's main goal was to follow undergraduate students taking a lower-division college writing and rhetoric course throughout one academic semester regarding their epistemological viewpoints and writing habits (Writ 101). Because it has been noted that quantifiable epistemic shifts take a longer time frame, I hypothesized that students' overall epistemological views would not alter throughout the 14 weeks (Jehng, Johnson, and Anderson, 1993; King & Kitchener, 1994; Kuhn, Cheney, and Weinstock, 2000; Pirttila-Backman & Kajanne, 2001). Kuhn, Cheney, and Weinstock (2000); King and Kitchener (1994); Part, However, I did anticipate that during the semester, their task-specific perspectives on writing would change because of the nature of teaching rhetorical writing and the course's aims (Yancey, 2001).

### **2.1 Method**

#### **Setting and participants.**

A well-known research institute in the South provided a writing class for students in the lower division throughout thirteen sessions, and 164 first-year students registered for the class. The

class was taught by individuals pursuing doctoral degrees in English, Rhetoric, or American Studies and who had at least four semesters of experience working as teaching assistants for classes that were closely related to the subject matter of the class. Writing 101 required students to complete certain coursework, readings, and assignments. Ninety-five percent of the first-year students who registered for the class during this particular fall semester claimed that they were between the ages of 18 and 19 at the time of their enrollment, with 44 percent of the students being female and 56 percent of the students being male. The following is a breakdown of the components in terms of their ethnic composition:

Seven percent of the population is comprised of Black or African-American people.

Sixteen percent of the population is comprised of Asian or Asian-American people.

Thirty percent of the population is comprised of Ling/a or Mexican-American people.

Forty-five percent of the population is comprised of White or Caucasian people.

Two percent of the population is comprised of Middle Eastern people.

Thirty-five percent of the first-year students in this class have chosen to major in the liberal arts. This is followed by 15 percent who have chosen to major in the natural sciences, 13 percent who have chosen to major in engineering, 10 percent who have chosen to major in business, 11 percent who have chosen to major in fine arts, 9 percent who have chosen education, and 5 percent who have chosen communications. In addition, twenty percent of the first-year students in this class decided to major in economics, and five percent of them selected to study communications. Eighty-four percent of the children stated that they had spent their whole lives in the United States, and virtually all of them could communicate in English as if it were their first language. Another 10% of the population had stayed there for more than four years, making up this percentage of the total. Students from other countries whose first language was not English were required to take the Test of English as a Foreign Language (TOEFL) and get a score indicating a level of English language ability acceptable for ordinary college coursework to be accepted into the class. Only students who met these requirements were eligible for enrollment in the class.



Students will learn how to read and write argumentative essays in this class, as well as how to apply the stasis theory to research a variety of topics. Everything is an Argument is the required literature for this course. Its inspiration comes from a procedural approach to writing, editing, argument construction and rhetorical theory (Lunsford, Ruszkiewicz, & Walters, 2010).

This course aims to assist students in expanding their aptitude for persuasive argumentation, critical thinking, and audience awareness. Since this course is a requirement for the university's core curriculum, students must complete it; however, they can also get credit for it by passing an exam in its place.

## **2.2 Sources of data**

### **Survey of Epistemological Beliefs**

A Schommer scale with 63 items was used to evaluate epistemic viewpoints (1990; Schommer-Akins, 2004; Schommer-Akins & Hutter, 2002). Items that inquired about the respondents' views on the nature of knowledge, the speed at which people acquire it, whether learning is a fixed talent, and the stability of knowledge were used to gauge their perspectives. A high score meant the participant thought knowledge and the aptitude for learning were unchangeable traits and that learning happened quickly. Each question received a rating on a scale from 1 to 5, with 5 being the highest.

The psychometric characteristics of the Schommer instrument and the study used to determine the subscales have both come under fire (Schraw, Bendixen, & Dunkle, 2002; Wood & Kardash, 2002). Schommer engaged a team of educational psychologists to divide each of the 63 items into distinct subgroups as he created the questionnaire. The final product was the twelve groups, each with two to eight pieces. Four orthogonal epistemic components were found in the 12 subgroups after factor analysis, which is a pattern that has been observed in several prior research projects (Hofer & Pintrich, 1997; Jehng, Johnson, & Anderson 1991; Schommer, 1990, 1993; Schommer & Dunnell, 1992; Schommer, Crouse, & Rhodes, 1992). Other research has questioned the classification of items before the conclusion of factor analysis, asserting that this step affects the scale's validity (DeBacker, Crowson, Beesley, Thoma, & Hestevold, 2008; Wood & Kardash, 2002; Wood, Kitchener, & Jensen, 2002). These assertions were stated in two studies, Wood, Kitchener, and Jensen (2002) and Wood, Kardash,

and Jensen (2002). The following academics have employed their study's EBQ and Schommer's 12 a priori item categories. Each has used principal axis factoring with Varimax rotation to get identical 4- or 5-factor answers. On the other hand, no study has attempted to reproduce the initial item classification phase performed by experts.

Due to the problems, I decided it would be best to utilize the most frequently used technology, which necessitated that I look at the factor structures of all 12 subcategories. The scale's final output, a 4-factor structure, was generated by both the early and late administrations. This structure generated loading patterns consistent with past EBQ analyses and explained 55% of the early semester variation and 53% of the late semester variation. Appendix A contains the item weightings for each of the 12 subcategories.

For Fast Learning, Authority, Certain Knowledge, and Impatience, each of the four subscales had dependability values (Cronbach's alpha) that varied from 0.67 early to 0.67 late. For Fast Learning, Authority, Certain Knowledge, and Impatience, these values were 0.75 and 0.73. (0.72, 0.74). (.63, .65) The total measurement reliabilities were 0.85 for the early test administration and 0.81 for the later test administration later in the semester.

### **Collection of Beliefs About Writing**

The White and Bruning (2001) measure, created to gauge people's perceptions about the purpose of writing, was updated into this 11-item survey. The goal of the test was to look at how participants perceived the value of writing. The tool used questions using a Likert-type scale of 5 points, with 1 meaning strongly disagreeing and 5 denoting strongly agreeing, to allow respondents to express their degree of agreement with the proposition. A good grade suggested that the writer had a product-focused writing strategy and that they believed writing should be affected by authority. I concluded that the initial results did not represent the two-factor structure that had been developed in earlier research after performing a pilot study of the original WBI with around 150 rhetoric and writing students during the previous semester (White & Bruning, 2001; 2005; Mateos et al., 2011) I altered the scale by include items that assessed attitudes pertinent to rhetorical writing in order to address the issue of inconsistent factor loadings. A scale of one to five was used to assess these opinions. Three extremely seasoned rhetoric and writing professors helped with the revisions, and I also based them on discussions I had with my students during class. Appendix B contains the original White and

Bruning (2005) scale and these updated portions. I used the most recent version of the questionnaire and then used principal component analysis with an oblique rotation to analyze the modified writing beliefs inventory (Varimax). I repeated the analysis and extracted the three variables since the scree plot appeared to suggest that there were three variables to take into account. The sentence "A primary objective of writing should be to have to make as minimum adjustments as feasible" was removed from the text because it included a cross-loading error. The dependability coefficients for the three extracted components varied .70 to .75 with a total Cronbach's alpha of .71. This resulted in an overall Cronbach's alpha of .71. The Writing Beliefs Inventory results from the early and late semester administrations are compared, and their corresponding factor loadings are presented in Appendix B.

Writing as a product had dependability values of 0.72 for early delivery and 0.70 for late delivery. Writing that was authority-based had reliability coefficients of 0.79 and 0.75. Writing that was intended to avoid conflict had reliability coefficients of 0.75. Early in the research, writing was assessed as a product, and later on, it was assessed as an action based on authority (.78, .74). The total measurement reliabilities were 0.85 for the early test administration and 0.81 for the later test administration later in the semester.

I visited each of the 13 Writ 101 sections that had agreed to participate during the third week of the 16-week semester, went through informed consent, reviewed the study procedures, and handed them the first survey. These visits occurred in the middle of the lesson, but the teachers left the room at this point so order to prevent them from being able to identify which students had consented to take part in the exercise. In the fifteenth week of the semester, I returned to repeat the process and distribute the surveys to the participants.

### **2.3 Findings**

#### **The evolution of philosophical and literary ideas across time.**

By comparing the early and late semester Pearson correlation coefficients within measurements, it was possible to discover the connections between epistemological stances and writing views (Table 1). For example, the Schommer's Epistemological Beliefs Questionnaire's subscales showed statistically significant associations in both the early and the

late administrations. Additionally, in the early and late administrations of the survey throughout the semester, there was a substantial correlation between each Writing Beliefs subscale.

Significant early-semester relationships were discovered for the majority of items on both the Writing Belief and the Epistemological Belief subscales. For instance, the findings from each knowledge belief subscale showed a significant relationship between the notion of writing as a product and the student's perceptions of learning as occurring quickly, authority as being all-knowing, knowledge as being certain, and their low tolerance for ambiguous information. Additionally, there was a significant association between early semester EBQ scores and the notion that writing should avoid conflict (.18-.29). Additionally, students who felt writing should be used to report authorities' opinions were more inclined to believe in certain knowing (.13), omniscient authority (.20), and frustration with ambiguous knowledge (.20). Our conclusion from this is that writing should be utilized to report authority' opinions.

None of the other subscales exhibited an association that was even marginally significant with how individuals regard writing as a product towards the end of the semester. The striking change in students' attitudes regarding product-focused writing from the start to the conclusion of the semester, which is covered in more detail in the next section of the study's discussion, may help explain this. First, the students believe that writing should steer clear of issues. In contrast to impatience with ambiguous information, this perspective was substantially linked with quick learning (.15), omniscient authority (.21), and specialized knowledge beliefs (.23). Although it was no longer linked to quick learning and annoyance with unclear information, students' impression that the goal of writing is to transmit the opinions of authorities remained strongly connected with omniscient authority (.30) and particular knowledge beliefs (.24). Table 1 shows the Pearson correlations between the writing belief scales (wb) and the epistemological belief subscales (bbq).

Three groups of correlations are distinguished: stability indices on a diagonal, time one above, and time two below.

	<b>EBQ FL</b>	<b>EBQ OA</b>	<b>EBQ CK</b>	<b>EBQ IA</b>	<b>WB WP</b>	<b>WB WRA</b>	<b>WB WAD</b>	
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EBQ Fast Learning	-.11	.21*	.12*	.27*	.16*	-.02	.21*	
EBQ Omniscient Authority	.40*	-.19	.25*	.35*	.19*	.20*	.29*	
EBQ Certain Knowledge	.31*	.30*	-.05	.29*	.16*	.13*	.19*	
EQB Impatience with Ambiguity	.70*	.50*	.26*	.03	.28*	.20*	.27*	
WB Writing as Product	.03	.06	.09	.09	.19	.03	.18*	
WB Writing Report Authority	.11	.30*	.24*	.24*	-.02	.05	.24*	
WB Writing Avoids Disagreement	.15*	.21*	.23*	.23*	.15*	.15*		.09
* $p < .05$								

### Measuring change in beliefs across the semester.

I performed a repeated-measures multivariate analysis of variance (MANOVA) on students' early- and late-semester scores on the EBQ and WBI subscales to see if their scores on the epistemic beliefs scale had changed over the semester.

Two of the epistemological belief subscales, Fast Learning ( $F(1, 163) = 216.86, p .01$ ) and Certain Knowledge ( $F(1, 163) = 165.39, p .01$ ), showed a substantial decline from early to late semester. Other subscales, such as Authority and Impatience, did not significantly change students' ratings throughout the semester. Table 2 lists the means and standard deviations.

Recall that the EBQ scores range from high to low, with high scores indicating a more absolutist epistemology and low levels indicating a notion of contingent knowledge, challenging authority, and flexible learning. Writing as a Product ( $F(1, 163) = 6.80, p.01$ ) and Writing should Avoid

Disagreement ( $F(1, 163) = 8.10, p.01$ ) were found to have undergone a substantial change according to the modified Writing Beliefs Inventory findings. Remember that Writing should avoid conflict and that a high score implies a perspective of writing as a process. Over the semester, students' perceptions of the primarily product-based nature of Writing shifted, as seen by post-test results showing an acceptance of revision as a necessary component of the process and a perspective on writing as audience communication. In addition, the way that students now view disputes and the need to include other viewpoints in their Writing was altered, which was also crucial. Late in the semester, students were more inclined to mention disputes and different viewpoints in Writing.

Table 2 shows the findings of a multivariate analysis of the early and late EBQ and WBI subscales.

Fast Learning*	3.9	3.3	25.23	216.86	.00	.57
	(.40)	(.30)				
Authority	3.0	3.0	.07	.32	.57	.00
	(.40)	(.40)				
Certain Knowledge*	3.6	3.0	23.69	165.39	.00	.51
	(.40)	(.40)				
Impatience	3.3	3.2	.53	2.49	.12	.02
	(.40)	(.40)				
Writing Beliefs Inventory						
Writing as a product*	1.50	1.38	1.08	6.80	.01	.04
	(.62)	(.67)				
Writing as authority-based	2.65	2.64	.00	.01	.93	.00
	(.82)	(.76)				

Writing should avoid disagreement*	2.62	2.43	2.96	8.10	.01	.05
	(.86)	(.90)				
* p < .01						

Over the semester, there was little change in the ratings that students gave at the beginning of the semester to indicate how they felt about how authorities' opinions appeared on their work. The three questions on the "Report Authority" scale were created to gauge the degree to which students believed that effective writing required properly capturing the opinions of subject matter experts and using direct quotations in one's writing. The use of sources, correct citation style, and avoiding distorting facts by using logical fallacies like erecting a straw man were heavily stressed in Writ 101. However, the students were expected to take ownership of their learning. Citation conventions and proper source usage were certainly stressed in class, but it is also plausible that this inhibited the students' sense of ownership and appropriation of their work.

**3. In the second section of the lecture, we will examine how the students' final papers and epistemological stances relate to one another.**

This portion of the study aimed to assess the relationship between students' rhetorical composition performance and their writing and epistemological viewpoints. The researchers were particularly interested in the kids' performance. When contrasting this procedure with the paragraph-writing tasks from earlier experiments, a change in strategy may be noted. These tasks were developed due to participants' participation in research (Kardash & Scholes, 1996; Mason & Boscolo, 2004; Mateos et al., 2011; Schommer, 1990). Eighty-one freshmen papers were randomly selected from a larger sample, scored, and included in the research after writing performance data from the student's final course papers were gathered. This increased the overall number of research publications to 198.

**3.1 Approach**

The data comes from the same measures and context utilized in the first portion of the study, plus the final course paper.

**composing persuasive papers and essays**

The students had to write a "Proposal Argument" between 5 and 7 pages as their final project for the course. They had to independently research a topic of their choice for this particular paper, cite at least five reliable sources, and provide a solution for a specific audience. For instance, one student asked for more nutrient-dense supper options in the on-campus dorm cafeteria in a letter to the university's head of the food division. Each one of the rhetorical ideas and techniques the students had studied during the semester was to be used in the proposal paper. Students had to submit a rough draft of their work at least two weeks before the due date to get feedback, and then they had to rework it and submit it as their final product. This was done to make the writing process model stand out more. Only the finished versions of the suggested arguments were gathered for this investigation. Eighty-one first-year papers were evaluated using a Charney-developed grading scale (2004). There are ten separate parts to this rubric, which are listed in Table 3.

Five professors, a Ph.D. candidate with a cumulative teaching experience of at least five academic years, made up the pool of raters. They participated in a two-hour norming session using the detailed scoring guide extensively. This manual had an extract in Appendix C and described the characteristics of each category at each of the five levels. Each paper's 10 separate parts were graded using a process called "blind scoring." This indicates that the raters were unaware of the student's scores on the writing belief and epistemological belief scales and their access to the student's personally identifiable information. Two raters graded each paper. Excellent levels of consensus were reached among raters on a given topic, ranging from 87 to 96 percent overall. The evaluations for each component were averaged when it was established that there was a high degree of reliability between the two raters.



Table 3 lists the 10 elements of the scoring rubric.

Component	Description <i>To what extent does the writer:</i>	Mean (SD)
Exigence	Motivate the reader to keep reading? Demonstrate the scope and context of the problem? Take on a clear and arguable position about the position/controversy?	3.68 (1.08)
Audience Awareness	Address a specific audience in an appropriate, persuasive way? Demonstrate awareness of an audience or readers?	2.33 (1.08)
Logic	Make a clear claim and use reasons and evidence to support claims?	3.51 (.97)
Avoid Certitude and Generalizations	Does the writer come across as fair-minded? Does the writer qualify statements and acknowledge uncertainty in the proposal, or come across as narrow-minded?	3.22 (1.24)
Source Integration	Maintain control of the argument while leveraging sources to support it?	3.22 (1.24)
Counterargument	State, acknowledge, consider, and fairly represent the opposition?	2.91 (1.26)
Rebuttal	Respond to opposing arguments in a clear, reasonable way that demonstrates understanding?	2.93 (1.25)
Organization	Organize paragraphs in a readable, follow-able, consistent way that is free of tangents?	3.56 (1.03)
Source Quality	Select references from reputable sources such as the library databases and news sources? (versus general web searches and Wiki)	3.97 (1.08)
Clarity and Word Choice	Use language that is appropriate and clear in a way that makes it easy to follow the writer's ideas?	4.00 (.85)

### **Data reduction procedures for paper components**

I chose to do component analysis (also known as Principal Component Analysis or Varimax rotation) on the 10 parts of the work after the papers had been assessed and the rater dependability was found to be satisfactory. The quality of the sources was a factor that made it challenging to organize the variables, and it could be claimed that it differs from the other criteria since it may be the consequence of teachers' guidelines for what makes for good sources. As a result, I conducted the study again, omitting the "source quality" variable this time. The resulting screen map showed a two-factor solution, but their cross-loading continued even when Exigence, Logic, and Source Interpretation/Integration were gradually eliminated from the study. This was true even though the screen map predicted a two-factor solution. As a result, I

eliminated the cross-loading elements and developed an explanation based on only two variables that could explain 73 percent of the variation. The "Contingency" component deals with audience awareness, avoiding certainty, counterargument, and rebuttal, while the "Clarity" component handles organization and word choice. "Contingency" has an alpha coefficient of 0.86. .70 is the alpha coefficient. Table 4 is a list of the factor loadings.

**Table 4.** Factor loadings for paper components

<b>Component</b>	<b>Contingency</b>	<b>Clarity</b>
Audience Awareness	.31	-.10
Avoid Certainty	.33	.14
Counterargument	.40	-.14
Rebuttal	.38	-.10
Organization	-.18	.63
Word Choice	-.11	.56
<i>Mean (SD)</i>	<i>3.16</i> <i>(1.16)</i>	<i>3.87</i> <i>(.90)</i>

The means for the two factors were calculated by directly averaging the component ratings included in each factor after the paper components were reduced to two basic factors. After the paper components were taken out, this was carried out. The results of the belief scale scores of the first-year students were then compared to the means of the paper parts. Since they were closer to when the students completed their final papers, the ratings from the later portion of the semester were given precedence over the ratings from the early semester on the belief scale. In other words, the last month of the semester, which was considerably closer to the time the late-semester scale was given, was when students were obliged to write their proposal papers.

Table 5 displays the relationships between the main paper components and the belief subconstructs. We found that the Writing Belief subscales and the Contingency paper component had a statistically significant adverse relationship. This shows that students were more likely to be the writers of papers that received lower grades on the Contingency component of their course papers if their beliefs reflected writing as a product, the aim of writing as to report authority, and the concept that effective writing should avoid controversy. The aggregate grades of these pupils' papers were likewise lower. In other words, there was a substantial correlation between the students' writing beliefs and how well they could incorporate contingent information into their writing.

Table 5: Correlations between the article's major elements and the overall belief scale scores

Belief measure subconstruct	Contingency	Clarity
EBQ Fast Learning	.03	-.15
EBQ Omniscient Authority	-.13	-.18
EBQ Certain Knowledge	-.08	-.11
EQB Impatience with Ambiguity	-.01	-.17
WB Writing as Product	-.35*	-.08
WB Writing Report Authority	-.30*	-.29*
WB Writing Avoids Disagreement	-.32*	-.19
* $p < .01$		

The relevance of the Clarity component of the paper, which includes both the document's structure and word choice, is illustrated by the substantial relationship between the idea that writing should reflect authority's thinking and clarity of prose. Students' compositions tended to be less well-organized and less intelligible when they were taught that writing should be used to report the opinions of people in authority. There was no direct correlation between the results on the knowledge or belief questions and the paper's components.

#### **4. Linking the goals of rhetorical writing and attitudes toward writing**

The results of part two of the study revealed a statistically significant relationship between the "Contingency" element of students' papers and each of the three Writing Beliefs subscales. The quality of the article's counterargument and rebuttal is one of these subscales, along with audience awareness and avoiding certainty. When responding to the "Contingency" feature, students were likelier to create papers of lower quality if they believed that writing was a commodity, that writing served to convey the views of authority, or that writing avoided confrontation. Conversely, students with a more positive viewpoint on writing considered it a tool for knowledge production. They saw it as a way to recognize and examine disagreement and were more likely to produce papers that were better at articulating contingent knowledge.

The next section may find an extract from students' proposals in their final course papers. By reading this, you can better grasp how various writing attitudes could manifest in students' writing performance. I chose first-year student papers with Writing Belief subscale values at least one standard deviation above or below the mean for this qualitative research methodology. Avoiding certainty, counterarguments and rebuttals, and audience awareness are the "Contingency Paper Factor" components around which the discussion of these students' papers is structured.

##### **4.1 Opposing Claims and Rebuttals**

Counterargument negotiation, one of the most crucial rhetorical techniques, makes authors seem more trustworthy by creating the idea that they are fair and reasonable. Students were urged to handle opposing viewpoints by providing counterarguments and rebuttals in their writing as part of the proposal paper assignment. In response to the request, this was completed. Writing Beliefs subscale scores for Andrew, a first-year journalism major, showed a process-oriented (1.25), interactive (1.53), and not opposed to acknowledging disagreement perspective on writing. Andrew's paper received a high score on the paper's "Contingency" factor (4.21) but had lower scores on the Writing Beliefs subscales (1.32). The following is an example of his excellent use of rebuttals and counterarguments, both of which are expressed in italics:

Hatch and others opposed to flag burning must understand that burning the American flag is rarely done for amusement. Most of the time, it is a declaration that's made under extreme pressure, especially when the protestor in question feels that his or her rights have been violated and needs some public platform... With God's help, I will never disrespect the American flag because I cannot fathom why someone would feel the need to do so. On the other hand, there are certain individuals whose circumstances are frequently so dire that it does not seem appropriate to communicate in any other way... It is unquestionably true that the causes for which individuals fought in the 18th century were far more significant. However, now that we have rejected Imperial England's policies, we have the freedom to express our disapproval of the key policies of our government.

In his statement, Andrew acknowledged that flag burning is a radical and perhaps disrespectful method of protest. He stressed his disgust with the practice, joined potential opponents, and highlighted the conditions that must be followed for people to participate in this type of protest, emphasizing the right to free speech. He joined any possible rivals as well. The result is a response to opposing points of view that is both logical and convincing.

Paul, a different first-year student, performed higher on the Writing Beliefs tests. His findings showed that he had a writing viewpoint that was more product-focused (2.07), as well as the belief that writing is utilized to report the opinions of authority persons (3.64). When writing on child soldiers in Uganda, Paul used less precise material with generalizations, references, and sources. Although he included a lot of background material on the subject, he only used one sentence to make his argument for action, saying that "educating youngsters might be the first of several steps the world can do to assist ease the anguish of the innocent children." He did not make a case for action using the background knowledge. Although some believe education is important for kids, they also believe it does not guarantee their daily security. The author of his study never touched upon this topic.

Regarding the paper's contingency factor, Paul received a 2.25. Like Paul, other students who received lower marks on the counterargument, rebuttal, and avoiding certainty paper appeared to have difficulty formulating a specific plan of action and instead concentrated on other professionals' background information and opinions. Since it felt like these students were trying to box themselves in, it was challenging to think of arguments opposing their opinions. These

pupils missed opportunities even to be aware of competing ideas because they automatically reverted to the information transfer mode.

#### **4.2 Avoid making broad generalizations or claims of ultimate truth.**

Cassie submitted a paper with a low grade on the overall contingency factor since she is unsure if she wants to pursue a Liberal Arts degree (1.72). Additionally, she earned a failing score for steering clear of certainties and generalizations (1.72). (2.92). Her corpus of work reflects her writing goals, which include a desire for writing that avoids controversial subjects and recalls the opinions of those in positions of authority (3.47). (3.52). She made many assumptions that almost border on being offensive when she stated that officials in charge of college admissions should give SAT scores less weight when making admissions choices. By citing her sources and making claims that implied conclusions that did not necessarily follow from the information she had provided, Cassie suggested that she was having trouble constructing her argument:

People who oppose the SAT typically belong to underrepresented groups and come from lower socioeconomic levels. The percentage of black early childhood children who need daycare and educational programs was the greatest of any race, per the information gathered by the National Center for Education Statistics in 2001. They represented 64% of the total (Source 1). They are born into disadvantaged and impoverished conditions, and their high school education is insufficient to prepare them for a test of this kind. Because a sizable portion of minorities cannot afford the \$26 test price, they are underrepresented at several national universities (Source 1). Minorities in the US have challenges while taking the SAT because the application process is too costly, and the subject matter is perceived as being too challenging.

Cassie misinterpreted the data given by several of her sources when seeking to show the links between racial inequality, poverty, and accessibility to higher education. As a direct result, her conclusions were overly broad and simplistic.

Successful students presented their thoughts and the ideas from their sources as reasonable but unproven. They steered clear of making either absolute or general claims. Business major Rachel's writing belief scores indicate that she has a procedural perspective on writing (1.48) and a viewpoint on writing that recognizes debate (1.05). She completed work that received a 4.50 out of 5 on the avoidance of certainty scale and a 3 out of 5 on the contingency scale (3.78). In

her essay, she used reliable sources, such as scientific research, to back up her case for limiting the length of time that kids are exposed to food advertisements: We must first identify the flaws in the present marketing framework before we can start to address the problem of properly communicating with youngsters. The first thing that could be seen is a situation where kids spend too much time unwinding after school. In order to demonstrate the important connection between children's TV viewing habits and their desire to eat, a case study involving 700 kids aged 10 to 15 was carried out. The research revealed that eating while watching television was one of the key factors in the children's selectively increasing weight. Even if the statistics cannot be trusted, it is quite probable that seeing food advertising or promotions on a children's television channel led to increased food intake (Source 1) The writing style of David, a biology student who advocated in favour of directing funding toward stem-cell research, stands in stark contrast to Rachel's paper. According to David's study, it should not be surprising that the government should support attempts to create biological clones. I cannot imagine how science could ever advance without it. It is common knowledge that the government funds researchers looking for new medications. David's low scores on the paper contingency factor (2.0) and the avoiding certainty paper component (2.0) on the writing belief scales show that he thinks writing should convey authoritative viewpoints (4.16). (2.14).

#### **4.3 Attracting many people in**

The purpose of this essay component, which was also a component of the "Contingency" paper element, was to evaluate the degree to which the students' articles fit the interests and concerns of a target audience. This evaluation was done in conjunction with the "Contingency" paper element. Although the standard assignment question emphasizes selecting and appealing to a particular target audience, each of the 81 papers submitted by first-year students received an average of 2.33. (1.08). This was the outcome of the test that measured "audience awareness." When composing a sizeable section of the pieces, a substantial amount of thought was given to a very large population.

Ben's letter to the principal of his public school, in which he advocated against mandating steroid testing for high school sports, is an example of an audience-aware proposal. In his letter, Ben urged the principal not to require such testing. A reference to Ben's letter illustrates how audience awareness is exhibited in the proposal. Ben exhibited an awareness of the writing process (1.12

on the Writing Beliefs scale) and acknowledged various writing ideologies (1.32). Regarding the argument, he was given an uncharacteristically high score of 4.56 on the contingency factor. His article was a particularly effective illustration of audience awareness because he identified a particular audience, referenced this audience's concerns in cost and viability, and drew on common knowledge of previous championships and elections in the town. His article was a particularly effective illustration of audience awareness. All of these different aspects had a role in determining the overall usefulness of the work. These characteristics are emphasized in the next portion of his work, which is written in italics for clarity. As a direct consequence of this, Ben was able to cultivate positive relationships with both the superintendent and the board of trustees of the school:

To all of the members of the School Board, as well as Superintendent Webber:

I will be the first to say that I struggled with addiction for the entirety of my time in high school. I excelled academically across the board and was quite active in extracurricular activities. I was almost obsessively interested in those things. During my four years at Laughton High School, I participated in many extracurricular activities, such as tennis, soccer, track and field, cross country, music, chemistry, UIL number sense, and team math. I also engaged in all of these activities. In two of those instances, we finished in the first place, which was more than enough to earn us the title of state champions. On the other two occasions, we came in second place.

What a remarkable feat this is! Twenty males were in our group, and none of us used steroids. If we required additional muscle, the weight room was available to us. Why would we subject ourselves to the possibility of being harmed by anything if doing so would put a damper on our prospects of winning the state championship? Dr. Webber, in your professional opinion, which of the following explanations do you think is the most reasonable for why the students in the Central Independent School District are being subjected to the examinations? I merely request that you and the other board members consider it carefully before taking any action. The price of each steroid test is one hundred dollars. The first point of reference When we take a deeper look at our country's current educational system, I believe you will agree with me that this is a topic that is quite fascinating to discuss. Where can we get the money to keep on with this project if we want to see it through? Even though we just finished building a brand-new elementary school a year ago, we are already encountering problems due to budget constraints. You should not



expect the municipality to foot the bill for the drug tests either. Exactly where is that brand-new location where live art performances are being held? Oh, I get it. Even though the federal government was going to pay for the building, the local municipality opted not to go forward with it.

However, even when students talked to an audience on a topic relevant to their own lives and experiences, the audience was not always persuaded by their arguments, nor were their ideas always favourably received. For example, Gabe, an engineering student in his first year, sent a letter to his superintendent. The aspects of Gabe's message that are underlined below clearly addressed this audience. In addition to that, he highlighted this audience in particular. His scores on the Writing Belief scales indicate that Gabe's worldview is centred on the product (2.11), and he writes to communicate the viewpoints of highly regarded persons (3.52). Because his strategy had a "Contingency" component, he was penalized with a lower score (2.51).

This recommendation comes from Gabe Smith, who attended Graff High School and is in Director Herrington's best interests.

The purpose of this conversation is to investigate any remarks regarding the dress code that may not receive adequate consideration.

The following is a complete sentence: Dr. Herrington, as the school district's leader, you have the authority to alter the educational system in any way you see appropriate. However, I am concerned that this authority is increasingly being used to restrict the freedoms of students. Because of this, children cannot express themselves freely, and you and the school board must be made aware that our students require a higher level of recognition and an increase in their level of personal responsibility. This letter, which I am writing to each of you to encourage change, is being written with some predetermined notions regarding the topic. You should all be aware that making students wear certain colours to school will not substantially impact how they view their own personal life, despite the fact that you could require them to do so. This method of controlling gang violence has only successfully prevented it from occurring in educational settings.

Even though writing the essay in the form of a letter did not guarantee that the argument would be more audience-aware, it might have helped the student contextualize the assignment and

develop the appropriate appeals if they were very familiar with both the audience and the topic (one's high school administration policies). Even though writing the essay in the form of a letter did not ensure that the argument would be more audience-aware. In the following example, the student writes for an audience that is not specifically specified and may not even exist. The author, Steve, has spent his first year at college working for a degree in biology. He received a low score on the contingency component of his work and had a product-focused (2.43 on the writing belief scale) and disagreement-avoidant (2.84 on the scale) writing philosophy (2.65). Within the context of his plan, he advocated for a stricter regulatory framework for bioengineered crops to be implemented by the government. On the other hand, the article's content and the audience it was directed toward hinted at an approach that was more in line with a research study. Because he did not identify an audience in his paper and did not even hint that there was one, his "Dear Organization" section appeared to be an afterthought that was inserted in order to fulfill the requirement of the assignment to address an audience:

On behalf of the Biotechnology Industry Organization, we would like to express our warmest greetings to you today.

The evolution of biotechnology has led to the invention of a ground-breaking approach to the production of commodities. This method exceeds prior methods in terms of its capacity to create a greater output and efficiency. On the other hand, the use of biotechnology in agricultural settings is a major cause for concern. Because they were, in a way, manufactured on purpose by man, many people are skeptical about whether or not it is genuinely safe to consume them. Although it is not impossible, further research and effort need to be put into this project to succeed. Compared to other countries, which utilize less than 18 percent of their land for agricultural purposes, the United States is the world leader in bioengineered agriculture since it uses 72 percent of its total land area for agricultural purposes.

Steve then elaborates on the topic and outlines agricultural genetic engineering. His intended audience, the "Biotechnology Organization," is probably already aware of this information.

From Steve's research, two key lessons may be applied to the great majority of the works with lower audience awareness scores. First, while talking to an institution that lacked a name and a face rather than a real person, authors surely found it challenging to envision and connect with their audience. They found it challenging to engage their audience as a result. Second, while

audience awareness issues may be the consequence of targeting an overly broad audience, students may mistakenly perceive their audience's interests and prior knowledge, leading to fewer or wrong appeals. If Steve had reevaluated and changed it to include a group of concerned citizens or a Congressional representative interested in agricultural technology, the degree of prior knowledge he intended his reader to possess could have been more reasonable.

## **5. The Investigation's Importance**

This study aimed to investigate the linkages between first-year students' writing and knowledge beliefs and how those beliefs affected the participants' writing. At the same time, they were enrolled in a composition course. First-year writing courses are described as "public photo forums" by Eberly (1999) because they provide students with the chance to start taking part in larger discussions about the policies that affect their daily lives. Therefore, it is advised for students to view communication as a succession of statements and debatable claims and a dialogue between the speaker and the listener (Bizzell, 1997; Hairston, 1997; Berlin, 1988). This type of environment was well suited for a study of epistemological and writing beliefs because rhetorical writing encourages consideration of the audience and alternative perspectives (Yancey, 2001), which on the surface, would seem to encourage epistemological growth and shifts in beliefs about writing. Instead, the study discovered that rhetorical writing fosters epistemic development and changes in writing-related attitudes.

### **5.1 Belief alterations**

Over just one academic semester, students' perspectives regarding specialized information and speedy learning underwent major shifts, which was a complete surprise. Longitudinal and cross-sectional studies have been conducted in the past to investigate various epistemological points of view. Based on the findings of these experiments, it appears that knowledge and learning beliefs may shift slowly, albeit slowly. The glacial pace at which the opinions of college students develop over multiple semesters and academic years is shed light on by studies that monitor participants over time, such as those conducted by Magolda (1992). In a cross-sectional study, similar educational-level trends have been identified, with considerable epistemic variances across college students in various academic years (Schommer, 1990; Schommer, Crouse, &

Rodes, 1992; Schommer, 1993; Schommer, 1998; 2004; Schommer-Aikins & Easter, 2006). In 1994, King and Kitchener conducted a survey using a cross-sectional design. They received responses from more than a thousand students enrolled in non-college, junior college, and university programs. By clicking here, you may read their findings, which demonstrated disparities not just between single semesters but also between whole school years. The findings of these researchers, when taken as a whole, offer insight into how undergraduate students' perspectives on the nature and consistency of knowledge have been gradually shifting over the course of time.

The present investigation found that the first-year students' epistemological notions on the subject of rapid learning and certain knowledge had experienced a significant shift that was not anticipated. These are the two subscales included in the epistemic views questionnaire. This shift might be the consequence of how the content in Writing 101 is structured, which is a factor that has a significant impact (a partial eta squared value of .57 for rapid learning and .51 for definite knowledge). The course focuses on contemporary aspects of popular culture that may be understood by a diverse range of individuals, such as the culture around food and beverages, music, heroes and superheroes, sports, and other topics pertinent to the field. In addition, students are instructed in constructing and evaluating arguments and identifying rhetorical characteristics such as exigence, audience, and boundaries (Bitzer, 1999). The students in their first year of college may have experienced a profound shift in their epistemology due to the material covered in the class, the model of the writing process presented, and the continual reminder that everything can be reduced to an argument. Students were expected to be able to articulate the significance of setting about the comprehension of a text as one of the primary goals of the Writing 101 course. Particularly, the concept of conditional meaning was emphasized throughout the entirety of the various levels of the course. The students were given the assignment of writing an essay in which they were to explore the significance of context. Because the current study's design did not include a control group, it is impossible to ascribe the students' shifting attitudes on the subject matter to their level of self-assurance in their knowledge and capacity to acquire the content rapidly. However, this class component and its consequences for epistemic growth need to be further studied using a study design that includes a sample of students who are not currently enrolled in the Writ 101 class.

According to studies done in the past utilizing a control group, there is a connection between

epistemic progress and certain teaching methodologies. According to research by Kienhues, Bromme, and Stahl (2008), students at German universities who received "refutational epistemological training" had a greater shift in their advanced epistemological views than those who just got informational instruction. No of the pupils' prior epistemological training was the case. According to the results, epistemologically "naive" students who got an education that involved reading texts presented as two conflicting arguments saw a higher change in epistemology than their classmates who just received informational teaching. This was true even after accounting for the pupils' prior understanding of the instruction's subject matter (DNA fingerprinting). Like this, the course material for Writ 101 urged students to evaluate various opposing viewpoints on contentious issues. This prerequisite required reading about several, sometimes opposing, points of view on important subjects (e.g. environmental conservation, the fast food industry, standardized testing, the US role abroad). Students were required to create works that directly addressed audience members who might not share their point of view and comprehend the reasons for other points of view. The coursework for Writ 101 may parallel cognitive work similar to this since "refutational instruction" by Kienhues, and colleagues (2008) showed that specific types of instruction can change students' beliefs toward a more contingent view of knowledge and an understanding of learning as a slow process.

### **5.2 The relationships between one's belief in their writing skills and the epistemic indicators of their paper grades**

Researchers discovered that there were typically substantial correlations between students' early and late semester perceptions of their writing and knowledge in the study that is the subject of this article. That is to say, during the administrations of both surveys, a significant correlation was established between the majority of the subscales on the modified Writing Beliefs Inventory (WBI) and the Epistemological Beliefs Questionnaire (EBQ). Late in the semester, however, the students' much reduced epistemological beliefs about the rate at which they gained knowledge and certainty, as well as their writing beliefs about writing as a product and the avoidance of dispute, changed the nature of the link. The students' epistemological and writing views underwent considerable modification, which caused a shift in the correlation's nature (Table 2). The EBQ subscales remained closely related to one another after receiving both treatments. The perception of writing as a product based on the Writing Belief scale and the EBQ subscales showed a moderately strong but significant link at the start of the semester. In terms of their

capacity to see writing as a finished work, the student's test scores dramatically increased after completing Writ 101, a course highlighting the significance of a process model of writing. As the semester went on, it is possible that there was no longer a strong correlation between these two subscales as a result of this change, in addition to the significant drop in students' epistemological beliefs regarding specific knowledge. This may have been the case due to the shift and the students' declining epistemological perspectives on specific knowledge.

The students' underlying epistemological views, as determined by the Epistemological Views Questionnaire, did not significantly correlate with any component of their persuasive writing. These results are consistent with those of Mateos and colleagues (2011), who discovered that students' argumentative writing was not significantly influenced by their epistemological viewpoints. It has been demonstrated in past research with undergraduate students that there is a strong relationship between the calibre of the students' conclusion paragraphs and the epistemological ideas they hold (Kardash & Scholes, 1996; Mason & Boscolo, 2004; Schommer, 1993b). One of the objectives of the current study was to gather "actual" artifacts from the student's coursework, and one method to do this was not by asking them to write particularly for the study. The assignment question remained the same throughout the course, despite efforts to standardize the scoring of these papers by using a rubric (Appendix C) and scorer training. Despite this, there was undoubtedly a significant amount of error variation in the student-submitted articles. The way the common assignment question was introduced and supported in the classroom and how much help students received with their research methods and their interest in the subject probably differed from one instructor to the next. The Writ 101 proposal project provided many chances for variance in how the students handled the topic, even if the actual work was the same for all students. Due to the variety of themes, source quality, feedback forms, and student excitement for the project, the link between writing performance and beliefs may become murky. Previous studies have shown a connection between one's epistemological beliefs, the force of their arguments, and how interesting the subject is (Mason & Boscolo, 2004). This implies that any study utilizing course-based writing should assess students' enthusiasm for the topics they are writing about and consider the support they receive from instructors and outside research. Future work could potentially seek to provide students with a more regulated writing job by limiting the number of instructors supporting the project, its topic, or the resources students may use for the writing assignment, following the framework of earlier research. This would be

in line with the desire to provide pupils with a writing assignment that is more tightly controlled.

It is conceivable that a link between the students' epistemological viewpoints and their overall writing performance in the course, which was assessed using various artifacts, may have been made. This connection could also apply to general academic achievement. Such results would support the theory that an association between children's grades and their epistemological beliefs, as measured by the EBQ (Schommer, 1993a; Schommer, 2002; Schommer, Crouse, & Rhodes, 1992; Schommer & Dunnell, 1994). More specifically, the subscale that assesses students' perceptions of the certainty of information has been linked to academic success among high school and college students (Trautwein & Ludtke, 2007).

The Writing Beliefs in a new format The EBI did not significantly correlate with any of the proposal document's constituent parts. On the other hand, inventory subconstructs had a close relationship with every element of the contingency paper. Remember that the article's dependent elements included audience considerations, avoiding certainty, a counterargument, and a response (Table 4). as a result, the pupils' paper scored The degree to which they felt writing is a product, that writing serves to report authority, and that successful writing avoids controversy, the degree of contingency was lower. The results of Mateos and colleagues (2011) do not conclusively show that task beliefs and writing performance have a substantial connection. While they did not discover any correlation between reading beliefs and performance on other tasks, these researchers discovered a strong correlation between university students' reading beliefs and their writing skills. However, remember that the WBI component structure did not perfectly replicate White and Bruning's first work with the scale in pilot research that served as the foundation for our current analysis. Remembering this knowledge is crucial. Based on the findings of focus groups, I included questions that directly addressed students' viewpoints on rhetorical writing (Appendix B). The fact that I modified numerous WBI questions and linked them with the particular purpose of rhetorical writing may have impacted the updated WBI's finding that there is a significant correlation between students' rhetorical writing quality and their opinions on contingency in writing. The new WBI discovered this connection. To put it another way, it is possible that the new items were used to evaluate students' perceptions about the thought processes they utilize while writing rhetorically.

### **5. 3 Audience awareness, epistemological development, and educational consequences**

The current study's proposal paper scoring findings indicated that the students' proposals obtained insufficient scores on the audience component (2.33 on a scale of 5 points). However, audience awareness is essential to rhetorical writing education (Yancey, 2001). (2.33 on a 5-point scale). Although the Writ 101 assignment question emphasized audience and study of numerous ideas, students may have resorted to familiar genres, such as the "traditional" research paper that is popular in high school and college courses (Bean, 2011). The cultivation of students' audience awareness needs to be a component of the writing process included in rhetorical writing as a part of the instructional process. According to a study by Roen and Willey in 1988, first-year composition students saw considerable improvement in their essay scores when they modified their work while keeping the target audience in mind. According to McAlexander (1994), in order for authors to connect with and respond to their readers, it was essential for them to be able to assume roles and have the ability to perceive various points of view. In addition, he went into detail on how authors can demonstrate that they understand their audiences. She had the belief that authors who are "egocentric" (the term she used to identify such authors) are unable to or are unable to conceive of having a reader. As a result, they do not have a method for collecting feedback on their work. She used the term "egocentric" to characterize such authors. According to Alexander's assessment, "decentered" authors have a more reactive sense of self and are more receptive to imagined critique. Decentered authors are also more likely to be self-critical.

Despite criticism from composition instructors and scholars, the research paper paradigm is frequently used in writing training. Richard Larson (1982) argued that research papers are a "non-form of writing" and argued in favour of tasks emphasizing students' agency and control over their research processes. Larson published his critique in 1982. This occurred more than 25 years ago. The requirement that first-year students submit research papers was characterized by Davis and Shadle (2000) as an instance of academic hazing. They clarified that the goal of "freshman research writing" was "to attempt to impose a set of standards concerning the ownership of the known, as well as to introduce students to the previously known" (p.425). Research papers are an example of writing cut loose from its original context. They do not effectively educate students for critical and active involvement in civic life. Instead, in order to complete these writing projects, students are required to take into account the opinions of



purported "authorities" and "experts," which may prevent them from having the chance to expand their knowledge and writing horizons.

When teaching first-year composition, it may be difficult to strike a balance between encouraging students to take more nuanced viewpoints on texts and writing and placing a high focus on writing that is supported by research and argument. Finding this balance can be a challenge. Throughout the semester, the individuals who took part in the current study maintained the viewpoint that the objective of writing is to chronicle the perspectives of those who occupy authoritative positions. Information literacy was a significant component of the curriculum for Writ 101, just like it is in other first-year writing courses. This was accomplished by emphasizing how important it is to use trustworthy research sources and to use such sources as references throughout the recommended argument. This highlights how important it is to cite reliable sources, which may help to explain why students' perceptions of writing that represents the opinions of authorities have not changed over time. Students' perceptions of writing that represents the opinions of authorities have not changed over time.

There is a good chance that the "perfect storm" for epistemological development can be created by instructing students in a manner that requires them to take into account the perspectives of those who disagree with them, encourages them to investigate different kinds of arguments, and analyzes those arguments through written assignments and in-class discussions. When we teach our students this rhetorical approach to reading and writing, for example, in first-year composition, we frequently observe an improvement in both their capacity for critical thought and their capacity to perceive a diversity of viewpoints. This is one of the most rewarding aspects of our jobs as educators. More research is required if we will have a better understanding of how the design of courses and assignments influences the epistemic growth of students. Our understanding of the kind of academic tasks most likely to foster such improvement would be enhanced as a result.

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## A Study on the Implementation of Automated Writing Evaluation

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### **Abstract:**

The body of research demonstrating the significance of automated writing evaluation (AWE) systems in writing instruction and education continues to expand. However, not much research has been done to investigate how AWE may be implemented in different educational settings and what kind of effects it has on the students' ability to write. This article describes the MI Write AWE system and the conclusions of an inquiry that looked at the incorporation and use of AWE with middle school writing teaching utilizing a variety of research methodologies. During this investigation, AWE integration was investigated concerning a conventional process approach to writing education and a strategy teaching method based on the paradigm of self-regulated strategy development. Both of these pedagogical tenets were considered about one another. Both the effectiveness of these two instructional settings in fostering students' and teachers' experiences with and perspectives on teaching and learning through the use of AWE, as well as the effectiveness of these instructional settings in encouraging students to improve the quality of their writing from their first draft through subsequent essays, were both evaluated. The results of these evaluations can be found in the table below. Following an eight-week intervention, multilevel model analyses showed that students' first-draft writing skills increased at approximately the same rates independent of the instructional setting. This improvement occurred across the duration of the intervention. The findings of qualitative analyses of interview data demonstrated that AWE's effects on teaching were consistent across various

contexts. Both instructional environments featured qualities consistent with a framework for purposeful practice, and this was especially true when it came to the application of AWE.

**Keywords:** automated writing evaluation; writing instruction; writing assessment

## **1. Introduction and Theoretical Basis**

Writing is a skill that requires a considerable lot of mental complexity and dexterity (Berninger & Swanson, 1994; Flower & Hayes, 1980; Hayes, 2012). As a consequence of this, the development of writing skills requires continual, purposeful practice in order to be possible (Kellogg & Whiteford, 2009). Constant changes in practice, an innate desire to remain focused on the current endeavor, and a conscious attempt to improve performance are all components of sustained intentional practice (Ericsson, 2006). Students must participate in the practice of this kind if they are to acquire and naturally apply lower-level writing skills such as handwriting, keyboarding, spelling, and the application of rules controlling written language. Students must also demonstrate that they understand and can apply these skills (Berninger & Swanson, 1994; Kellogg, 2008; McCutchen, 1988). In addition, students need to have plenty of practice with this mode of writing to develop their ability to think strategically and exercise metacognitive control over the primary cognitive processes that are engaged in the writing process. Some of these processes include planning, translating, assessing, and reworking the material (Bereiter & Scardamalia, 1987; Flower & Hayes, 1980; Graham, 2018; Graham et al., 2019; Harris, Graham, Brindle, & Sandmel, 2009; Hayes, 1996, 2012).

Putting these strategies into action, on the other hand, is not adequate on its own. It is essential, in order to keep one's level of competence consistent over time, to regularly get feedback that is timely, pertinent, and constructive from one or more feedback agents, such as a mentor, peers, or even one's self or a computer (Ericsson, 2006; Hattie & Timperley, 2007). Research done in the past (Patchan, Schunn, & Correnti, 2016; Patthey-Chavez, Matsumura, & Valdés; Hattie & Timperley, 2007; Nelson & Schunn, 2009; 2004; Shute, 2008) has demonstrated that students benefit the most from receiving criticism that addresses both the surface-level and content elements of writing and that is quick, precise,

localized, and thorough. This type of feedback has been shown to help students improve their writing.

It is unfortunate that students seldom ever engage in the type of continuous focused practice that I just described because the majority of curricula only allocate a very small amount of time to writing instruction (Brindle, Graham, Harris, & Hebert, 2015; Gilbert & Graham, 2010; Graham, Harris, Fink-Chorzempa, & MacArthur, 2003). In addition, to provide teachers with high-quality feedback, the instructors must put in much effort and knowledge in pedagogy (Dikli, 2010). Both Mr. Parr and Mr. Timperley In point of fact, research conducted by Clare, Valdés, and Patthey-Chavez (2000) and Matsumura, Patthey-Chavez, Valdés, and Garnier (2002) indicates that instructor evaluation does not typically result in an improvement in the academic performance of students because it emphasizes the students' inadequate writing abilities. Therefore, it is imperative to develop strategies for improving students' writing practice and the frequency and effectiveness of teacher feedback if one wishes to see an increase in the writing results of one's student body. This is the case if one wishes to see an increase in the writing results of one's student body. Utilizing automated writing evaluation (AWE) systems is one way to strengthen writing practice and reduce the amount of time spent on the practice-feedback cycle (Kellogg, Whiteford, & Quinlan, 2010). This can be done without increasing the time teachers are required to spend evaluating and commenting on their pupils' work. A wide variety of learning management capabilities and automated grading are typically utilized together with automated feedback elements incorporated into AWE platforms to assist in the teaching and learning of writing. A significant portion of the teaching staff now uses AWE technology (Palermo). However, research into how AWE might be successfully implemented into various teacher-led writing education programs and styles has lagged behind popularity in recent years (Thomson, 2018; Stevenson, 2016; Wilson & Czik, 2016).

In the current study, a mixed-techniques approach was utilized so that the researchers could investigate the application of AWE and its incorporation with the other two methods of teaching writing at the middle school level. [This phrase needs a reference] [This phrase needs a reference] Authentic writing opportunities and cycles of planning, drafting, and revising were provided in an instructional setting that followed the traditional process

approach to teaching writing, whereas authentic writing opportunities and cycles of planning, drafting, and revising were included in an instructional setting that utilized strategy instruction to include AWE. There were real opportunities to write, with cycles consisting of planning, drafting, and editing (i.e., explicit instruction on cognitive and metacognitive strategies for executing various writing processes like planning, drafting, and revising). We examined the two learning environments to see which would be more likely to inspire students to produce better first drafts of their papers in the future. We also looked at the students' and the instructors' experiences with and perceptions of the AWE system in order to get a better understanding of the pros and cons of the system as seen by its users, as well as how these views connected to and explained the students' writing performance trajectories in the two different instructional settings. This was done in order to get a better understanding of the pros and cons of the system as seen by its users. This provided us with a better understanding of the merits and drawbacks of AWE as viewed by its customers.

### **1.1 Automated Writing Evaluation**

Writing is something that may be taught as well as learning with the use of AWE systems, which are educational aids that are based on various forms of technology. The automated feedback offered by AWE is an essential part of the platform. This feedback is designed to assist authors in improving their writing after they have revised their work (see, in this issue, Cotos, Huffman, & Link, 2020; Knight et al., 2020). The purpose of the Academic Writing Experience (AWE) is to reduce the number of grading teachers must undertake while simultaneously providing students with opportunities to practice writing and receive feedback on their work. AWE systems integrate automated qualitative input with automated quantitative feedback in scores or other assessment indications (e.g., Mayfield et al., 2018; Roscoe, Allen, Weston, Crossley, & McNamara, 2014; Roscoe & McNamara, 2013). One thing that usually makes AWE as a feedback system dependent on it is the development of automated essay scoring, generally known as AES. Another name for AES is an automated essay scoring system. Automated scoring algorithms, abbreviated as AES, are computer programs that are tried and true to faithfully reproduce the ratings given by human raters (Shermis & Hamner, 2013).

Studies conducted in the past have found that combining AWE with automated feedback provides a variety of benefits for both teaching and learning writing in a classroom setting. It has been demonstrated that the use of AWE can free up teachers' time in the classroom by reducing the amount of grading that they are required to complete, encouraging individualized instruction, boosting student autonomy and writing motivation, assisting with portfolio management, and enabling teachers to provide more feedback on higher-level writing abilities (Grimes & Warschauer, 2010; Warschauer & Grimes, 2008; Wilson & Czik, 2016; Wilson & Roscoe, 2020).

However, the implementation of AWE has not always been followed by an increase in the number of chances for pupils to write that they have been given (Warschauer & Grimes, 2008). This demonstrates that, at the middle school and secondary school levels, the requirements of adhering to an English Language Arts (ELA) curriculum that places less emphasis on writing may be more time demanding than the time-saving advantages of utilizing AWE (Wilson & Roscoe, 2020). Additionally, some students find the amount of information provided by automated feedback to be excessive and overwhelming (Grimes & Warschauer, 2010; Ranalli, 2018), which necessitates additional support and instruction from teachers in order for students to correctly interpret the data (even though automated feedback is effective in scaffolding writing quality improvements across subsequent revisions of an essay; Wilson & Czik, 2016; Wilson, Olinghouse, & Andrada, 2014). Even though it has been demonstrated that automated feedback is effective in scaffolding, this continues to be the case.

The implementation of AWE has been linked to positive effects on a variety of writing outcomes for students in grades K–12, including increases in the number of time students spend working on their writing, increases in the number of revisions they finish, and improvements in the quality of the writing they produce (Franzke, Kintsch, Caccamise, Johnson, & Dooley, 2005; Graham, Hebert, & Harris, 2015; Grimes & Warschauer, 2010; Morphy & Graham, 2012; Shermis, Garvan, & Diao, 2008; Wade-Stein & Kintsch, 2004). However, fewer studies have found a connection between automated feedback and improvements in writing attitudes (Roscoe, Allen, Johnson, & McNamara, 2018), motivation and self-efficacy (Grimes & Warschauer, 2010; Wilson & Czik, 2016; Wilson & Roscoe, 2020), and writing quality, particularly mechanical aspects of writing across

revisions (Kellogg et al., 2010; Morphy & Graham, 2012; Wilson, 2017; Wilson). These findings have been (Wilson & Roscoe, 2020).

Even though the outcomes of applying AWE are typically positive, not much research has been done to investigate how AWE might be utilized in conjunction with instructor-led writing instruction to produce the optimum outcomes (c.f., Knight et al., 2020). Writing-process practice, strategy-based practice, and game-based practice, for example, have all been proven to have equal benefits on students' advancements in work quality while revising their writing, according to earlier research by Roscoe and colleagues. [citation needed] (see Roscoe et al., 2018; Roscoe, Snow, & McNamara, 2013). However, these studies do not provide insight into how teachers incorporate AWE into their classes or adjust their instruction in response to the research outcomes. Comparing an AWE feedback condition to a teacher feedback condition is a common approach utilized in earlier research on AWE that has investigated differences at the teacher level (Stevenson & Phakiti, 2014). The construction of a false dichotomy between AWE feedback and instructor input is the defect that causes these comparisons to be erroneous from an ecological aspect, even though they can be beneficial in terms of the research design. The purpose of the automatic feedback made available by AWE systems is not to take the place of the input provided by teachers but rather to supplement it (Kellogg et al., 2010). Therefore, educators can provide students feedback that has been selected with greater care because of this (Wilson & Czik, 2016). As a consequence of this, additional research is required to teach teachers about the affordances of AWE that they can use, the limitations of AWE that they should be aware of and how to handle them, and the integration of AWE into various contexts for teacher-led instruction, such as instruction on the writing process or instruction on strategies. This is because more research is required to teach teachers about the affordances of AWE that they can use, the limitations of AWE that they should be aware of and how to handle them.

Consequently, the current research investigates how students can generalize and maintain improved writing quality across various essays after receiving the automated evaluation. The researchers also investigate how teachers and students see the usage of AWE concerning more traditional process-based methods of teaching writing strategy and teaching writing. In light of this, the current research expands upon the ground-breaking work done more than ten years ago by Warschauer and Grimes when they evaluated the

district's adoption of AWE (Grimes & Warschauer, 2010; Warschauer & Grimes, 2008). The current research considers the perspectives of individuals whose thoughts affect whether or not a strategy is successful, whether or not it is adopted, and whether or not it is used. The strategies for implementing AWE are the primary emphasis of the current study and the researchers' previous work. This study is unique in that it also uses longitudinal development models to determine the rate at which students' writing skills advance as they complete a number of essays in various educational contexts. This helps the researchers determine how students' writing abilities improve over time. This aims to determine how quickly children's writing skills grow over time. The bulk of research done in the past concentrated on determining how much of an improvement there was in the quality of writing either between different drafts of the same essay or between the pre-test and post-test versions of the same essay (see Stevenson & Phakiti, 2014). There is a lack of information on how AWE might be incorporated into teacher-led instruction, which makes it difficult to support generalized writing quality improvements, such as the transfer to improved performance on writing assignments completed independently without the support of automated feedback (i.e., improvements in the quality of students' first drafts). This is necessary to support generalized writing quality improvements. This is because there is a dearth of information regarding how AWE may be integrated into teacher-led instruction to improve overall writing quality.

## **2. MI Write**

A well-known example of an AWE system is the Measurement Incorporated (MI) Write system, formerly PEG Writing. The capabilities of MI Write's formative assessment should help improve both the writing instruction students get and their own development. This online interactive learning environment enables a wide range of interactions between instructors and students and the AWE system itself. For example, teachers can provide students with prompts that can be modified, give them embedded (that is, in-text) or summary comments and feedback, and create reports that can be customized to track the development of their class or individual students, thanks to the learning management features provided by MI Write. These features can be accessed through the MI Write website. In addition, students can take advantage of MI Write's feedback and scoring features to increase the amount of revision work they do, calibrate their performance

against automated writing quality scores, and use automated feedback to improve the quality of their writing across multiple drafts of an essay, complete differentiated and interactive multimedia skill-building lessons, and give and receive anonymous or identifiable peer reviews. The website for MI Write gives users access to these many tools.

The MI Write system utilizes the Project Essay Grade (PEG) grading engine, which in turn enables the system to automatically offer students feedback on their writing. Our scoring engine performs statistical analysis on student writings, computes metrics that capture the underlying features of writing, and models the judgments of professional raters in order to provide scores. These steps are necessary in order to generate scores. First, PEG searches for and pulls out text characteristics from the essays used for training associated with human-scored writing quality indicators. Syntactic parsers and semantic analysis are two methods that fall within this category. Following that, the overall quality of the essays is evaluated based on these qualities. Two examples of such qualities are the average hypernym level of the lexicon and the percentage of mature terms in the language. Other examples include counting the number of n-grams found in letters, words, parts of speech, and phrases, calculating measures of semantic overlap and other substitutions for structure and elaboration. Finally, PEG provides helpful automated feedback in the form of suggestions for increasing the overall quality of an essay when it is edited based on the characteristics of the text. Likewise, this feedback is offered when an essay is revised based on the characteristics of the text.

MI Write uses the PEG scoring engine, which grades student work based on both prompt-general scoring models and purpose-specific scoring models, to scaffold revision and improve writing skills (such as informational, argumentative, and narrative). This refers to the quantitative automatic feedback that PEG is capable of providing. MI Write uses score models to do automated evaluations of the following six areas of writing quality: idea development, organization, style, sentence structure, word choice, and conventions. The final score, which can vary anywhere from 6 to 30, is determined by giving each of the characteristics that are being evaluated a number on a scale that goes from 1 to 5. Students are provided with not only their individual but also their overall results, as well as a score report. In addition, this report includes annotations for the draft's spelling and grammar, a comprehensive evaluation and comments for each quality, and recommendations for



interactive courses (see Figures 1-4). The reports sent to the teachers include the question, information on how it was used (for essays, drafts, peer assessments, and lessons), utilization data, and student and class-level performance (by characteristic, total score, and writing purpose).

PEG's automated scoring technique is consistent and immune to typical human-rater mistakes, such as rater drift and halo effects. [Citation needed] (that is, entirely trustworthy). Similar functionality may be found in other AWE scoring systems that use automated scoring. PEG recently provided evidence that it can be relied upon by competing in the first two rounds of the Automated Student Assessment Prize (ASAP) competition. The Hewlett Foundation financed this competition. PEG exceeded all of its rivals in that field regarding human score agreement, and it was found to be usually more trustworthy than utilizing two expert raters. In addition, PEG outperformed all of its competitors in that field regarding human score agreement (Morgan, Shermis, Van Deventer, & Vander Ark, 2013; Shermis & Hamner, 2013).

In addition to the findings that Wilson and his colleagues came at, the findings of the most current study that MI conducted Write demand more elaboration (Wilson, 2017; Wilson & Czik, 2016; Wilson et al., 2014; Wilson & Roscoe, 2020). Palermo and Thomson (2018) researched how instructors' use of the AWE system NC Write led to improvements in the writing abilities of middle school pupils (a state-specific variation of MI Write).

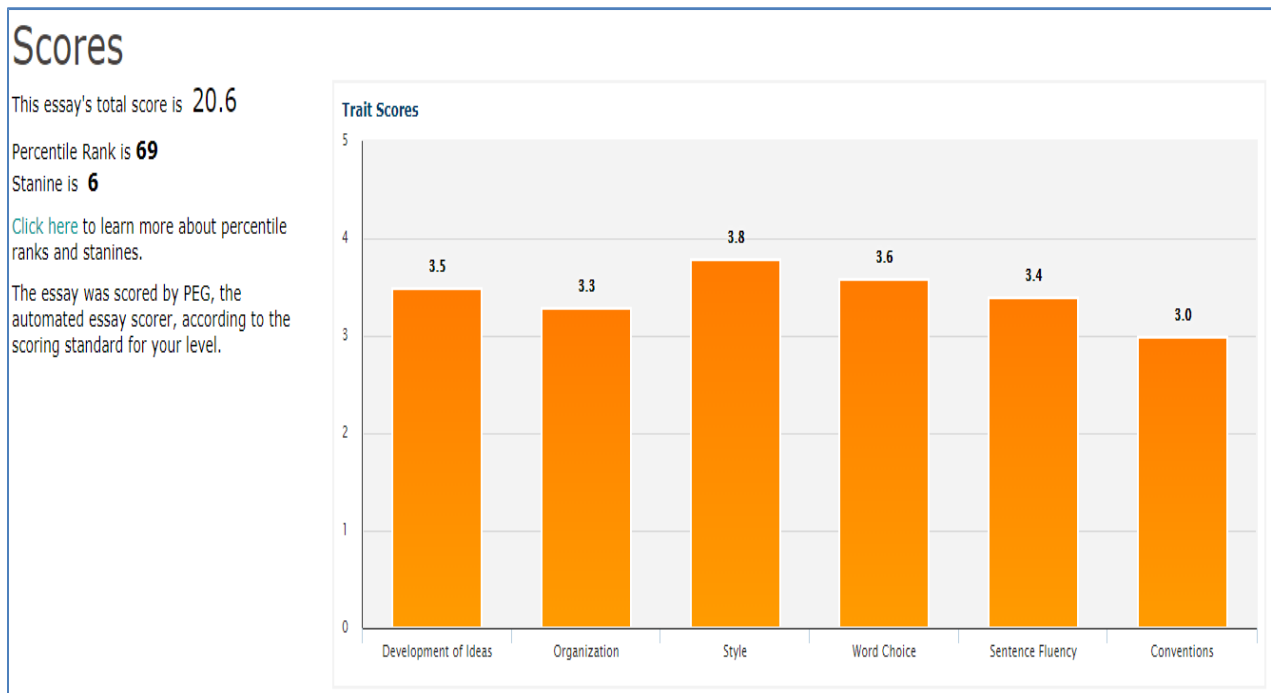


Figure 1. Essay total and trait-specific scores.

Middle school and high school students should start school later and let us sleep more. We work harder than the elementary and we stay up later than them [@too](#). We keep getting more tests [@then](#) them every year we also get out of school later than them and they go to school later than we [@do](#). We should get more sleep because we run harder and do more in P.E. and think about the people who has to do a sport. Think about them who has to do a sport and work a long shift.

All of us should get enough sleep to how much we need. The little kids always get more than us. We have to get up at 5 or 6 while they get up at 6 or 7. And they get more sleep than us because they go to bed earlier than us. The [@parents would say "it's your fault because you @didn't went to bed early enough"](#). Sometimes it's the parent keeping the kids up watching a movie or a tv series. [@Their](#) are people who have epilepsy. For example, who barely can sleep they could go to bed at 3:30 in the morning and they have to get up at 5:30 in the morning maybe earlier.

Students with [@jobs have to @work like you have to work from 4 to 10 p.m.](#) and they go to bed late. So you get better education if you are awake. You don't learn that much if you are tired. You want kids to stay awake and pay attention. [@If they don't pay attention they will fail their EOG.](#) You want to make sure your kids go to bed early so they can stay awake and think better they might pass the [@EOG.](#) [@If they go to bed and go to school later they can do better in class and they could pass their grade.](#)

Kids need to learn more about life things with math, reading, [@S.S.](#), ETC. They need to be smarter say they have kids they can with their kids if they are [@fat](#) if they don't go to bed early and they are sleepy. They should learn their fault not getting enough sleep.

[@In conclusion](#) elementary go to school later why shouldn't the middle school and the high school. [@Their](#) will be more kids passing the [@EOG](#) and the [@EOC](#). It's not fair we have to start school earlier and get out later while [@their are Elementary starts school later get out sooner.](#) [@You was a kid once you know how it feels being sleepy and you have no idea what they are talking @about or you haven't learn anything.](#) [@If kids got more sleep they will make a better grade because they are wide awake.](#)

**Comments**

The helping verb "didn't" requires a different form of the verb "went" from the one you've used. For example, instead of saying "I haven't finish the game," say "I haven't FINISHED the game." Instead of saying, "I didn't wrote the message," say "I didn't WRITE the message."

Close

**Submissions**

- Latest Draft
- 5th Draft
- 4th Draft
- 3rd Draft
- 2nd Draft
- 1st Draft

[Revise](#)

24 submissions left

[Format](#)

**Peer Review**

[Request](#)

Figure 2. Student essay annotated with spelling and grammar feedback.

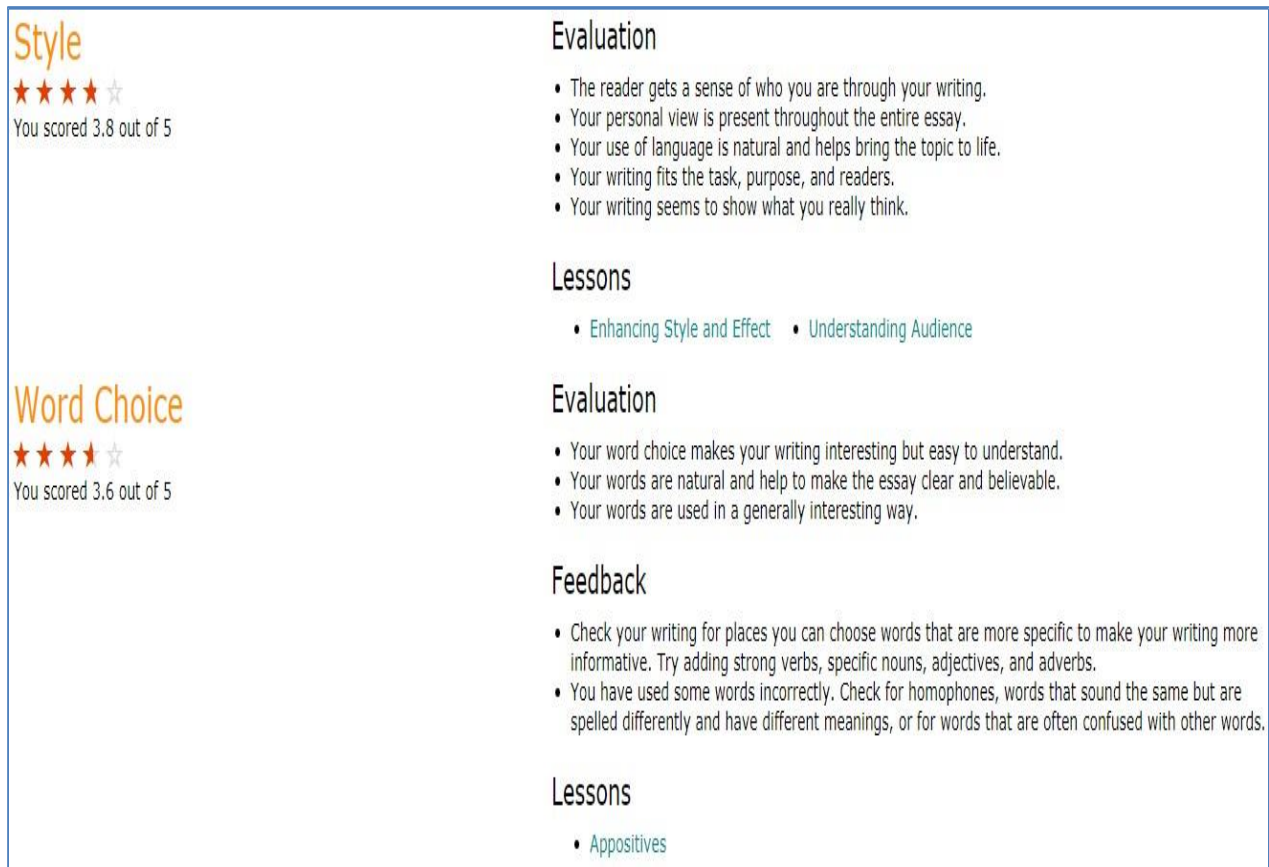


Figure 3. Writing analysis with evaluation and feedback for each trait.

The screenshot displays an interactive lesson interface. On the left is a sidebar with two sections: 'Category' and 'Difficulty Level'. The 'Category' section lists: Development of Ideas, Organization, Style, Word Choice, Sentence Structure, Conventions, Grammar Exercises, and Passage Exercises. The 'Difficulty Level' section lists: All Levels, Beginner, Intermediate (which is highlighted with a vertical bar), and Advanced. The main content area shows three lesson cards. Each card includes a small thumbnail image, a title, a duration and level indicator (e.g., 'Time: 10 minutes Level: Intermediate'), a 'Read-aloud available' icon, and a brief description of the lesson content.

**Category**

- Development of Ideas
- Organization
- Style
- Word Choice
- Sentence Structure
- Conventions
- Grammar Exercises
- Passage Exercises

**Difficulty Level**

- All Levels
- Beginner
- Intermediate**
- Advanced

**Using Self-Statements to Improve Writing**  
⌚ Time: 10 minutes Level: Intermediate 🔊 Read-aloud available  
Expert writers talk to themselves as they write. They use self-statements to help them get started, evaluate their progress, and encourage them to keep going. In this lesson, you will see examples of self-statements and how they can be used to improve your writing.

**Strategies for Planning and Writing an Argumentative Essay**  
⌚ Time: 20 minutes Level: Intermediate 🔊 Read-aloud available  
This lesson introduces two powerful strategies to use when planning and writing an argumentative essay: STOP and DARE. Join Mrs. Norris and her students to learn about these strategies and how you can use them with your next argumentative essay.

**Text Evidence in Argumentative Essays**  
⌚ Time: 14 minutes Level: Intermediate 🔊 Read-aloud available  
Adding text evidence in the form of direct quotations or paraphrasing can make your argumentative essay stronger and more credible. In this lesson, you will learn how to select evidence and how to use it correctly.

Figure 4. Interactive lessons.

Performance regarding the construction of arguments. During this eight-week intervention, students in two different treatment conditions used NC Compose to compose essays, receive automated grades and comments, change writings in response to feedback, and complete interactive courses. Teachers integrated NC Write into the traditional process of writing instruction of one treatment condition (NC + TRAD); they also integrated NC Write into the self-regulated strategy development (SRSD) instruction of a different treatment condition (NC + SRSD), which was changed to a lower-intensity format to support teacher implementation. Finally, teachers also integrated NC Write into the traditional process of writing instruction of a third treatment condition (NC + TRAD), which was the traditional writing instruction of a third treatment condition.

Students in the NC + TRAD condition get teaching that offers actual writing opportunities and includes cycles for planning, drafting, and revising their work. In addition, students in the NC + SRSD group had access to explicit training in cognitive and metacognitive capacities to construct and create persuasive language. Finally, students in a third condition analogous to the previous one were given traditional process writing training rather than NC Write. According to the findings of the multilevel model, the posttest essays written

by students who had been exposed to NC + SRSD were of the highest quality, had a greater word count, and contained a greater number of the fundamental components of argumentative essays than those written by students who had been exposed to the other two scenarios. In addition, the posttest revealed that students in the NC + TRAD group had generated essays at a more advanced level than students in the comparison group.

On the other hand, Palermo and Thomson (2018) also provide evidence of these impacts. Research has shown that MI Write helps teachers provide more feedback on higher-level writing skills (Wilson & Czik, 2016), supports increases in students' writing motivation and self-efficacy (Wilson & Roscoe, 2020), and scaffolds improvements in students' writing quality throughout multiple drafts of an essay. In addition, research has shown that MI Write helps teachers provide more feedback on lower-level writing skills (Wilson & Czik, 2016).

## **2.1 The Present Study**

Using data from a previous study conducted by Palermo and Thomson, the purpose of this study is to provide a more in-depth analysis of how AWE can be incorporated in two distinct teacher-directed instructional contexts, the related effects on students' growth in first-draft writing quality across several essays over time, as well as teachers' and students' perceptions of AWE in those contexts. This study will also investigate the effects of AWE on students' growth in first-draft writing quality across several essays (2018). This analysis used the information obtained from Palermo and Thomson's research (2018). These particular facets of the subject under consideration are notable and relevant in and of themselves. Research on the two different ways to combine AWE with teacher-led teaching in ELA classrooms has not previously been conducted, but it is essential if educators are to comprehend how to fully utilize the affordances that AWE provides and get the most pedagogical benefit out of employing it. In addition, previous research on the efficacy of AWE has seldom concentrated on improving the quality of writing in the first drafts of several articles. Instead, the emphasis was placed on how one's writing has progressed throughout several drafts of the same essay or how one's writing has evolved from an initial exam to a subsequent test. It is conceivable to investigate if prolonged exposure to education paired with AWE feedback results in generalized advances in

autonomous writing ability if one looks at the improvement in the quality of first-draft writing. Last but not least, even though the viewpoints of both teachers and students have a crucial role in determining the effectiveness of active wilderness education (see Wilson, 2017), quite little is known about their roles in AWE research (c.f., Grimes & Warschauer, 2010; Warschauer & Grimes, 2008; Wilson & Roscoe, 2020).

The current study evaluated the use of AWE in writing teaching to better understand how it may contribute to improvements in writing instruction and learning. In order to research writing instruction, which was made possible by the AWE system NC Write, we utilized an embedded quasi-experimental mixed methods technique. Both of these study questions were answered as follows: When AWE is employed in two different instructional contexts—process writing instruction and strategy teaching—what are the students' first-draft writing performance development trajectories (i.e., writing quality, essay length, and essay elements)? In terms of their personal experiences and perspectives, what do teachers and students think the AWE system is all about? In light of these findings about the AWE affordances in the various educational contexts, what do these findings imply? (2b)

## **2. Evidence of Effectiveness: A Mixed-Methods Examination of Writing Instruction with AWE**

### **2.1 Methods**

In this study, a quasi-experimental approach was adopted, involving the use of various post-intervention tactics (Clark & Creswell, 2008). This approach sought to supplement the findings from quantitative research by including the collection of qualitative data in a predominately quantitative experiment (Creswell, 2015).

#### **Participants and their settings**

The sample developed by Palermo and Thomson is utilized in this investigation (2018). The new study incorporated up-to-date measurement and analysis methods and focused its attention on a wide range of research issues.

Within the sample, 14 teachers collectively represented five distinct school districts. They chose to adopt NC Write while also including strategy training into their SRSD instruction

(NC + SRSD) or introducing NC Write into their normal process writing instruction (NC + TRAD). Both options are shown below. They were provided with both choices as viable instructional methodologies for producing a process essay. The educator chose kids for each group and placed them in appropriate environments (within courses). In this manner, a quasi-experimental strategy was utilized in the research, in which the circumstances were established at the level of the teacher, and the outcomes were evaluated at the level of the student. The research activities were carried out with participation from all students enrolled in the classes taught by the participating instructors in the study; however, only the data collected from the students who provided their informed consent to participate in the study were analyzed. When the procedure for recruiting new instructors was initiated, there were a total of 1043 students registered in the classes that the participating teachers were teaching. 677 of these students, which is sixty-five percent of the total, provided parental approval to participate in the activity. Despite this, 118 willing students were not included in the sample because either their pre- and posttests were not completed, they only wrote three essays over the length of the intervention, or their class and instructor assignments changed throughout the therapy.

Nevertheless, because these students expressed an interest in participating in the study, we did not exclude them from consideration. Therefore, the final sample comprised 559 children in grades six through eight. The demographic information of the participant is presented in Table 1. In addition, we considered the implications of these characteristics in the study since the two sets of conditions were not similar in any way, including the fact that there was a disparity in the percentage of black children and pupils with impairments (SWDs).

In order to collect more qualitative information, we conducted interviews with additional student samples who volunteered to participate. The interview sample consisted of 30 students, with 15 randomly assigned to each of the three conditions. In addition, interviews with twelve academics were carried out, with six lecturers chosen to represent each of the three scenarios in the study.

### **When and under what conditions**

It was in the spring of 2016 that the intervention took place. Before the spring of 2016,

neither the participating instructors nor the students had any prior knowledge of NC Write. Students were required to finish the pre-test essays during the first week of class. The next step was for teachers to use NC Write while simultaneously training their students in either the standard or the SRSD writing instruction for eight weeks.

Students in both groups utilized NC Produce to complete six interactive courses, write five unique essays (except the essays required for the pre-test and posttest), and receive feedback on each essay. In every scenario, students received training on writing throughout two weekly classes that lasted for forty-five minutes each. Unpredictable occurrences in two different school districts resulted in a two-week extension to the conclusion of the academic year. The total time spent on training for both scenarios was twelve hours. The posttest consisted of the students writing essays one week after they had completed the intervention.

Most participating schools ensured that each student had access to at least one digital learning device, despite the significant disparities in the technological resources available between districts and even within individual districts (see Table 1). In addition, a "bring your own device" policy is implemented at most schools nowadays. As a result, students have adequate access to technology to employ NC through a device of their choosing or a device provided by the school (such as a Chromebook). Write as a component of your writing lesson.

## **2.2 Measures**

### **Writing prompts**

Writing tasks that required students to argue their points of view were used to evaluate the student's ability to express themselves in written form. Each of these prompts has been evaluated by specialists with expertise in the respective fields. The questions .Some search results include supplementary materials, such as short essays and videos. Using a method known as counterbalanced testing, the students were provided with prompts throughout the entirety of the pre-and posttestsposttests. Throughout the entirety of the intervention, students were provided with an option between two different essay questions to utilize for each of the assignments that were assigned to them. Since our primary objective was to



evaluate students' development in their general, autonomous writing ability, an outcome that had not been thoroughly investigated in any of the previous research, we decided to investigate how well students improved the quality of their early drafts for several different types of essays. This was because assessing the pupils' progress was our work's primary purpose. The research did not take into account any pieces of literature that were the product of collaboration between more than one author.

**Table 1. Participant demographics**

Variable	NC + TRAD	NC + SRSD	Difference test
Students ( <i>n</i> )	272	287	
Districts ( <i>n</i> )	3	4	
Schools ( <i>n</i> )	3	5	
Teachers ( <i>n</i> )	6	8	
Grade ( <i>n</i> )			
6	41	113	
7	160	28	
8	71	146	
Male (%)	48.71	45.10	$\chi^2_{(1)} = 0.726, p = .394$
Race (%)			
White	78.71	50.74	$\chi^2_{(1)} = 54.530, p < .001$
Hispanic or Latino	12.93	12.59	$\chi^2_{(1)} = 0.013, p = .908$
Black or African American	4.18	32.96	$\chi^2_{(1)} = 72.403, p < .001$
Asian	1.14	0.37	$\chi^2_{(1)} = 1.061, p = .303$
American Indian or Alaska Native	0.38	0.37	$\chi^2_{(1)} = 0.000, p = .985$
Native Hawaiian or Pacific Islander	0.38	-	$\chi^2_{(1)} = 1.029, p = .311$
Two or More Races	2.28	2.96	$\chi^2_{(1)} = 0.242, p = .623$
Free or Reduced Price Lunch <sup>a</sup> (%)	60.33	59.96	
Limited English Proficiency (%)	3.06	5.71	$\chi^2_{(1)} = 2.062, p = .151$
Students with Disabilities (%)	5.68	14.12	$\chi^2_{(1)} = 9.529, p = .002$
Age <sup>b</sup> ( <i>M, SD</i> )	155.51 (9.11)	156.42 (12.31)	$F(1,557) = 0.981, p = .322$
Previous ELA achievement <sup>c</sup> ( <i>M, SD</i> )	455.67 (10.53)	454.53 (11.61)	$F(1,557) = 1.311, p = .253$
Students per digital learning device <sup>a</sup> ( <i>M</i> )	0.73	1.01	

<sup>a</sup>Estimates based on school-level data.

<sup>b</sup>Age in months at time of pretest.

<sup>c</sup>Based on scale score (range: 423–484) from the previous year's end-of-grade assessment.

## Writing quality

We used the PEG total essay score, which varied from 6 to 30 points, to evaluate the quality of each essay's writing and calculate its overall ranking. For various reasons, we decided to

evaluate the essay based on its overall score instead of the ratings it received for its characteristics. First, the objective of the PEG total essay score is to provide a numerical representation of a concept that is sometimes referred to as the quality of the student's writing. Consequently, the first quantitative study question we posed centered on the development paths taken by pupils with this specific topic area. Two, there is a significant correlation between people's weights to the many characteristics that make up their selves (Wilson et al., 2014).

### **Essay length**

The number of words an essay needed to be considered complete was the measure used to determine its length. In order to perform this computation, every word written was taken into account, irrespective of how it was spelled. The article's length was calculated by using the software application known as Microsoft Excel.

### **essay components**

Each essay was evaluated based on how well it used the key components of argumentative writing by applying the methods described by Scardamalia, Bereiter, and Goelman (1982). Before concluding, we gave careful consideration to the allegation, as well as its reasons, elaborations, and counterclaims. Essays were awarded points for each component they incorporated or for each unique and original example they used in their arguments, elaborations, and refutations. These scores were based on the total number of words in the essay. Alternately, one point was added to the total score of the essay for every argument refuted.

The essays were sent to the specialists to analyze them based on the essential components of argumentative writing. Throughout their instruction, the raters were provided with a scoring director, a team leader, and a collection of anchor essays. Afterward, the raters looked at two groups of 10 practice essays each and analyzed their content. In the last step of the process, raters were presented with a training set consisting of eight extra essays with difficult compositions for them to grade. After participating in an informational session that lasted one and a half days, raters evaluated the works by consulting the training materials, particularly the anchor pieces, which assisted them in basing their judgments on the scoring criteria. Throughout the scoring procedure, the scoring director and the team leader conducted random

checks of each rater's scores to evaluate accuracy and drift and to offer raters' comments. In addition, 15 percent of the essays were reevaluated by the person in charge of scoring or the head of the team to determine the extent to which each rater might be trusted. The reliability analysis concluded that there was a 96 percent agreement on the counterclaims ( $r = .874$ ), a 96 percent agreement on the conclusions ( $r = .928$ ), a 96 percent agreement on the elaborations ( $r = .917$ ), a 96 percent agreement on the claims ( $r = .924$ ), and a 96 percent agreement on the elaborations ( $r = .917$ ). There was a correlation of 0.923% between the supporting reasons, representing 78% of the total.

Students and educators' perspectives and their own professional experiences with the AWE system. We conducted open-ended and semi-structured interviews with students and instructors to learn more about how students and instructors utilized and perceived the AWE system, as well as what these perceptions suggested about AWE's affordances in various educational situations. A few things piqued our interest: Before we began this study, we did not have any ideas or assumptions about how consumers would respond or interpret AWE after it was installed. This was largely because the previous research on user views and experiences with AWE was scant and outdated. Consequently, we posed a wide variety of questions on NC Write to the educators and pupils involved in both settings. Students were tested on their knowledge of a broad spectrum of topics, including their awareness of whether or not NC Write helped them improve their writing, whether or not the automatic feedback was helpful in this regard, what they had learned from using the program, and what aspects of NC Write they would change if they had the opportunity to do so. Teachers were asked a variety of other questions, some of which included the following:

whether or not NC Write had helped their students improve their writing

how it had done so

what they thought of the automatic feedback

which aspects of NC Write they would change if they had the opportunity to do so

The interviews that were digitally captured were afterward transcribed word for word.

When analyzing the information we obtained from the interviews, we relied on grounded theory-based qualitative data analysis methodologies (Strauss & Corbin, 1998). A tool called NVivo 10 developed by QSR International was utilized during the study. Two individuals with previous experience in qualitative data analysis were responsible for coding the data. The usage of both iterative and recursive coding was made. The coding steps were structured following the sequence suggested by Corbin and Strauss (2015). The findings from the interviews were first arranged into groups according to the conditions, and only then were they openly coded. This was done to make it simpler to come up with the first ideas. After that, we conducted a comparative analysis to determine each concept's interconnected dimensions and characteristics. After that, we categorized people's responses according to the context, the approach, and the category integration we used. Finally, we validated the coding scheme by comparing the completed coding scheme to the problematic situations found while we were coding. The completed coding system may be seen in Table 2. Standardized techniques for use in educational situations. Before the start of the study, each teacher participated in a walkthrough of NC Write, which introduced them to the software and demonstrated its major functions. This allowed the teachers to become familiar with NC Write. In addition, before the beginning of the semester, the teachers were allowed to test out the application after getting their account details.

The educators were provided with all of the necessary teaching resources in order for them to successfully carry out the intervention. Every educator received comprehensive instructions that walked them through the objectives of the research as well as the many different treatment approaches in great detail. These instructions also contained all of the student materials necessary for the intervention, as well as directions for the pre-test and the post-test to be administered. In addition to receiving lesson plans for each of their classes, teachers were provided with an overview of the calendar that detailed the NC Write activities (such as interactive lessons, essay preparation and drafting, and essay revision) that would be taking place in each of the classrooms where their students would be enrolled. These activities included: Because there have been instances in the past in which students and teachers have depended excessively on AWE, teachers were provided with a script to follow to consistently offer students background information about PEG and automated essay scoring. This was done so that teachers could consistently offer students background information about PEG and

automated essay scoring. This was done because there were situations in which students and teachers placed excessive confidence in AWE (Grimes & Warschauer, 2010). PEG does not read and comprehends written material in the same way that people do; however, it has learned how to recognize the characteristics of effective writing through training that includes reading and grading a significant number of essays graded by humans. Even though PEG does not read and comprehend written material in the same way that people do, it has learned how to recognize the characteristics of effective writing. Students were taught this important information. This purpose was to teach PEG how to identify the characteristics of good writing. Therefore this was done. The students were informed that the PEG could only consistently evaluate essays that were prepared in "good faith" and that if they submitted duplicate work or attempted to deceive the PEG in any other way, the ratings they received on their essays might not accurately reflect the quality of their work.

Table 2. Coding Scheme

Concept	Dimensions/Properties	Description
1. Benefits of NC Write	1.1 Efficiency 1.2 Evidence of growth 1.3 Provides a structure for writing 1.4 Relevance 1.5 Supports differentiation 1.6 Supports intrinsic motivation 1.7 Supports writing instruction	Perceptions of benefits of NC Write for learning and teaching
2. Change about NC Write	2.1 Opinions	Aspects of NC Write users felt should be improved, added, or removed
3. Writing quality feedback	3.1 How feedback supported improvement 3.2 How students used feedback 3.3 Teacher assistance with interpretation 3.4 Criticisms and other limitations of feedback	Perceptions, implementation, and use of automated feedback
4. NC Write Lessons	4.1 How supported improvement 4.2 Criticisms and limitations	Perceptions of interactive lessons
5. Prompts	5.1 Perceptions	Perceptions of intervention prompts
6. Graphic organizers	6.1 How supported improvement 6.2 Criticisms and limitations	Perceptions of graphic organizers in NC Write
7. Explanation for growth trajectories	7.1 Ceiling on improvement	Factors explaining growth trajectories
8. Implementation challenges	8.1 Practice 8.2 Intervention timing	Challenges associated with implementing NC Write and/or intervention

Putting NC's plan into motion Writing might be difficult, and developing ideas for interventions could also be difficult. Therefore, the teachers allocated to the SRSD condition received supplementary teaching on utilizing SRSD in the classroom to teach writing methods. This instruction was provided since the SRSD condition was one of the possible outcomes. The professional development program ran for a total of sixty minutes and was carried out onsite at the schools attended by the instructors. Additional reading material on the SRSD model was distributed to the instructors to get things started. Participants gained an understanding of the theoretical underpinnings of SRSD, its logic, and the steps involved in teaching SRSD writing during the program. During the training, teachers went through the SRSD lesson plans and the student resources related to those

lesson plans. It was underlined that lesson plans should be altered as necessary to differentiate instruction based on the needs of learners, and this point was driven home repeatedly. Because lesson plans provided a framework for instruction, they were designed to be adaptable enough to accommodate various changes.

### **Instructional strategies for NC + TRAD**

When both the NC and TRAD conditions are satisfied, teachers in classrooms often employ the standard approach to instructing students in the art of writing. A writing environment that is participatory and supportive, cycles of planning, writing, and revising, individualized instruction, student ownership of their work, as well as self-reflection and evaluation are all characteristics of process writing education. Several factors characterize process writing education. These factors include: (Graham, McKeown, Kiuahara, & Harris, 2012; Graham & Perin, 2007). This class will cover several core writing skills, strategies for planning and organizing, and the basic framework of argumentative essay writing. Students in the NC + TRAD condition utilized NC Produce to write argumentative essays, access interactive lessons on concept development, organization, word choice, sentence structure, and conventions, and improve their writing using the program's feedback. This condition was compared to the control condition, which did not utilize NC Produce. The NC condition was combined with the TRAD condition to create a new condition known as the NC + TRAD condition.

In their article, "Process Writing Strategies That NC + TRAD Educators Use in Their Classrooms," Palermo and Thomson provide an in-depth overview of the many methods that NC + TRAD teachers implement in their lessons (2018). In a nutshell, the findings of a study on writing instruction methods (Gilbert & Graham, 2010) supported the adoption of a process approach to writing education by instructors, which included the teaching of writing skills. The study was conducted by Gilbert & Graham. This was because learning to write well was integral to the procedure. Direct skill training, summary instruction, writing as a learning tool, and paragraph writing were the evidence-based strategies that NC + TRAD instructors used the most frequently in their classrooms. [Further citation is required] [Further citation is required] Spelling, phrase combination, inquiry or research, and other similar tactics were among the methods that were commonly suggested but less

frequently put into practice.

As a consequence of the interactions that we had with the instructors of NC + TRAD, we now have a more in-depth understanding of the activities they participate in. Since the North Carolina General Writing Assessments were eliminated, there appears to have been a change away from prioritizing writing education, as indicated by the responses of five of the six instructors who were questioned regarding this topic. The lecturers talked about using different strategies, such as strengthening the connection between reading and writing, including argumentative writing components in research papers, and reducing the time spent writing as a direct result of these activities. The five-paragraph essay format was maintained by some of the professors, despite the fact that these individuals were aware of the repetitious nature of the procedure. Writing skills were offered to students engaging in process writing education by NC + TRAD educators in the form of mini-lessons several times each week. The students were given regular exposure to these writing abilities.

The following pieces of guidance were included in the NC + TRAD lessons, which provided teachers with a fundamental foundation to aid in incorporating NC Write into their more traditional approach to teaching the writing process. These lessons were designed to provide teachers with a foundation to help them teach NC Write. First, using the script provided, instruct the students on the principles of the Performance Evaluation Guide (PEG) and the automated essay scoring system. Two, offer students the chance to create a one-of-a-kind essay in NC. Write roughly every other week (that would make a total of five, excluding the pre-and post-tests), and provide a variety of themes for students to pick from. 3. Guide the students through the process of selecting the most suitable graphic organizers for prewriting and preparation from the several alternatives shown in NC Write. In the fourth step, each student should be given the option to use the automated feedback to make changes to the essays written by the other students. It would help if you underlined how crucial it is to incorporate the criticism into key adjustments that enrich the organization of the essay in this paragraph. These changes should be brought about as a result of the critique. 5. At a frequency of about once every two weeks, each student should participate in an NC Write lesson (i.e., six total). Students enrolled in NC + TRAD were recommended to participate in additional coursework that included issues such as audience comprehension, essay elaboration, and sentence diversity.



In conclusion, the teachers at NC + TRAD instructed students in various writing skills in addition to the actual construction of argumentative essays by utilizing a process writing technique incorporating AWE. This was done to teach the students the essential components of argumentative essay construction. There were three important differences between teaching writing using SRSD and writing using the process writing method, even though the two approaches had certain commonalities in teaching writing. (3) The instruction provided by NC + TRAD was not as criterion based or instructional responsive as the instruction provided by NC + SRSD was to the same degree. (1) NC + TRAD teachers did not explicitly teach techniques for self-regulation. (2) NC + TRAD teachers did not explicitly teach strategies for planning, writing, and revising argumentative essays.

Instructional approaches applicable to NC + SRSD Writing instruction based on the SRSD pedagogical method was administered in classrooms randomly assigned to the NC + SRSD condition. Composing classes at SRSD focused on teaching students techniques for organizing and writing argumentative essays and the background information, skills, and self-discipline required to successfully implement such strategies in their writing. Throughout this unit, students were also taught how to organize and compose argumentative essays. Students in the NC + SRSD condition utilized NC Compose to obtain access to interactive courses highlighting automated methods, composing argumentative essays, and revising works utilizing feedback supplied by the application. This was done in the context of the NC + SRSD condition.

The SRSD writing curriculum was applied by the teachers of NC + SRSD in a total of six iterations, making it a recursive curriculum. This lesson will provide students with general and genre-specific writing procedures, the knowledge to employ strategies, and the self-regulatory knowledge and abilities necessary to properly use strategies and manage the writing task. This lesson aims to provide students with general and genre-specific writing procedures (Graham, Harris, & McKeown, 2013; Harris & Graham, 2016). This was discovered by Graham, Harris, and McKeown (2013) and Harris and Graham (2016). In addition, a short mnemonic that will aid the student in recalling the mental processes linked with each approach is provided to the student (Graham & Harris, 2018). (Graham & Harris, 2018). The phases of education promote a gradual discharge of responsibility for various strategies and the preservation and generalization of such strategies, as students enhance

their skills in applying various methods.

Numerous meta-analyses have unequivocally proved that SRSD has a positive influence, on average, on the writing abilities of students, which supports the hypothesis that this impact is favorable (i.e., Graham, 2006, Graham & Harris, 2003; Graham et al., 2012; Graham & Perin, 2007). On the other hand, the vast majority of SRSD treatments that have been described in the published research have been led by researchers or tutors, have been carried out in small groups or one-on-one settings, and have featured high-intensity therapy (that is, courses that are provided for 20–45 minutes three to five times a week). After a significant amount of practice-based professional development, only a select few studies conducted in more recent times have examined the use of SRSD by instructors across the entirety of the classroom (e.g., Festas et al., 2015; McKeown et al., 2016, 2018). As a part of the current study project, we decided to lessen the amount of emphasis placed on the SRSD model's presentation to lessen the amount of time spent on professional development and make it easier for instructors to accept the SRSD model.

As a direct consequence of the inclusion of argumentative writing in the current research, the students were instructed in a planning process that is commonly referred to as STOP (which stands for "Suspend judgment," "Take a stance," "Organize thoughts," and "Plan more as you write"). One of the goals of this method is to persuade students to choose the side of an argument that they are most likely to be able to defend while assessing allegations and potential counterclaims. This should be done so that students can demonstrate their understanding of both sides of the debate. In order to develop a compelling argument, students are expected to think about how to arrange the material they have obtained, and they must continue to prepare, change, and rewrite their work throughout the writing process. In addition to this, students received training in the DARE method, which is tailored to a particular genre (which stands for "D" for "develop your argument," "A" for "include supporting reasoning and evidence," "R" for "reject counterclaims," and "E" for "end with a conclusion"). With the assistance of this method, students will be led step-by-step through the process of merging all of the fundamental components of argumentative essays into their writing in their unique way.

The specific processes teachers used to guide students through the six phases of SRSD

writing instruction and to coach them in the necessary planning, and writing abilities are documented in great detail in Palermo and Thomson. These two books also contain much supporting evidence (2018). (2018). In a nutshell, the first stage of the process was titled "Develop background knowledge," Its purpose was to provide students with the basic information and terminology they needed to begin utilizing the strategies. This process phase was intended to provide students with the information and terminology needed to begin using the strategies. Next, the teachers imparted planning and writing skills to the students, who were tasked with learning them by heart and putting them into practice. This scaffolded approach was carried over into the other components of the program and continued throughout its whole. Finally, teachers and students continued their research of the tactics during the second stage, dubbed "Discuss it." During this stage, the primary focus was on how the essential components of argumentative essays contribute to the strengthening and persuading of an essay.

In the third step, titled "Model it," the teachers demonstrated how to use the STOP and DARE acronyms to the pupils. They accomplished this by demonstrating how to write an argumentative essay. During the time that students spent writing, teachers conducted demonstrations of self-regulation tactics such as goal planning, self-education, and self-evaluation. These were some of the activities that were covered. Students were given various tasks in the fourth part of the process, labeled "Memorize it," to aid them in remembering both approaches and putting them into practice. The instructors made periodic assessments of the student's levels of comprehension of the processes, and they adapted the students' respective practice and Support activities accordingly until all of the students had acquired the target level of competence. During the fifth phase, which was referred to as Support, both the students' teachers and their classmates encouraged the students to use their strengths in planning and writing and self-regulation methods. This was accomplished through collaborative efforts on the assigned essays (via small-group revision activities). Most of the time that students spent working on this phase was spent preparing and revising the essays they had previously written. The amount of coaching that instructors gave students as they increased their capacity to apply tactics like STOP, DARE, and self-regulation led to a decrease in the total amount of coaching that teachers provided. Students were considered to have completed the final level, called Independent performance, when

they demonstrated that they could organize and produce a powerful, persuasive essay without the assistance of professors or PEG assessment. This was one of the requirements for moving on to the next level.

The instructors of the courses offered by NC + SRSD were given direction on integrating NC Write with the various types of strategy training presented to them. This counsel consisted of the identical recommendations that were presented to the instructors of NC + TRAD, and those recommendations were as follows:

Please make sure students select the right graphic organizers for prewriting, give them time to rewrite each essay, and assign six separate NC Produce lessons.

Provide background information about PEG and automated scoring.

Have students write a total of five different essays in NC Write.

Because NC Write lessons, composing, and editing activities are aligned with the phases and content of teacher-led SRSD writing instruction, the integration of NC Write with strategy instruction is differentiated from other approaches to writing education. This is because other approaches to writing education do not have this alignment. As an illustration, teachers who instruct NC + SRSD have their students complete specific NC Write lessons at varying learning levels to reinforce the strategies for planning and writing as well as the methods for self-regulation that were initially presented to the students during teacher-led instruction. These strategies and methods were initially presented to the students during teacher-led instruction. The students from NC + SRSD were given assignments from the NC Compose curriculum. These lessons covered various topics, including how to plan and write an argumentative essay, improve writing by using self-statements, and improve essay writing by using transitions. The fifth stage of education, named Support it, and needed the most writing practice, was when students' composition and revision activity in NC Write reached its maximum point. This stage was also the instruction stage with the most writing practice requirements. This transpired when educators started cutting back on their assistance to pupils as the latter developed their writing abilities.

### **AWE publicity**

Because we could not carry out detailed inspections of classroom teaching in each condition, we decided to go through the log files of the NC Write a program to assess the frequency with which each student was presented with AWE while they were learning how to write. We constructed a metric that represented each student's AWE exposure based on the core therapeutic activities by using those log data as our source of information. This evaluation had a maximum limit of 17 points, based on the maximum number of treatment activities each student successfully performed during the intervention. These activities included attending NC Write sessions, writing first drafts, and making revisions. This figure does not include coursework finished in less than two minutes or essays containing a significant amount of copied language. The average number of treatment activities was completed by more students in the NC + SRSD group than by students in the NC + TRAD group ( $M = 13.73$ ,  $SD = 2.73$ ;  $t(557) = 3.93$ ,  $p0.01$ ). Later studies used the grand mean centering technique to integrate the AWE exposure parameter.

### **3.4 Analyses**

The quantitative examination was carried out using a modeling approach that included many levels. This system managed the whole dataset, which included skewed data and observations that were not independent of one another. MLwiN version 3.02 was utilized throughout every investigation (Charlton, Rasbash, Browne, Healy, & Cameron, 2017).

A series of models consisting of three levels were developed to include all of the students' first-draft essays that they had written while operating under either the NC + TRAD or the NC + SRSD conditions to investigate the development pathways of students' writing abilities. During the intervention, students typically completed six essays (the mean number was 6.31, and the standard deviation was .92). According to a preliminary analysis of each student's writing performance outcomes (i.e., essay length, essay components, and writing quality), both the findings from the pre-test (i.e., the first essay) and the change over time was erratic. This was determined by each student's essay length, components, and writing quality. In addition, there was a difference in the outcomes of the pre-test and the initial essay. The results demonstrated a non-linear evolution over time, particularly for many students. This was evidenced by the highly rapid improvements in performance that

occurred at the outset of therapy but the slower development that occurred as the intervention progressed. In light of previous research that investigated the growth trajectories of writing performance in connection to AWE, a variety of growth models were evaluated and put through their paces for this study (Wilson, 2017; Wilson et al., 2014). There were three models: a linear model, a logarithmic model that used the natural log of the time variable, and a polynomial, quadratic development model that used the variables. The linear model was the simplest of the three. Time<sup>2</sup> and primetime (a count of all the first draft articles written and used to describe the instantaneous speed of change) were taken (a variable representing the amount of time that had elapsed since the beginning of the study). Both variables' centers were set to 0, representing the student's performance on the pre-test writing exercise, and both variables had the same meaning.

In order to determine intra-class correlations and ensure sufficient variation across all levels to support the implementation of a three-level model, the first step in each study was to specify an unconditional model. This was done to determine intra-class correlations (Model 1). According to the findings of each unconditional model, there was sufficient variability at each level to warrant the use of a three-level model. This was determined by analyzing the outcomes of the models. In order to evaluate the development patterns of the pupils' writing abilities, the quadratic equation presented below was utilized. Growth model (Model 2):

$$R_{ijk} = \beta_0 + \beta_1 \text{Time}_{ijk} + \beta_2 \text{Time}^2 + v_{0k} + v_{1k} \text{Time}_{ijk} + v_{2k} \text{Time}^2 + u_{0jk} + u_{1k} \text{Time}_{ijk} + u_{2k} \text{Time}^2 + e_{ijk}$$

The expected level of the student's writing performance is represented by the variable link in this model for a student I who is collaborating with a teacher j for a specific period k. (i.e., writing quality, essay length, and essay components). During the practice round, it was discovered that the link between student I and instructor j was in the initial condition of  $\beta_0$ . The instantaneous growth rate of the student is represented by the variable time  $\beta_1$ , measured at time k. Time<sup>2</sup> illustrates the curvature, sometimes referred to as the gradual slowing down of the growth rate. The variation inside a student is represented as  $\beta_2$ , a variation between students is represented as  $u_{0jk}$ , and differences between instructors and students are represented as  $v_{0k}$ . It is generally accepted that random effects follow a normal

distribution consisting of constant variances and zero-mean means. A conditional quadratic growth model, also known as Model 3, was constructed in the last development phase. form:  $y_{ijk} = 0_{ijk} + 1_{Time}_{ijk} + 2_{Time}^2 + SRSD + SRSD * Time + 6SRSD * Time^2 + v + v_{ijk} + time + v_{3jk} + Time^2 + u_{4k} + 5 + u_{Time} + u_{e_{ijk} + time^2} + i_{jk} + 0k + 1k + i_{jk} + 2k + i_{jk} + 0_{jk} + 1k + i_{jk} + Kijiji + 2k$  This model is superior to the earlier quadratic growth model because it includes a control for AWE exposure ( $3_{Exposure}_{jk}$ ) and predictors to look for between-condition differences in initial status ( $4_{SRSD}_{k}$ ), growth rate ( $5_{SRSD * Time}_{ijk}$ ), and deceleration ( $6_{SRSD * Time}^2$ ) for each writing performance outcome. Additionally, this model includes predictors to look for between-condition differences in initial status ( $4_{SRSD}_{k}$ ), growth rate ( $5_{SRSD * Time}_{ijk}$ ), and deceleration ( $6_{SR}$  (i.e., Model 2).

In order to evaluate how well each model fits the data, we employed a metric known as negative log-likelihood (-2LL). When a significant chi-square difference test is done based on the number of estimated parameters, smaller results indicate a better match than those larger.

### 3.5 Results

What are the first-draft writing performance growth trajectories of students (i.e., writing quality, essay length, and essay elements) when AWE is used in two different instructional settings, namely process writing instruction and strategy teaching? Specifically, process writing instruction and strategy teaching. The instruction given to children in writing in any of these two scenarios is a different writing format.

The results of developing more advanced models are outlined in Table 3, which may be seen here. The random effects of the unconditional model show that differences in teachers account for 24 percent of the variance in writing quality, differences between students within teachers account for 27 percent, and differences between students themselves account for 49 percent of the variance in writing quality. The quadratic growth model (Model 2) was significantly more fitted to the data as compared to the unconditional model [(12)=1095.52, p.001]. After taking into account the clustered data structure, the findings of the quadratic model showed that students improved the quality of their first drafts of each subsequent essay by 1.6 points, with a deceleration rate of 0.2 points. This was the case even though the students' overall quality increased over time. This was the circumstance

even though, over time, there was an improvement in the overall quality of the students. According to analyses of demographic x condition interactions, the initial status and rate of change of Black students were not statistically significant ( $p = .47$  and  $.09$ , respectively). This was the conclusion reached by the researchers. However, Black children in the NC + SRSD group decelerated at a significantly slower speed than that non-Black pupils in the NC + SRSD group ( $p = .01$ ). This was a significant difference between the two groups.

Because the initial status, rate of change, and deceleration of SWDs did not show any statistically significant differences ( $p = 0.38$ ,  $0.56$ , and  $0.90$ , respectively), these variables were omitted from the final model in the interest of maintaining as much simplicity as possible. According to the concluding conditional model (Model 3), which took into consideration students' levels of AWE exposure, the quality of the students' first drafts was initially worse for those in the NC + SRSD group than it was for those in the NC + TRAD group. This was the case for both categories of students (by 2.4 points). Students diagnosed with NC and SRSD did not exhibit any signs of improvement over time.

When compared to students from NC + TRAD, the student's overall writing quality advancement rose by 0.68 points while decreasing by 0.07 points. Figure 5 displays in a split-screen style the expected development trajectories for Black and non-Black students, indicating how the two distinct student groupings will alter over time.

### **The length of the article**

Table 4 displays the results of numerous models used to make predictions regarding the length of essays. According to the random effects of the unconditional model (Model 1), out of the total variance in essay length, 47% was attributable to individual students, 27% was attributable to differences in student performance within instructors, and 26% was attributable to differences in instructor performance. According to these statistics, there was a decline of 47 percent among students, 27 percent among students and instructors, and 26 percent among professors, respectively. Approximately speaking, the reduction occurred across students, students and instructors, and professors. The quadratic growth model (Model 2) could predict the data with greater accuracy [ $2 = 1061.69$ ,  $p.001$ ]. After taking into account the clustered data structure, the model results showed that students increased the length of the initial drafts of each subsequent essay by approximately 45 words, with a



deceleration rate of approximately 6 words. This was the case even though students slowed down their rate of word growth slightly. This was the case even if the students' word addition rate reduced by around 6 words over the year. The analyses of demographic condition interactions for beginning status, rate of change, and deceleration did not provide statistically significant outcomes for Black students or SWDs ( $p = .15, .16, \text{ and } .22$ , respectively) or deceleration ( $p = .89, .97, \text{ and } .60$ , respectively). Because of this, these variables were excluded from the final model. According to the final conditional model (Model 3), which considered the students' prior exposure to AWE, students in the NC + SRSD group initially generated shorter first drafts than students in the NC + TRAD group. This finding was based on comparing the two groups' initial draft lengths (102 words). Students who completed NC + SRSD demonstrated variations in the growth rate (by 19 words) and slowing (by 2 words) of the length of their essays across successive initial drafts; however, these differences were not statistically significant when compared to students who completed NC + TRAD. The students who completed NC + SRSD also demonstrated variations in the growth rate (by 19 words) and slowing (by 2 words) of the length of their essays across successive initial drafts. These forecasted shifts in the direction of economic development are depicted in figure 6.

### **Essay components**

Table 5 displays the results of the models employed to analyze the essay's component components. The unconditional model's random effects (Model 1) revealed that of the overall variability in the number of essential elements of argumentative essays, 49 percent fell among students, 27 percent fell among students within instructors, and 24 percent fell among teachers. The remaining 24 percent fell between students and between instructors. The remaining twenty-four percent was distributed fairly evenly between the teaching staff and the pupils. The quadratic growth model (Model 2) was significantly more fitted to the data as compared to the unconditional model [ $(12) = 649.59, p.001$ ]. After considering the clustered data structure, the model's findings showed that students gradually increased the number of components in their initial drafts by approximately 1.6 for each subsequent essay, with a deceleration rate of 0.2. This was the case even though the number of components increased over time. This was discovered after the model had been utilized to analyze the data. The studies of demographic condition interactions for starting status, rate

of change, and deceleration produced non-significant findings for Black students ( $p = .49, .96, \text{ and } .64$  respectively) and SWDs ( $p = .35, .32, \text{ and } .24$  respectively). Because of this, these variables were excluded from the final model.

Table 3. Unstandardized Coefficients (and Standard Errors) of Multilevel Growth Models of Essay Quality

Parameter	Model 1: Unconditional model			Model 2: Quadratic growth model			Model 3: Conditional model		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<b>Fixed Effects</b>									
Writing quality									
Initial status, $\beta_0$	14.11	0.57	<.001	12.05	0.68	<.001	13.54	0.84	<.001
AWE exposure, $\beta_3$							0.37	0.06	<.001
NC + SRSD, $\beta_4$							-2.43	1.12	.03
Rate of change									
Intercept, $\beta_1$				1.55	0.33	<.001	1.18	0.47	.01
NC + SRSD, $\beta_5$							0.68	0.63	.28
Deceleration									
Intercept, $\beta_2$				-0.21	0.05	<.001	-0.17	0.07	.01
NC + SRSD, $\beta_6$							-0.07	0.09	.43
<b>Random Effects</b>									
Level 1 (time, $\sigma_{\theta 0}^2$ )	8.68	0.25		5.12	0.17		5.12	0.17	
Level 2 (students)									
Initial status ( $\sigma_{u0}^2$ )	4.86	0.40		4.33	0.56		4.04	0.54	
Rate of change ( $\sigma_{u1}^2$ )				0.22	0.14		0.21	0.14	
Deceleration ( $\sigma_{u2}^2$ )				0.00	0.00		0.00	0.00	
Level 3 (teachers)									
Initial status ( $\sigma_{v0}^2$ )	4.26	1.70		6.12	2.44		3.99	1.63	
Rate of change ( $\sigma_{v1}^2$ )				1.40	0.57		1.28	0.52	
Deceleration ( $\sigma_{v2}^2$ )				0.03	0.01		0.03	0.01	
<b>Goodness of Fit</b>									
Deviance (-2LL)	15877.16			14781.64			14738.73		
Difference Test				$\chi^2_{12}=1095.52$		<.001	$\chi^2_4=42.91$		<.001

Note. Est. = Unstandardized parameter estimate, SE = standard error,  $p = p$ -value.  $P$ -values are not provided for random effects as the Wald test for these parameters is only approximate.

Table 4. Unstandardized Coefficients (and Standard Errors) of Multilevel Growth Models of Essay Length

Parameter	Model 1: Unconditional model			Model 2: Quadratic growth model			Model 3: Conditional model		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<b>Fixed Effects</b>									
<b>Essay length</b>									
Initial status, $\beta_0$	267.09	22.30	<.001	204.42	26.46	<.001	265.35	32.70	<.001
AWE exposure, $\beta_3$							8.84	2.05	<.001
NC + SRSD, $\beta_4$							-102.48	43.63	.03
<b>Rate of change</b>									
Intercept, $\beta_1$				45.46	10.99	<.001	35.44	15.99	.03
NC + SRSD, $\beta_5$							18.73	21.44	.38
<b>Deceleration</b>									
Intercept, $\beta_2$				-5.96	1.63	<.001	-4.99	2.40	.04
NC + SRSD, $\beta_6$							-1.95	3.22	.54
<b>Random Effects</b>									
Level 1 (time, $\sigma_{t0}^2$ )	11998.11	342.60		7037.84	245.10		7036.77	245.32	
<b>Level 2 (students)</b>									
Initial status ( $\sigma_{u0}^2$ )	6749.61	549.91		3646.38	649.10		3498.87	640.83	
Rate of change ( $\sigma_{u1}^2$ )				786.87	254.44		788.31	255.42	
Deceleration ( $\sigma_{u2}^2$ )				19.01	6.31		19.04	6.35	
<b>Level 3 (teachers)</b>									
Initial status ( $\sigma_{v0}^2$ )	6609.15	2627.67		9397.93	3700.49		6175.28	2476.43	
Rate of change ( $\sigma_{v1}^2$ )				1522.54	636.77		1420.26	597.81	
Deceleration ( $\sigma_{v2}^2$ )				32.07	13.90		30.84	13.43	
<b>Goodness of Fit</b>									
Deviance (-2LL)	37646.10			36584.41			36562.13		
Difference Test				$\chi^2_{12}=1061.69$		<.001	$\chi^2_4=22.28$		<.001

Note. Est. = Unstandardized parameter estimate, SE = standard error, *p* = *p*-value. *P*-values are not provided for random effects as the Wald test for these parameters is only approximate.

Table 5. Unstandardized Coefficients (and Standard Errors) of Multilevel Growth Models of Essay Elements

Parameter	Model 1: Unconditional model			Model 2: Quadratic growth model			Model 3: Conditional model		
	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>	Est.	SE	<i>p</i>
<b>Fixed Effects</b>									
<b>Essay elements</b>									
Initial status, $\beta_0$	9.28	0.58	<.001	7.28	0.72	<.001	8.90	0.89	<.001
AWE exposure, $\beta_3$							0.25	0.07	<.001
NC + SRSD, $\beta_4$							-2.71	1.20	.02
<b>Rate of change</b>									
Intercept, $\beta_1$				1.63	0.34	<.001	1.33	0.50	<.01
NC + SRSD, $\beta_5$							0.55	0.67	.41
<b>Deceleration</b>									
Intercept, $\beta_2$				-0.24	0.05	<.001	-0.20	0.08	.01
NC + SRSD, $\beta_6$							-0.06	0.11	.59
<b>Random Effects</b>									
Level 1 (time, $\sigma_{\eta_0}^2$ )	11.83	0.34		8.81	0.25		8.81	0.25	
<b>Level 2 (students)</b>									
Initial status ( $\sigma_{u_0}^2$ )	6.29	0.52		6.85	0.52		6.73	0.51	
Rate of change ( $\sigma_{u_1}^2$ )				0.00	0.00		0.00	0.00	
Deceleration ( $\sigma_{u_2}^2$ )				0.00	0.00		0.00	0.00	
<b>Level 3 (teachers)</b>									
Initial status ( $\sigma_{v_0}^2$ )	4.36	1.76		6.67	2.73		4.44	1.88	
Rate of change ( $\sigma_{v_1}^2$ )				1.46	0.61		1.40	0.59	
Deceleration ( $\sigma_{v_2}^2$ )				0.03	0.01		0.03	0.01	
<b>Goodness of Fit</b>									
Deviance (-2LL)	16775.71			16126.12			16109.57		
Difference Test				$\chi^2_{12}=649.59$		<.001	$\chi^2_4=16.55$		<.01

Note. Est. = Unstandardized parameter estimate, SE = standard error, *p* = *p*-value. *p*-values are not provided for random effects as the Wald test for these parameters is only approximate.

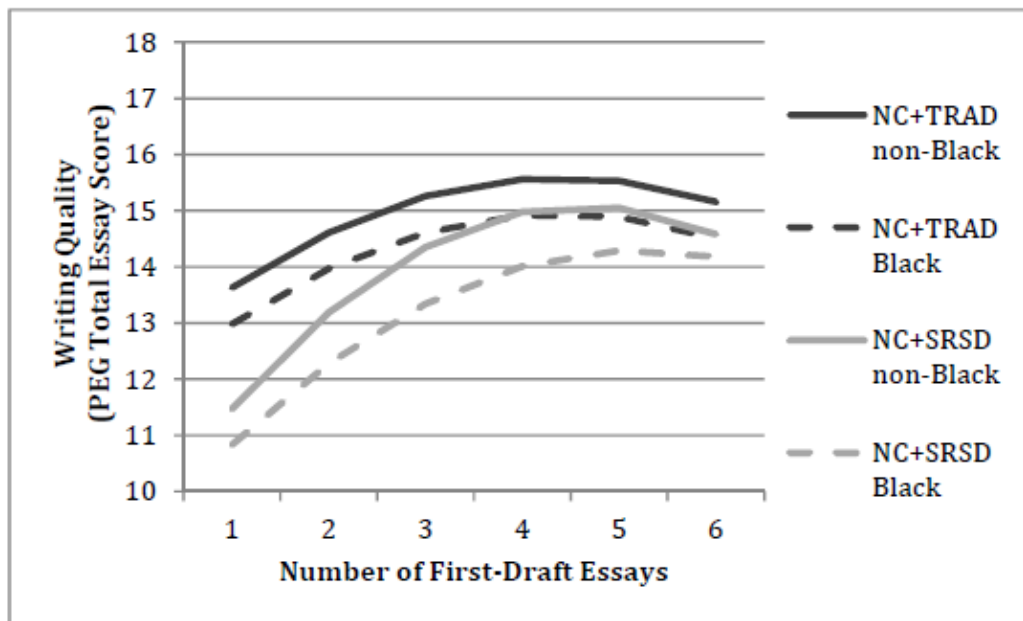


Figure 5. Growth in writing quality by treatment condition using restricted y-axis for illustration purposes (PEG total essay score range 6–30).

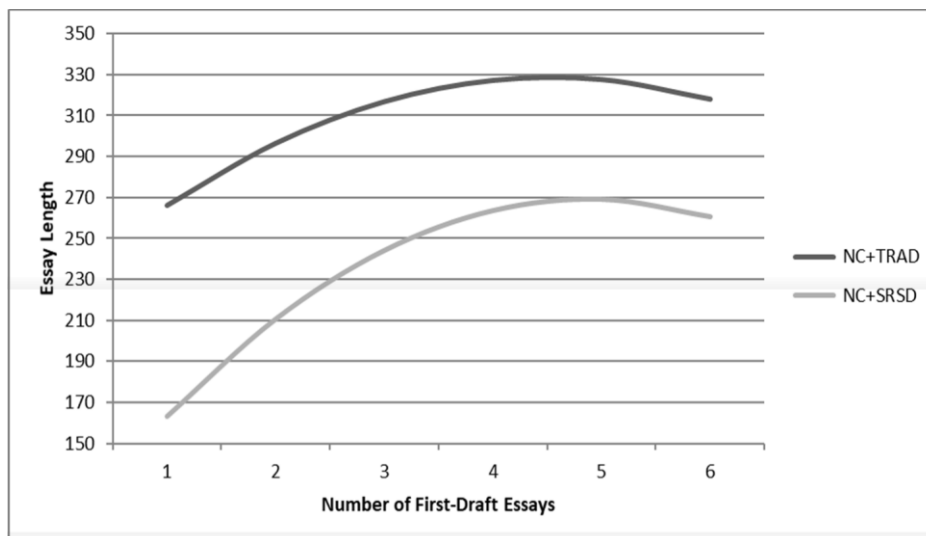
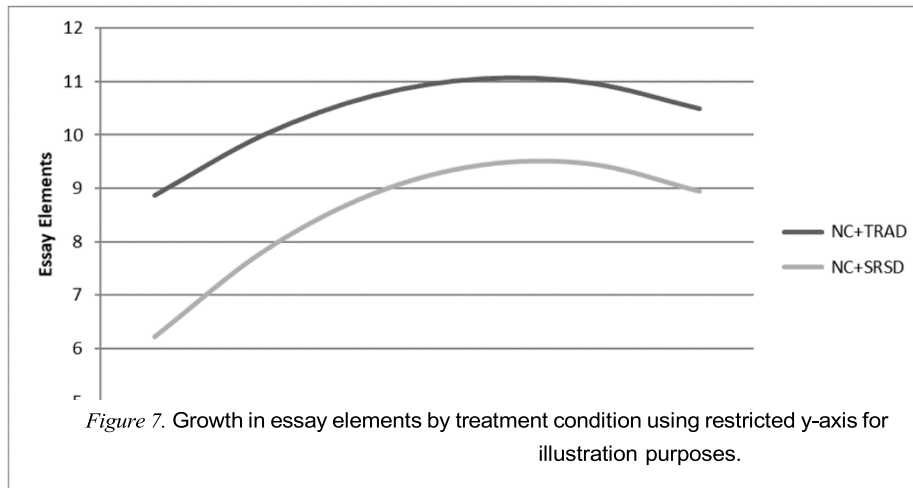


Figure 6 displays, along a constrained y-axis, how the length of each essay increased as a function of the treatment condition. lengthy essays

According to the final conditional model (Model 3), which considered the students' exposure to AWE, students in the NC + SRSD group started with 2.7 less fundamental components in their first drafts than students in the NC + TRAD group. In addition, students in NC + SRSD experienced non-significant changes in their essay element growth rate (by 0.6 elements) and

a decrease in growth over time, in contrast to students in NC + TRAD (by 0.06 elements). Figure 7 displays the expected development patterns for both groups of students over the next few years...



**What are students' and teachers' experiences with and perceptions of the AWE system and what do these perceptions indicate regarding the affordances of AWE in the different instructional contexts?**

The students' writing abilities in both treatment groups greatly improved during their first draft essays. The students' writing performance development trajectories demonstrated a substantial initial gain, followed by a decrease when consecutive first-draft essays were produced, and then a plateau at the end of the process. This pattern was followed by all outcomes, including improving the student's writing ability (i.e., writing quality, essay length, and elements). Even though students in the NC + SRSD treatment group showed poorer writing abilities at the outset of the experiment, students in both treatment groups made equal growth throughout the first draft of their essays. After the students had been exposed to teacher-led teaching paired with AWE feedback for a longer period, the results indicate an overall improvement in the student's capacity to write independently.

Qualitative data were gathered from students and instructors' experiences with and impressions of the AWE system to supplement the quantitative findings and explore potential aspects of instruction and AWE feedback that may have contributed to the increase in the quantitative findings. This was done to investigate potential factors that may have contributed to the increase in the quantitative findings. The purpose of this was

to investigate potential explanations that might have had a role in helping to explain the rise in the quantitative findings. In addition, we used qualitative data analysis techniques from grounded theory to determine the dimensions and characteristics of the concepts that frequently emerged in the interview data and identify ideas that frequently appeared in the data. This was done in order to accomplish both of these goals.

The qualitative research revealed, among other things, that teachers and students who used NC Write in contexts for strategy instruction and process writing had comparable views of the AWE system and experiences with it. This was shown by the findings that both groups used NC Write in these contexts. Furthermore, it was discovered that this was the case when teachers and students used NC Write in various situations to teach writing strategies and writing processes. This overarching conclusion, in line with the quantitative data, showed that NC Write presented constant affordances and limits regardless of the educational setting in which the students were put. The findings of the study supported this conclusion. When we present qualitative results. As a result, we categorize the data according to the important concepts discovered throughout the research rather than the conditions that were looked at. This is because we find that this approach yields more accurate results.

A structure that facilitates writing with intent. In conclusion, the qualitative research demonstrated that NC Write offered a writing structure geared toward achieving a certain objective. The concepts that emerged from the interview data were used to describe how NC Write was utilized to supplement writing instruction in two different instructional environments and how students' improvement in writing performance was similarly aided. The interview data were used to generate these concepts. Both of these settings provided a one-of-a-kind approach to the process of teaching writing. The format of the concentrated writing exercise is outlined in Figure 8, which may be found here. Writing, in the context of this paradigm, is a process that entails both getting feedback on one's performance and learning by completing the actual act of writing itself. The interactions between each component are shown to be cyclical and non-sequential by using arrows that point in both directions when moving from one component to the next. According to the findings of the interviews, NC Write provided a writing framework that supported numerous crucial aspects of purposeful practice in both of the schools' environments. (Ericsson, 2006)

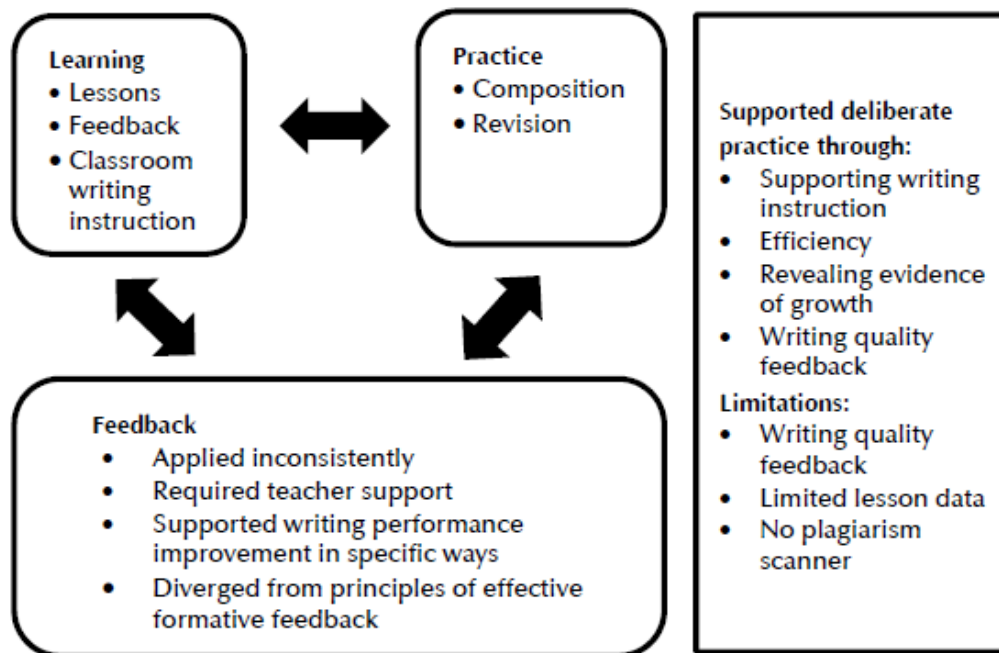


Figure 8. Framework for deliberate writing practice.

The most important takeaway from the qualitative research is an explanation for why the quantitative research did not demonstrate any clear effects of the instructional environment on the development trajectories of children: The process writing instruction setting and the strategy teaching setting is no longer as compared to one another as they previously were since NC Write is not helping with intentional practice. Students received numerous opportunities for relevant practice and task-level performance feedback that assessed the quality of their writing thanks to the learning, practice, and feedback components that were a part of NC Write specifically. This feedback was used to evaluate the students' writing. The links the components had with one another served as a source of support, which helped the students enhance the quality of their writing. The next step is for us to go over the thoughts that emerged from the interview data and that assist us in comprehending how students' writing abilities have improved throughout the course of the study that supports the teaching of writing.

One of the ideas that emerged from the analysis of the interview data was the concept that the use of NC Write served as a valuable supplement to the writing instruction and strategy training teachers delivered. Students were able to practice newly learned educational concepts via the usage of NC Write, while teachers were able to reinforce recently taught



themes in the classroom using NC Write. For instance, students from NC + SRSD took part in a presentation conducted by a teacher in which they learned about the STOP and DARE strategies. In addition, students were allowed to use the skills they had gained in the interactive NC Write session in a future class by completing a graphic organizer and writing an essay using NC Write. This allowed the students to apply what they had learned. When asked if NC Produce benefited her SRSD class, one teacher responded, "The software supplied us with examples that kids were able to... truly appreciate how that structure worked together; it was incredibly beneficial, and it was something that I did not have to, myself, go and write." When asked if NC Produce benefited her SRSD class, she said that it was something that she did not have to go and write.

Another component of NC Write's capacity to assist in the facilitation of writing education was the program's compatibility with the writing instruction teachers provides for their students. The instructors addressed how well the curriculum linked with the writing standards and how well it suited their unique process-oriented methods of teaching writing. They also discussed how well the curriculum matched how they teach writing. According to the viewpoint of one educator responsible for teaching both the Common Core and the NC + TRAD curriculum, the NC Write program "just feels like it complements my Common Core and what I am currently teaching." It is another tool that I use in my classroom to help my students improve their writing, and in my view, it is one of the most helpful tools. The educators discussed the best ways to adapt their lesson plans to realize this alignment. A conversation was had by one of the lecturers at NC+TRAD.

My students would benefit from merely taking the time to explain things to them and ensuring that I use the same terminology when I teach if I want them to grow accustomed to it. This is since I considered the phrase they used in the comments helpful, and as a result, I would not want to modify it. On the other hand, it gave off the impression of being highly potent. Incorporating a framework for process writing education and practice into the NC Write program was the third element contributing to the program's overall success in improving writing teaching. Several NC + TRAD teachers who did not believe they were well suited to teach writing found that the program's instructional framework, opportunities for composition and revision, and feedback provided by the program were useful. One of the instructors recalled saying:

It was helpful to have a framework of what to talk about and what to teach them, given that I am not the finest writing instructor. Nevertheless, there are important life lessons to be learned here, and you may say, "OK, everybody, here is the challenge posed to us. Here it is. Let us have a conversation about these issues." "All right, here is the question that has been posed to us," she said. Because of NC Write's assistance, I was able to dramatically improve the quality of my class.

The software's capacity to direct students' attention toward writing while they were in a classroom setting was the program's last addition to NC Write's support for writing education. The majority of the lecturers who took part in the study were in agreement with the premise that the elimination of the North Carolina General Writing Assessments was one of the contributing factors that led to the recent shift away from placing as much of an emphasis on writing instruction in the state of North Carolina. The following is an explanation given by one of the professors for NC + TRAD:

Because of the proliferation of texting and other forms of electronic communication, in addition to technological advances, it has become increasingly challenging for today's youth to regularly express themselves via the medium of writing. Therefore, on a day-to-day basis, it assisted me in better focusing, and I considered that to be a valuable component.

### **Efficiency**

Another topic that was brought up rather frequently in the interviews was the efficiency of the North Carolina Write program. One aspect of efficiency that teachers thought would benefit their students' efforts to enhance the quality of their writing was the availability of chances for writing practice. According to one teacher for NC + TRAD, the more you write, the better writer you will become. This instructor also stated that the program "just affords them the opportunity they require." Teachers reported that students were able to complete more writing tasks when using the program than they were able to do when they were not using the application. This was true in both scenarios. This aspect was present in both cases. This degree of efficiency was made possible by the fact that all of the information in NC Write was typed, which made it possible to write text far more quickly than it would have been feasible to create it by hand. According to the words of one of the

students in the NC + TRAD program, "I have more time while I am on the computer since I can type faster than I can write." Students' growing familiarity with writing production strategies was found to be the cause of the increasing amount of writing practice that was given to students, according to the findings of an NC + SRSD study. This was especially true when those strategies were used across various subject areas in the curriculum.

Additionally, research was conducted to determine whether or not automated feedback may assist teachers in saving time. "I suppose it is the number one selling aspect for me," a teacher at NC + TRAD was quoted as saying, "because I did not have to sit there and read every single [essay] to discover all the grammar issues, the spelling mistakes, and everything like that." [citation needed] "I did not have to sit there and read every single [essay] to discover all the grammar issues, the spelling mistakes, and everything like that." Through its courses, prompts, visual organizers, and portfolios, the program could facilitate an increase in the organization's operational efficiency. One of the professors at NC + TRAD expressed their appreciation that they did not need to spend an hour preparing an essay for their students to write or instructing them on the appropriate way to form sentences because it was already there for them. The instructors discussed how the grading and feedback-giving techniques they used in their classes were far more successful than those used in other teachers' courses. One teacher from NC + TRAD gave the following information on her utilization of NC Write as a formative evaluation tool within the context of the writing class that she was teaching:

Because I teach by example, and even though I like assisting my students in writing their papers together with them, doing so does not provide me a clear picture of where each student is with their writing, I continue to do it nevertheless. After we have finished working on the problem together, I will have them do some activities on the computer by themselves so that I can evaluate their progress. This gives me a much better understanding of how much knowledge they have gained over the last week. Students are held responsible for their writing as a direct consequence of this.

Because of the implementation of NC Write, several efficiencies have been brought about. These efficiencies include an enhanced chance for kids to improve their writing talents and time savings for teachers who can now notice signs of improvement. When asked whether

NC Write has improved their writing abilities, students in both groups replied yes, citing the program's presentation of quantitative improvement markers as evidence. Most students felt a high self-awareness regarding the quality of their writing and how much it had progressed since they began using NC Write. This was especially true for those students who had previously struggled with writing. One student who participated in the NC and TRAD seminars remarked that his writing had improved "far more" due to his participation. When I first attempted it, I got a 12, but after that, I altered it to a 23. Considering this, it is clear that practice makes perfect. My score was the lowest on the bar graph for the question that was categorized as "Sentence Structure." This question evaluates aspects such as how well I use commas and how effective my sentences are overall. Following is what was expressed by a student at NC + SRSD who built on similar ideas:

I started with a score of 18, which represented my current standing at the moment. Because of the feedback and review process, which includes informing you what you need to do and what others can do to support you, I have improved my score to a maximum of 24. It describes what actions you should take and what information will be helpful to you. Students discussed how they kept track of their progress by utilizing their portfolios and expressed their contentment with having precise assessments of both their writing quality and their progress. The following information was provided by a student attending NC + TRAD: being able to monitor my progress as opposed to being told meaningless platitudes like "Oh, you did good,"

Your writing allowed you to visualize yourself ascending the mountain, so you did not have to rely on others to shed light on the situation. The interviews also revealed that the students had a better understanding of the relationships between the components of an essay and the quality of their writing. This was supported by the fact that there was obvious evidence that the student's writing had improved. For instance, the students had a very good understanding, thanks to the automated grading and comments, that higher-quality works often featured either a greater number of essay parts or fewer faults. The following is how one student from NC + TRAD characterized his overall experience: When I saw the directions that said to "select more upper-grade words," "make your sentence longer," and "add some extra paragraphs," I quickly realized what I was supposed to be doing. I

exited the page, went back in, made the necessary modifications, added new material, and clicked the "submit" button. The second time around, I received a higher grade.

### **Providing insightful feedback**

The automated feedback that NC Write offers were the subject that was often brought up in interviews. When questioned about their behavior after receiving feedback, students almost universally stated that they first looked at their PEG's total essay score before looking into their characteristic evaluations. This was their response to the question, "What did you do after you got feedback?" However, in addition to these aspects of the instruction, the kids took it and utilized it in various ways. Some students neglected to look at any of the other aspects of the examination, concentrating their attention on the overall essay and the characteristic evaluations. These students occasionally used their attribute scores to concentrate their growth efforts more targeted manner. A student from NC + TRAD illustrated how he used the bar graph that was provided with the assignment to compare various characteristic scores. I make it a point to move the number with the lowest value up at least one line; for instance, if it were a 3, I would make it a point to move it up to a 4 on the line that follows it.

After reading their overall essay and characteristic scores, most students went back to study the grammar and spelling comments and integrated them into their work. This was done after seeing their results for both the overall essay and the characteristics. Then, after realizing that my sentences were too long when I reached the grammatical portions, I would go back and evaluate the entire article, and on occasion, I would revise it. This process was summed up as follows by one of my classmates at NC + SRSD: After examining the words that I misspelled in the first place, I think about how poorly I spelled the other words.

The students believed that the criticism of their spelling and grammar was appropriate and helpful since it tied to a particular subject in the essays that they had written. This was the consensus among the students.

Their reports indicate that students did not regularly engage in activities that required them to write, such as analysis, evaluation, or feedback. It seems that the reason for this was the

large number of comments that were made, as well as the excellent quality of those remarks, which presented a choice of solutions for each characteristic. The students displayed a wide variety of levels of involvement as they read this information. According to the comments of one student who was enrolled in NC + TRAD, "they would go through the subject, but they would not study it in depth."

The vast majority of students who utilized the writing analysis tended to understand the comments more generally. This was the case rather than doing an in-depth analysis or systematically using the strategy. One student from NC + SRSD advised his other classmates to keep this in mind, saying, "So that the next time I write it, I know that I need to include more detail or more supporting evidence." Even if you do not take notes, you will still be able to look at it and tell yourself, "OK, remember that so that the next time I write it, I know that I need to include more information or more supporting evidence." This will happen regardless of whether or not you make notes. According to the students' reflections, everything was documented in their portfolios made it possible for them to receive feedback from prior iterations of their work whenever necessary.

Instructors in both types of classrooms who took part in interviews acknowledged that students seldom used the writing analysis assessment and feedback but instead concentrated on the total essay scores. This was established through the teachers' participation in the interviews. On the other hand, the instructors saw that as the students' score comparisons advanced, they began to compare the content of their work and explore the links between textual aspects and their ratings. This was something that the teachers had not seen before. Although it was the role of the instructors to direct the student's attention to the extra remarks, the professors could not prevent the students from comparing and contrasting the outcomes of their essays.

The second criterion of high-quality written feedback is the requirement that instructors provide students with a significant amount of assistance in order for the students to correctly grasp and execute the feedback that is provided. "I do not think they can get it if you do not sit down with your students and explain [the remarks] to them," said one teacher for NC + TRAD. A handful of the pupils mentioned that they needed help to fully understand what was being conveyed. One of the students from NC + SRSD who

recounted their experience stated that when they initially heard the material, they had no idea what half of it meant. The children's poor command of the language was one of the primary factors contributing to the situation's urgency. In the interviews, teachers from both sets of circumstances characterized offering this help more as a duty to their students than as a direct result of the feedback, particularly failing. In this activity, the instructors were tasked with comparing and contrasting the two types of feedback. The students struggled with the intricacy of the terminology, which was necessary according to an NC + TRAD instructor, even though it was tough. Teachers discussed the use of task and topic scaffolding as a means of assisting students in comprehending and applying feedback, and many of them pointed out that writing-related challenges are the areas in which students require the greatest assistance.

It enabled instructors to shift the focus of their help from assessment to coaching, even though students require a great deal of aid to put the comments into practice.

Because of the feedback, I could have one-on-one conversations with [students] at various intervals and explain why certain things were causing them concern. For example, one of the teachers at NC + TRAD used statements such as "This is why they wanted you to do this" and other terms that were quite close to that. The feedback provided by an independent third-party facilitated improved communication and cooperation between students and their respective professors, regardless of the context in which it was presented.

In conclusion, but certainly not least, the comments made on the kids' work shed light on several general concerns, which spurred the teachers to give educational assistance. The educators who took part in the interviews underlined the need to routinely review the automated feedback provided to the students to provide direction for the decisions made about the educational system. A teacher for NC + TRAD provided the following explanation:

Because most of your students struggle with the same issues, the feedback you give them will be quite consistent. In every one of your classes, you will see this particular phenomenon taking place. Since they are all receiving the same information, you can teach a class and say things like, "OK, here is the feedback that everyone is getting, so let us see

what we can do to make it better," among other things.

In conclusion, even though feedback required a great deal of assistance from instructors, it enabled them to take on more of a coaching role and zero in on the most important learning goals.

The fact that it assisted students in improving their writing talents in certain ways was the third feature of the remarks on the quality of the writing. During the interviews, the students consistently mentioned that the criticism they had gotten helped them become better at self-regulating and self-evaluating their writing. In addition, they said that they had improved their writing in terms of the content and specialized terminology they used, as well as their spelling, grammar, word choice, and sentence structure. According to the comments given by the students, increasing the quantity and quality of their critiques helped them become better writers. Another student from NC + SRSD elaborated and said that what it is is merely more knowledge than you would receive from a typical lecturer. Another student from NC + SRSD adds that Things is more exhaustive and comprehensively covers the topic than the professors can do on their own. During the interviews, a handful of the students expressed their opinion that the criticism's focus assisted them in developing their writing skills. One of the students from NC + SRSD remarked that it is quite clear what you did well and where you need to improve in the future.

in addition, many educators concluded that encouraging students to monitor their work by offering consistent and timely feedback on each essay draft benefited the student's academic performance. One NC + TRAD teacher described how consistently providing her students with feedback helped them improve during the course at identifying and correcting their errors. Simply having the ability to go back and change a few things... when I instruct people to edit, they seek for [errors] or notice them, which is how the information became public. I had the impression that my children were starting to get it and that they were able to make the necessary modifications as we continued to practice it. In addition, I saw that they were making fewer errors as we continued, which was another evidence that our technique was successful.

### **Constraints of the structure**



The NC Write elements that enable writing teaching, effectiveness, feedback on writing quality, and proof of change appeared to increase learning settings that focused on this framework for purposeful writing practice in two independent instructional contexts. These learning settings included: The findings from the interviews also revealed that NC Write had components that diminished the efficiency of the same framework. The findings illustrated how limiting each of these characteristics might be. These concerns relate to NC Write's inability to detect plagiarism instances and the platform's limitations on the provision of interactive courses and automated feedback.

A significant number of the criteria for delivering constructive formative feedback were disregarded in the remarks on the writing quality (e.g., Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Parr & Timperley, 2010; Shute, 2008). This distinction posed a challenge to the usefulness of the provided feedback and its relevance. For example, many students voiced their dissatisfaction with the difficulty and amount of time required for the writing analysis evaluation and feedback. One of the students at NC + TRAD stated that due to the advanced vocabulary that was utilized, there were certain aspects of the critique that she did not fully get. Both types of teachers had similar concerns, and some of them described the effectiveness of the feedback as ranging from being incredibly useful to be completely ineffective. One of the instructors at NC + SRSD provided the following example as an illustration: The more advanced students that I had were able to comprehend this lesson on a deeper level, which led to their gaining a greater amount of knowledge from it. My pupils who read at a lower level need to develop in several areas, but one of those areas is their capacity to fully comprehend the information presented to them. They also need to concentrate on the things they accomplished well and the areas in which they may improve.

The level of clarity that was there in the remarks was another aspect that diverged from the standards of providing constructive feedback effectively. Several students were dissatisfied with the writing analysis because they believed it was too vague to be helpful. If there were one thing I could change, it would be to provide a little bit more specific information on how I may make things better. One of the students at NC + TRAD mentioned that it might shed light on what issues need to be addressed and how things can be improved. A couple of students all had the same remark: there was not enough variety

in the writing analysis. The educators all had the same point of view: they believed the input was reasonable and usually useful but lacked enough specifics to allow for constant revisions as the document moved from draft to final. In every instance, the teachers and the students recalled a period when the children had achieved a writing quality ceiling and found it difficult to continue to advance. This was consistent with the quantitative research findings, and both sets of individuals recalled it. "When I did the one before that, I fired a 24..." When questioned about their experience, one student from NC + TRAD responded, "I have even rewrote a whole paragraph to see if it would help or anything else, but I feel like I cannot reach that point where I am above a 24," when asked about their performance. At NC + SRSD, one of the instructors recommended that the feedback format be reorganized to place a greater emphasis on the revision strategy. As a response, she said, "OK, here is your score," as though the information needed to be presented in a manner that was engaging to the pupils. Why is it vital to consider this? What course of action should I follow after this?

Last but not least, some clues that suggested how the formative feedback was delivered may not have adhered to the basics of effective formative feedback, which resulted in a reduction in the usefulness of the input. Because the feedback was presented in a visual style, some students made minor adjustments to their work to correct their spelling and grammatical errors. These students were under the notion that by making these adjustments, they would be able to significantly improve the quality of their work. Students in both types of classrooms discussed their experiences of trying to make improvements and felt disheartened when their scores or the remarks that followed did not change. The reading analysis was more illustrative than the writing analysis, but the writing analysis allowed for more individual interpretation. The students appeared to have the most difficulty applying critique to concept development, structural style, and stylistic choice in the writing analysis. If one of my students responded, "Well, I went through, and I did everything they asked me to do, and I still got an 18," and another of my children replied the same way, she could feel slightly annoyed. One educator from NC and SRSD had to say about it in their evaluations. After going back and reading the comments for a second time, they concluded that, for the most part, they were still making the same mistake. You are reviewing the feedback, but are you taking any action in response to it, or are you

merely making adjustments and crossing your fingers that the outcome will be positive?

The feedback on the writing quality was less valuable and effective than it might have been because it did not adhere to the principles of effective formative feedback regarding complexity, specificity, and presentation (Shute, 2008).

Throughout the interviews, the professors and the students expressed a variety of perspectives on their experiences with the NC Write classes. Only a few students could think of specific classes that they believed had contributed to their development as writers. The students voiced a general satisfaction with the interactive teaching approach that was being utilized in the classroom. The majority of the instructors commented that the classes met their requirements and were successful on the whole. According to one of the NC + SRSD instructors, the mini-lessons "helped out considerably," the explanations were succinct, got right to the point, and were written in a way children could readily comprehend. This was true regardless of the topic being discussed. Despite this, more instructors and students than any other NC Write component voiced dissatisfaction with the courses. The most common concerns from students were that the lecture might have been made easier to understand and that there should have been far less information presented than there was. According to the instructors, the most significant problem with the courses was a deficiency in providing good feedback on the pupils' progress. The following is an explanation that an instructor offered for NC + TRAD as an example:

I am interested in learning more about the students' progression while working through the lessons and after completing a particular session.

During the interviews, we questioned teachers and students about NC Write's aspects that they believed may use some tweaking or improvement. The students offered several suggestions that were connected to the characteristics that were already present in NC Write. One of these suggestions was the peer review system. However, throughout the investigation, this particular function was never utilized. According to the opinions of the instructors and the students, it would have been good to receive further feedback in the form of sample essays. At the time of the intervention, NC Write only had a limited number of annotated example essays, but the results of the intervention showed that there was no clear association between the grades received on those essays and the total grades received

on the essay assignments. Many educators believe that NC Write should be able to differentiate between information that has been taken straight from the prompts and source materials and work that has been stolen from other writers when judging whether or not a piece of writing has been plagiarized (i.e., copied from essays that have been published online). Even though there was evidence that some students in the sixth grade had duplicated the prompts, the teachers observed that plagiarism was more of a problem in the upper grades. According to one of the teachers working at NC and SRSD, all required to get a score of 12 was to copy and paste the question. Because of this, it was a poor decision on their part not to even write anything on their initiative.

Even though they had informed the students that essays were to be sent in with "good faith" to receive an appropriate grade on the PEG, the instances of plagiarism continued to annoy the teachers. Students were given fewer chances to practice their writing and were more likely to receive criticism that was not entirely accurate because it was assumed that plagiarism had occurred even in situations where it was not disclosed. This was because it was assumed that plagiarism had occurred. The degree to which feedback differed from the cornerstones of successful feedback, the dearth of lesson data, and the absence of a plagiarism detector were all shortcomings that limited the use of the framework for deliberate writing practice in process writing and strategy training. These shortcomings included: the lack of a plagiarism detector, the dearth of lesson data, and the extent to which feedback varied from the cornerstones of successful feedback. The problems with the purposeful writing practice paradigm rendered it less useful.

### **3.6 Discussion**

This study aimed to investigate the feasibility of incorporating AWE into two separate pedagogies for teacher-led writing instruction at the middle school level. In order to accomplish this goal, we used a strategy based on mixed techniques, which incorporated both qualitative and quantitative research. The integration of AWE with a traditional process approach to writing education was carried out differently when compared to the integration of AWE with teaching strategies in one instructional scenario. Both of these approaches were used to instruct writing classes. We examined the two learning environments to see which would be more likely to inspire students to produce better first

drafts of their papers in the future. We looked at students' and teachers' experiences with and perceptions of the AWE system in order to get a better understanding of the quantitative findings, the advantages and disadvantages of AWE as perceived by users, as well as what these perceptions indicated regarding the affordances of AWE in the various instructional contexts. This was done to better understand what these perceptions indicated regarding the affordances of AWE in the various instructional contexts. This was done in order to have a better understanding of what these perceptions about the affordances of AWE showed when used in a variety of educational settings. In this part, we will discuss each component of the research independently.

What are the growth trajectories of students' first-draft writing performance (i.e., writing quality, essay length, and essay elements) when AWE is used in two different instructional contexts, namely process writing instruction and strategy teaching? These contexts are processed writing instruction and strategy teaching.

Previous research has very infrequently explored the growth of first-draft writing skills throughout successive essays and discovered evidence of transfer. The current study is an extension of earlier research on AWE because it demonstrates that students who took part in different instructional contexts supported by AWE increased the quality of their writing, the length of their essays, and the number of fundamental components they included in their first drafts for a variety of writing performance outcomes. This study also shows that students who took part in different instructional contexts supported by AWE increased the length of their essays. The students in NC + TRAD and NC + SRSD showed an immediate increase in their writing skills that declined over time and reached their peak after the intervention's fourth first-draft essay. This growth occurred in both groups of students. This finding is noteworthy because it reveals that students' development rates in their ability to write were comparable across both educational settings. This finding illustrates why this finding is relevant. The research also showed that the student's reading competency growth rates were comparable in the different contexts in which reading was taught. The findings of this experiment, which focused on different teacher-directed instructional models, are similar to the findings of Roscoe and his colleagues' investigation of the efficacy of various student-directed practice models for the implementation of AWE. Students saw improvements in the quality of their writing after revising their essays using

AWE, regardless of the kind of process writing practice forms they used to complete the assignments (standard process writing practice formats, strategy-based practice, or game-based practice) (Roscoe et al., 2013, 2018, 2019).

There are some reasons why the two groups of students who used AWE in different instructional contexts showed similar growth trajectories. Even though strategy instruction is linked to large effect sizes (Graham et al., 2012; Graham & Perin, 2007), and even though SRSD-based interventions have, on average, produced the largest effect sizes for writing quality of all writing interventions (Graham & Harris, 2018), there are several reasons why the two groups of students who used AWE in Both courses made use of AWE in order to improve the quality of their writing; however, only one class employed The first issue is that the overall efficacy of the strategy has decreased as a consequence of its alteration to a structure that is less strict to increase the number of teachers who accept it and minimize the amount of time spent on professional development. However, Palermo and Thomson found that NC + SRSD had a significant, positive influence on students' essay length (Cohen's  $DZ = 1.36$ ), essay components ( $DZ = .97$ ), and writing quality (Cohen's  $DZ = 1.18$ ) at the post-test. These findings were based on the multivariate analysis of variance (MANOVA) (2018). These impact sizes are all comparable to those determined by previous SRSD studies (e.g., Graham & Harris, 2003; Graham, 2006; Graham & Perin, 2007; Graham et al., 2012). The second line of reasoning proposes that differences in the average quantities of AWE exposure brought on by the various situations would go some way toward helping to explain the findings.

On the other hand, a control for AWE exposure at the student level was included in every one of the final conditional models. This control took into account the fact that there were differences in the amount of time spent writing in NC Write both within and between the various conditions. The third point of contention is the regularity with which measurements are taken. In the current study, it is possible that the standard errors were too large or that the mean gains in writing competence over first-draft essays were too low to identify any changes between the conditions. This finding is comparable to what Palermo and Thomson (2018) discovered. They discovered that NC + SRSD students improved their writing performance more from the pre-test to the post-test than NC + TRAD students did. As a result of NC Write's consistent affordances (and limits)

throughout different learning situations, the effect of students' exposure to writing instruction was mitigated, which improved students' overall writing ability. The facts from the interview provide credence to this interpretation of what transpired. This last concept will be investigated in further detail further down.

What are the experiences that students and teachers have had with the AWE system and their views of it, and what do these perceptions imply about the affordances that AWE provides in the various instructional contexts?

Although NC Write was deployed in both contexts—process writing instruction and strategy teaching—students and instructors engaged with and felt the same way about NC Write. As a result, NC Write was implemented in the fields of teaching writing skills and teaching the writing process. This discovery led to the idea that NC Write presented continuous affordances and restrictions independent of the educational situation.

A study of qualitative data demonstrated that NC Write provides a framework for purposeful writing practice independent of the instructional context. Through the application of this system, which included a cycle of learning, practice, and feedback, students' writing talents were encouraged to improve. It provided efficiencies that could not have been achieved in any other way, provided feedback on the caliber of students' writing, showed that students had improved, and encouraged ongoing, iterative engagement with cycles of practice and feedback. In addition, NC Write specifically helped teachers in writing instruction. As a result, the deliberate practice was made feasible.

The SRSD model was chosen as the best type of strategy teaching to apply in the current study because it is an evidence-based practice (Harris & Graham, 2016) and a particularly successful type of strategy training since it integrates self-regulation instruction. In addition, given that the study's goal is to examine the effectiveness of various types of strategy education, this choice was selected (Graham et al., 2012). (Graham et al., 2012). However, while process writing teaching and SRSD instruction had certain commonalities, they differed significantly in many important ways. The focus on teaching self-regulation skills and whether or not the training was criteria-based or instructional responsive were two examples of these disparities. The results of the interviews, on the other hand, revealed

that the little variations in writing performance between the two training methods might be due to NC Write's affordances, which were comparable to both the process writing and strategy training conditions.

An essential part of SRSD education, for instance, is teaching planning and writing processes (Graham & Harris, 2018). Students may use the DARE technique discussed in the previous section to help them recall and put all of the fundamental elements of argumentative essay writing into practice. This can be done by giving students a set of standards for excellent argumentative writing and asking them to assess their work in light of those standards. The interviews revealed that, although process writing instruction placed less emphasis on planning, writing, and revising strategies, AWE encouraged students in both conditions to consider the connections between essay components and the writing quality scores given by PEG. This discovery is quite intriguing. As a consequence of the practice of comparing essays and grades, students were better able to understand the relationships between textual qualities and writing quality, as well as the elements of good argumentative writing. The routine of comparing essays and marks helped achieve this.

Promoting writing beliefs and training in self-regulation techniques are also part of SRSD instruction. This is crucial to SRSD education because it helps students practice self-control, control the writing process, and compile verifiable evidence of their growth (Harris, Graham, & Mason, 2006). (Harris, Graham, & Mason, 2006). There was some evidence from the interview results that AWE gave students in both conditions the tools they needed to manage their use of writing strategies and the writing task, as well as the opportunity to compile evidence of their writing progress, even though self-regulation strategies and beliefs that are supportive of writing were not explicitly taught to students in the NC + TRAD condition. This was the case as AWE provided students in both settings with the chance to gather proof of their writing development. When students have the chance to practice frequently and receive feedback on their performance, their capacity to self-monitor, self-control, and self-evaluate their performance may grow (Ericsson, 2006). (Ericsson, 2006). The cycles of practice and feedback within the AWE framework were thought to enhance students' self-monitoring and self-evaluation. Students were able to employ new teaching techniques immediately and observe how they influenced the caliber of their writing when they learned them, whether from a lesson in NC Write or their



classroom teacher. This was made feasible because students had access to NC Write and their teachers in the classroom. The ease of access to automated results and comments and their broad acceptance as genuine and meaningful may have boosted the students' ability to self-evaluate. Each student received automatic feedback that provided them with tangible proof of their development, which they could easily follow over time through their writing portfolios and was very clear to them as they progressed from one draft of their work to the next. Students can access this information about their efficacy because of practice and feedback cycles, mastery experiences, and proof of progress. The results showed that some of the same levers for the development of self-regulatory skills and capacities and positive writing beliefs were provided by both SRSD training and AWE.

In conclusion, the degree to which SRSD training is founded on criteria and is sensitive to instruction is one of the most significant contrasts between SRSD training and process writing teaching. The results of the interviews suggested that the interconnected nature of the learning, practice and feedback cycles offered by AWE explained both current performances as well as the components necessary for improved performance for all students, even though process writing instruction is not typically as customized to the needs of students as SRSD instruction. For example, even though the present performance had been discussed, this was the situation. With this knowledge, the students could focus on particular areas of their writing performance and make efforts to enhance them. In addition, the cycles of learning, applying, and receiving feedback from their teachers may have helped students develop a better grasp of what makes outstanding writing.

As a result, it is quite encouraging to notice the advantages of using AWE to support writing instruction and acquisition. AWE can be successfully applied in various educational contexts, as evidenced by the fact that kids in the two treatment groups showed similar growth trajectories. When this is done, it seems that the kids' writing gets better, and the teachers and students can see AWE's benefits. Our findings suggest that using AWE modifies teaching in ways consistent with a framework for meaningful writing practice. These results suggest that typical process approaches to writing or strategy training differ substantially from effective writing education utilizing AWE.

### **Limitations of the Present Study**

While interpreting the study's conclusions, keeping a few crucial caveats in mind is crucial. Professors did not randomly choose students; rather, they allocated them to conditions. Several undesirable consequences are produced by this quasi-experimental strategy, including between-condition variances in the proportion of students of color and students with disabilities, as well as the caliber of kids' initial writing. Due to a lack of resources, it was not possible to film or observe instructors' writing classes. This made it impossible to confirm the details provided by NC + TRAD teachers on how they conduct their writing lessons. Additionally, as evidenced by the NC Write log files, AWE exposure was constrained to a part of the completed actions. Lesson activity logs, for instance, showed which courses students attended and for how long, but they did not record any data on how well the students performed during that specific session. Although the lack of prior NC Write exposure did factor into the selection process, the interviews revealed that students and teachers needed some time to become used to the program. This implies that the software might have influenced the results. The timing of the intervention, which was close to the conclusion of the school year, which is frequently a period when student effort tends to diminish, may have contributed to the fact that students' writing ability deteriorated at the end of the intervention and on the post-test. We cannot distinguish between effects brought on by NC Write or the intervention and those that developed gradually. Further study will be necessary to examine the effects of maintenance and the issue of whether results alter if therapy is initiated earlier in the school year

#### 1. Indications for Future Developments

Our investigation discovered that while the downsides of AWE were likewise not sensitive to the setting in which they were implemented, their advantages were not reliant on it either. This was shown by the fact that educators in NC + TRAD and NC + SRSD reported experiencing the same difficulties and annoyances. This finding shows that teachers could not modify their lesson plans to accommodate AWE's limitations. In order to help students navigate AWE's boundaries, instructors must be aware that adopting AWE may need them to expend additional effort. As a result, effective professional development and coaching will be necessary that go above and beyond the degree of technical expertise needed to use AWE.

The findings of this investigation offer proof that supports some theories about potential future developments. Future research will be required to determine how writing instruction should grow and alter in response to using AWE. Future studies should concentrate on instructional components that are more difficult when using AWE because the current focus of AWE research is on those teaching areas that instructors may ignore or lessen when using AWE (i.e., the time-saving elements of AWE) (i.e., the time-saving elements of AWE). Teachers should devote more time teaching students the fundamentals of effective writing, giving them feedback in the form of examples and counterexamples, and helping them connect general criticism with specific steps they can take to enhance their writing. In other words, they need to provide their students with more research-based writing instruction (e.g., Graham & Perin, 2007). The need to change and adapt lesson plans when AWE is a component of teachers' writing toolkits should also be emphasized when it comes to professional development for AWE (see also Knight et al., 2020).

The results showed that students who used AWE in contexts for process writing education and strategy training both improved their writing talents at comparable rates. This was determined by looking at the students' first draft ratings for each essay. Based on the results of the current investigation, these conclusions were reached. However, there were likely variations in the subsequent modifications that students made to their papers in the two sets of scenarios and the methods they used in each scenario. In order to better understand the potential disparities that may be attributed to various educational contexts, more studies should be conducted to examine writing performance concerning both first drafts and final manuscripts. By utilizing the information offered by keyboard recording software, which illustrates the writing and editing procedures that students go through, it is feasible to achieve this aim (see Vandermeulen, Leijten, & Van Waes, 2020).

In conclusion, children need practice opportunities that have been intelligently designed and can be mastered sequentially to encourage intentional writing practice (Ericsson, 2006). (Ericsson, 2006). While taking part in these practice opportunities, students should be able to apply specific writing strategies and techniques within the parameters of AWE; nevertheless, they should not be expected to write an essay to receive feedback on their work. For instance, one practice session may focus on developing a claim, while the other might focus on refuting that claim (or on developing introductions, elaborations, and

conclusions with a specific objective in mind). When taken as a whole, these exercises aim to support students in maintaining and even improving their writing skills throughout their academic careers. In an additional study, examining the goal of such practice opportunities in writing instruction that uses AWE is important. Creating these practice activities and the AES models that go with them should receive special attention.

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**6**

**Explicitly Teaching Five Technical Genres to  
English First-Language Adults in a Multi-Major  
Technical Writing Course**

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**Abstract:**

My research focuses on students who speak English as their first language and are currently enrolled in a technical writing class open to students from many majors. I will report in this post on the outcomes of teaching these students five distinct types of technical writing. In this case, the students in issue have English as their mother tongue. Previous experimental research has shown that it is useful to explicitly teach academic writing to adults who speak English as their first language. The findings of the research have proved this.

In contrast, no research on technical writing has ever been conducted compared to this study's level of depth and breadth. In order to investigate these effects, I employed a strategy that included a few different research approaches. In order to present a more comprehensive, in-depth characterization of the 534 texts authored by 316 student authors, this approach consisted of a control-group quasi-experimental design with a qualitative analysis. These were the components that made up the strategy. According to the findings, the participants in the genre workshop created writings with a significantly higher

sensitivity to audience, purpose, structure, design, style, and editing than those generated by participants who were taught using more traditional approaches. Participants displayed a superior awareness of audience, aim, and editing while working within the framework of technical genres in the job materials text type instead of the procedures text type. This was the case when comparing the two text types. When contrasting the two different forms of text, this was the result.

**Keywords:** technical writing, explicit teaching, the study of genres, experiments that border on the theoretical, and writing that is technical

## **1. Introduction**

The purpose of this study was to give an experimental viewpoint on how students in technical writing courses for several majors react to the explicit teaching of genres. The purpose of the study was to provide this viewpoint. The research was conducted to offer a perspective like that as a result of its findings. I also explore whether or not meta-discourse functions, which include the kind of wide text in addition to the participants' sexes, years, and areas of concentration participants, influence the treatment outcomes. This is done to determine whether or not these factors affect the therapy results. (Carter, Ferzli, & Wiebe, 2004; Wilder & Wolfe, 2009) The results of prior experimental research have shown that explicit techniques are useful in instructing academic writing principles to a wide variety of adult students whose language spoke during birth is English. These students come from diverse cultural and linguistic origins, and English is their primary communication medium. On the other hand, no study on technical writing has been carried out that can be compared to this one and has been done. Moreover, no research on technical writing has been done. One of the key focuses of the technical writing class is on be ingrained in the curricula of educational establishments of higher learning all over the world. The lecture halls are now at capacity, with students majoring in a wide array of topics directly resulting from the program's popularity. These students are all demanding that their instruction be specially catered to the field in which they are majoring.

### **1.1 The Efficacy of Explicit Teaching**

The term "explicit teaching" refers to any debate that articulates the formal features of a genre, including any dialogue that discusses the cultural, political, or social problems related to the genre—influence such characteristics. Explicit teaching can occur in various settings, including classrooms, seminars, and workshops. There are many different environments in which explicit instruction may take place. It is possible to get explicit education in various settings, including but not limited to classrooms, libraries, and museums. Other potential places include the following: (Freedman, 1993, p. 224). Explicit lessons that are well-designed adhere to a particular format, which includes the following steps: first, the instructor establishes the learning purpose; then, they elucidate to the pupils the newly acquired ability; then, they demonstrate how they should react, and ultimately, they help the pupils practice the skill until they are confident in their ability. Then, they can perform it independently. Explicit lessons that are well-designed follow this format. Explicit well-designed lessons adhere to a precise structure consisting of the following steps: first, the teacher outlines the learning objective; next, they describe the new skill to the students. Lastly, the instructor assesses the students' mastery of the new skill (Boyles, 2002). In order to accomplish these goals, several different tactics, such as modeling, scaffolding, coaching, articulation, reflection, and investigation, are utilized.

Most genre scholars in North America think explicit lessons foster prescriptivism and overgeneralization of norms. Both factors lead to pupils wrongly applying conventions, which is why explicit teachings are problematic. Because of this, learners are more likely to overgeneralize norms when exposed to explicit instruction (Blakeslee, 2001; Freedman, 1993; Hengst & Miller, 1999). On the other hand, some academics consider genres, not as linguistic templates that can be taught straightforwardly but rather as complex social practices that evolve in response to the requirements that are put upon them by society (Miller, 1984; Schryer, 1993). Despite this, a large body of evidence says more explicit training is more effective than less clear instruction. This is the case across a broad spectrum of grade levels, a variety of academic fields, and a large number of scholastic populations (Chall, 2000; Moni, Hryciw, & Moni, 2006; Rittle-Johnson, 2006; Walker, 1999, 2002; Watkins & Slocum, 2004).

The conclusions from meta-analyses provide evidence in favor of the dependability of explicit approaches and the school reform initiatives that resulted in the most significant



improvements made using explicit procedures. These methods resulted in better academic success levels among students than innovative techniques (Adams & Engelmann, 1996; Borman, Hewes, Overmann, & Brown, 2003; Chall, 2000). experimental studies under control groups have shown that explicitly teaching academic disciplinary norms to people whose native language is English has a good impact, and these investigations have substantiated these positive impacts. [Further citation is required] (Carter et al., 2004; Wilder & Wolfe, 2009). Students who learned how to write a laboratory report through an online resource generated texts that were much more effective and scientifically reasoned than those who did not utilize an online resource. Those were produced by students assigned to the control group in the study carried out by Carter et al. (2004).

According to Wilder and Wolfe's study, undergraduate students who received explicit training in literary analysis standards were able to write papers whose ratings given to English instructors were greater than those given to essays produced by students who had not received the therapy. This was the conclusion drawn from the study's findings (2009). Furthermore, the researchers who carried out both studies came to the same conclusion: the students who were given treatment demonstrated a significant increase in interest in their education and had a more positive attitude toward writing. Again, this was the conclusion reached by the researchers who carried out both studies.

Based on this research's findings, it appears beneficial to explicitly teach genres that students generate in academic contexts. There has not been any study that particularly looks at the advantages of educating students to write in styles appropriate for use in a variety of professional settings, such as job materials, communication, and processes. These are all examples of genres that may be taught. Due to the great emphasis program administrators have put on the course covering many technical writing service majors, there is an expanding demand for this inquiry. This need is a direct outcome of the high importance placed on the course. For example, the class not only satisfies the standards for the core curriculum that the students are required to take, but it also satisfies the requirements for professional communication set forth by organizations such as the Accreditation Board for Engineering and Technology. These organizations require that students be able to communicate effectively in their chosen fields (ABET). The works of Meloncon, England (2011), and Wolfe (2009) state that. These objectives have impacted

not only the student populations that have enrolled in the class but also the teaching strategies that the instructors have utilized. This has been the case because these objectives have had an impact on both the student populations and the teaching strategies.

### **1.2 The Multi-Major Technical Writing Course**

Students will get familiar with the rhetorical, stylistic, and organizational qualities behind various technical writings as the major objective of the course on technical writing service. This will be accomplished by exposing students to a variety of technical writings. This will be performed as a component of the training that you will get. Because the course must also fulfill university and external accreditation requirements, the average student population comes from diverse academic backgrounds. Subfields. This is because the institution must also accredit the class. These disciplines include, but are not limited to, dance, computer science, English, and engineering, amongst others. This is because the curriculum for the class needs to consider not only the institution's requirements but also those of the accreditation authority to be considered appropriate. Previous empirical research has demonstrated that students' academic majors, in addition to various meta-discourse functions such as gender, academic level, and native speaker status, are also considered. Can affect their writing performance (Adamson, 1992; Boettger & Wulff, 2014; Fries, 1940; Jaeger, 2010; Romer, 2009a, 2009b; Wulff, Romer, & Swales, 2012; Wulff, Romer, & Swales, 2012; There has not been any study that has been effectively controlled to analyze how the social factors that were stated earlier may impact the outcomes of explicit education in adults whose first language is English. This is because there has not been any research done on the topic. This problem is a direct result of the demographically different student groups who enroll at educational institutions. Research on explicit teaching outcomes shows that it is a useful method for populations with varying performance levels and aptitudes. Because of this, it can be helpful to instructors of technical writing as well as the students that they coach.

### **1.3 The Study's Aims and Research Questions**

In this study, I measure the effects of explicitly teaching students who speak English as their first language how to write technically in five common genres: the job letter, the resume, the claim letter, the recruitment email, and the instruction set. The students in this

study all speak English as their first language. The students in this study all speak English as their first language. All of the students that participated in this research were proficient in the English language. Each of these many different kinds of writing has its unique standards and conventions that a writer is expected to abide by. I examined these impacts using a mixed-method approach, which included a control-group quasi-experimental design and a qualitative analysis to more completely explain the 534 texts that the student authors created. I did this because I wanted to see if there was a correlation between the two, and I found that there was. I did this because I was curious whether or if the two have any connection, and I discovered that they do to my satisfaction. This strategy, in my experience, yielded the most dependable results. Thus I felt it to be the best option. The design of the so-called experiment was focused on how it would work in the two different situations. Experiments that were mentioned earlier. Both experiments explicitly taught academic writing rules to individuals whose first language was English. The quasi-experiment was designed using its methodology predicated on its application in those two experiments. All individuals who participated in the so-called experiment spoke English as their primary language (Carter et al., 2004; Wilder & Wolfe, 2009).

Students in the treatment group of the current study were provided with a series of straightforward lectures that first concentrated on enhancing their grasp of genre principles and then highlighted the formal aspects of a particular genre. These talks were presented as a component of the ongoing research project. Because it considers both the theoretical and practical underpinnings of the three basic schools of genre theory—English for Specific Purposes, the Sydney School, and New Rhetoric Studies—this educational technique is unique. English for Specific Purposes, the Sydney School, and New Rhetoric Studies are the names of these educational institutions (see Hyon, 1996 for a description of each school). Both of these distinct lines of inquiry served as the foundation for the design of my study, which is as follows:

**RQ1.** When students are given direct teaching while taking an introductory course in technical writing, what impact does it have on their learning? To be more specific, how does the treatment affect the focus that is placed on the intended readership, the purpose of the text, the structure, the design, the style, and the editing?

**RQ2.** What kind of an impact does using the meta-discourse elements have on the therapy overall? To be more specific, what kind of an effect does the therapy have on the experimental group, the wide text type, the gender of the participants, the academic major they are pursuing, and the year they are in school?

Each of the 534 texts that made up the data sample was evaluated using a scale that included five points for each of the six dependent variables. This allowed for a total of twenty-five possible evaluations. These readings were from well-known lessons focused on technical communication (Johnson-Sheehan, 2012; Markel, 2012). Able students were to provide therapy specific to the genre in question and, in my estimation, produce works of a significantly higher quality than those not provided with therapy specific to the genre in question. Something very different was from what I had anticipated. I presented the second research question to make a significant addition to the rapidly growing body of research on how there is the interaction between social factors and academic and technical writing talents (Boettger & Wulff, 2014; Hardy & Romer, 2013; Romer, 2009a; Wulff et al., 2012). These studies are furthermore available in the publications listed below: Romer, 2009a; Boettger & Wulff, 2014; Hardy & Romer, 2013; Wulff et al.; Boettger & Wulff, 2014. It has been demonstrated to be an efficient method of providing education, but it is not yet known if success with explicit instruction can be achieved across the board or if it is just achieved with specific individuals or groups. Even though it has been demonstrated to be an effective strategy, this continues to be the case.

## **2. Methodology**

In this portion of the report, I provide specific information about the research participants and the environment in which it was carried out. In addition, I go into the methodology, supplies, and criteria employed during the experiment.

### **2.1 Participants and Setting**

People who took part in the study comprised a total of 316 individuals who spoke English as their first language and were enrolled in the beginning levels of programs in technical writing offered by a public research institution in the western U.S. state of Texas. The treatment and control groups had a total of 155 participants in their respective groups at

the beginning of the study. The 161 participants in the group served as the control for the experiment. 34% of the participants were seniors in high school (n = 106), 31% were juniors (n = 98), and 35% were either first- or second-year college students (n = 112). There were a total of n = 137 male participants, who accounted for 43 percent of the total, and there were a total of n = 179 female participants, who accounted for 57 percent of the total. Students with degrees in business or the humanities accounted for 52 percent of the participants (n = 164), whereas students with STEM degrees accounted for 48 percent (n = 152) of the participants. Nobody who participated in the study had a curriculum vitae that primarily focused on conveying technological information.

In addition, nine teachers teaching sophomores in a technical writing class participated in the research. These instructors stood in for each of the 18 different sections of the class. The lecturers were either full-time professionals working in technical communication and rhetoric or graduate students working for their Ph.D. in the same field. Either way, they had extensive knowledge and experience in the subject matter. In addition, each of them had finished and passed a teaching techniques program at the graduate level that was explicitly relevant to their field of study. Finally, they had all worked in a classroom environment in the past.

This course was developed to accommodate students coming from a diverse range of academic backgrounds. It was based on a module-based approach to education and on a standardized curriculum comprised of six different learning modules that were each distinct. These modules will be taught in the order that is supplied; however, the teachers will choose how the information will be delivered and what the end output will be for each unit. The therapy provided as a part of this study was carried out in a manner that adhered to these cross-sectional criteria to ensure accuracy. The study's internal validity was helped by both the traditional course outline and the instructional modules. This was done to ensure that all of the experimental groups received the same information for an equal amount to the same point in the semester simultaneously.

## **2.2 Materials**

Each participant was given the pre-study exam that was a part of the materials for this research project prior to the beginning of the study and the explicit treatment. This test was

administered before the commencement of the investigation. Therefore, before the beginning of the research, a test needed to be taken.

### **Pretest**

Because quasi-experiments include the use of preexisting groups, it is the researchers' responsibility to consider any variations between the groups that may have an effect on the findings. It is advised that, in particular, an initial test of the participant's writing skills be carried out for writing-centered, classroom-based quasi-experiments. (Beach, 1992). The students introduced themselves on the first day of class in both the control group and the genre group and were given the assignment to write a message that would be given to their respective teachers. In this memoranda, students began by explaining their academic specialization and the line of work they planned to pursue, and then they moved on to examine the various types of writing that they believed they would encounter in their chosen field. Using a word processor, the participants finished the task in twenty minutes. During that time, they took special care to ensure that each segment was given equal time to write.

Each memo was scored based on timed, first-draft writing grading criteria and six points. The evaluators were separate from one another (White, 1995). On the test, the group that served as a control obtained an average score of 2.98 (with a standard deviation of 0.95), whereas the group assigned the genre had an average score of 3.08. (with a standard deviation of 0.98) The results of a Kruskal-Walli rank sum test indicated that the scores obtained by the individual groups did not differ from one another in a manner that was statistically significant ( $F = 1.35$ ,  $p > 0.05$ ). According to these data, it appears that the participants in both experimental groups started off with writing skills comparable to one another. Consideration should be given to the possibility that these findings are correct.

### **Treatment**

The therapy consisted of two stages: the first stage was the assessment, and the second stage was the intervention. One of the key aims that were established at the outset of the project was to increase the participants' overall comprehension of the genre and the link between genre and audience. The perspectives and methods of the New Rhetoric Studies

school of genre theory are considered one of the three basic schools of genre theory; there is an emphasis on genre awareness. In addition, this establishment is one of the three primary genres (Devitt, 2004, 2009). Therefore, the pupils were required to read the first chapter of Hubert (1976). The author used popular literature as an example to illustrate that genre is a term driven by human tastes, which was discussed in the article. As a part of this assignment component, the students were required to read the entire chapter. After the instructor had listened to the comments that the students had given to this reading, she then led a discussion about how students both academic genres such as the form and are shaped by academic genres such as the curriculum that was being covered in the class.

During the second phase, the primary focus was placed on the norms and requirements often associated with a certain writing style. The English for Particular Purposes and the Sydney School of Education are two of the most well-known educational institutions in the world that are fully committed to the research and teaching of genre theory. Through the many concepts and approaches to learning that they instill in their students, both educational institutions encourage their pupils to become genre masters. The Australian Wheel Model is a way of organizing education such that it progresses through a series of guided stages, each of which focuses on a different aspect of how the structure and organization of a text affect context as well as the reader and the writer. Served as the primary source of inspiration for this phase's four stages. According to the Wheel Model, education is structured into sequential phases, which emphasizes how a text's structure and arrangement impact context and influence the reader and the writer. The Wheel Model emphasizes how the organization and structure of a text impact context and affect both the reader and the writer (Martin & Rothery, 1980). The lecturers started by demonstrating how to read the many different kinds of texts that would be given utilizing this method later on. After that, the participants worked together to come to a consensus on this text; they then explored the historical context in which it was present; ultimately, they made their versions on their own. The first and second stages of the therapy are covered in depth in the additional reading material that may be found in Appendix A.

### **2.3 Measures**

I assembled a total of 524 pieces of technical writing to analyze them. These pieces were completed examples of the five investigated genres from both experimental groups. I did this so that I could conduct the study. The participants were tasked with generating texts for the unit that concentrated on documents related to the work and correspondence. Although the participants generated two texts ( $n = 214$  and  $202$ , respectively), each author wrote two texts. Who was given the task of generating texts for the unit that concentrated on processes, each constructed one text that went into greater detail ( $n = 108$ )? In addition, 192 people went to the class and chose to hand in a reflection, a mandatory component of every significant assignment they were expected to complete. These recollections are provided throughout the results section at various points throughout the section in order to provide an understanding of how the participants arrived at the level of autonomous construction. The purpose is to understand how the participants arrived at this level. The authorization of the IRB was required before any data could be gathered. Thus that was the first step.

### **Variables**

When completing the analysis, we considered the degree to which each piece of writing met the requirements for each of the six dependent variables (DV) given below. These variables are as follows: audience, goal, structure, and design, in addition to the type of editing used. I determined the DVs by carrying out the procedures outlined in dependable textbooks on technical communication for the process of writing a text. These instructions were used to help me write the text. These textbooks explain the process of preparing a text by instructing authors to undertake audience analysis in order to appreciate the rhetorical purpose. This is done as part of the process of preparing the text. In order to calculate the DVs, I followed this guideline as best I could. This analysis has an effect not just on the organization and presentation of the material but also on the sentiment of the piece as a whole and the editing that went into it. (Johnson-Sheehan & Markel, 2012; Table 1 includes an explanation of each variable and a list of the possible levels that can be assigned to each variable.

In addition, the texts were analyzed in terms of five independent variables (IV) to determine whether or not any meta-discourse functions interacted with the treatment. This



was done with the hope of concluding in order to assess whether or whether any meta-discourse functions interacted with the therapy, this was carried out. The following classifications were applied to these distinct variables: Group, General, Gender, Academic Concentration, and Year (see Table 1).

### Rubric

The raters used a rubric that assigned five different points to each category on the DVs to evaluate the texts on the discs. The following link will take you to Appendix B, which contains in-depth descriptions of the different scales for each variable. This grading system existed before the investigation was carried out, and its development took place independently of the investigation. However, the teachers of technical writing at the research site came up with the notion for this instrument to ensure more uniformity in grading across all of the many aspects of the project that are separate and distinct from one another. I decided to use this particular rubric in this particular scenario because it mirrored the educational contribution of many teachers who participated in this study.

I started by giving stars or ratings to all items in the complete data set. After that, I randomly chose twenty percent of the sample and divided it between two separate raters so that they may form their own opinions based on the information. Both evaluators earned master's degrees and have a wealth of experience working in higher education, namely in technical communication at the college level. These rates were not employed as faculty members at the educational establishment where the research was conducted; each had previous experience instructing one of the five text genres in their home departments. The research was carried out at an educational establishment in the United States. The results of a weighted Kappa test showed that the degree of agreement among raters was 81 percent, which indicates that there is a great degree of uniformity across all of the ratings (Beach, 1992; Watt & van den Burg, 1995).

**Table 1.** Taking into account both constant and changing levels of the

Variable	Description
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Audience (DV)	The texts were categorized according to how well they met the requirements of the target audience (-2, -1, 0, 1, 2).
Purpose (DV)	Classified the statement of the texts' intended purpose (-2, -1, 0, 1, 2)
Structure (DV)	Classified how the texts followed the structural conventions of the text type (-2, -1, 0, 1, 2).
Design (DV)	Classified how the texts' design elements matched the text type (-2, -1, 0, 1, 2).
Style (DV)	Classified the clarity and succinctness the texts' prose, including an appropriate use formality and technicality (-2, -1, 0, 1, 2).
Editing (DV)	Classified the number of errors in the texts (-2, -1, 0, 1, 2).
Group (IV)	Classified the student by experimental group (control or genre).
Broad (IV)	Classified the texts by type (correspondence, job, or procedures).
Gender (IV)	Classified the students by sex (female or male).
Major (IV)	The students were broadly categorized according to their majors (non-STEM or STEM). Students majoring in fields other than science, technology, engineering, and mathematics included those studying architecture, communication studies, English, human development and family studies, hotel and restaurant management, interior design, journalism, personal financial planning, public relations, retailing, and special education. Students who were majoring in STEM fields included those who were studying Agricultural and Applied Economics, Animal Science, Anthropology, Biochemistry, Biology, Chemistry, Civil Engineering, Exercise and Sport Sciences, Food Science, Political Science, Psychology, Speech and Hearing Sciences, Wildlife and Fisheries Management, and Zoology. Also included were students who were studying Civil Engineering.

Year (IV)	Classified the student writers by academic year (freshman/sophomore, junior, or senior).
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## Data Analysis

In order to determine how successful the therapy was, a MANOVA, which stands for multivariate analysis of variance, uses a factorial between-groups design. In short, it was carried out. MANOVA is a more common term for this type of study. After doing some early hypothesis tests, it was discovered that there were no statistically significant departures from normality, multivariate outliers, or multicollinearity. This was the realization that was arrived at. The testing was carried out so that we could check for the presence of these components. Despite this, demonstrating the validity of quasi-studies is much more difficult than doing so with true experiments. The pretest was used to evaluate whether or not the experimental groups were comparable before the therapy application. The findings have been reported using the multivariate test known as Pillai's Trace since it is the advised test to utilize when the MANOVA assumptions are not satisfied. Considering this allowed us to publish the findings using Pillai's Trace (Tabachnick & Fidell, 2013). In addition, the section on the findings only addresses the major effects and interactions that were found to be within a range of adjusted alpha of 0.008 (0.05/6 DVs). This particular range of adjusted alpha was chosen since it was statistically significant. The findings from the prior section served as the basis for determining this range.

The findings of the MANOVA test have also been submitted to a qualitative study, presented in this article to give a more in-depth explanation of those results. This research was carried out to ensure that the results were as accurate as possible. In addition, to provide some context for the differences in the experimental groups' levels of attention to the DVs, I collected snippets of the written word and the thoughts the students had produced. These passages are chosen from the written work completed by the pupils.

## 2.4 Procedure

A control-group quasi-experimental design was developed so that the goals of this investigation could be realized. Both the experimental groups were given a test of their

writing abilities prior to the beginning of the trial. In addition, at the outset of the research project, the participants in both experimental groups were given the identical assignment description. This was done so that it would be simpler to compare the DVs with the final written output that the participants had produced.

At the beginning of the semester, I used a random assignment method to give each of the nine instructors a single teaching unit to be responsible for. This unit may include job materials, communication, or processes. Because each class met twice a week, I decided to randomize the assignment of the unit work to be completed by the students. This decision was made regardless of whether the courses were held in the morning or the afternoon. In addition, each teacher's classroom had a treatment group and a control group that they were responsible for overseeing.

During the first set of interviews that I conducted, the teachers I spoke with thought that the treatment put more of an emphasis on the characteristics of the technical texts instead of the instructional strategies they are already utilizing in the classroom. However, these instructors needed to give the impression that they were not abandoning the participants in the control group by limiting the information that the control group could view. Instead, I wanted them to convey the impression that they were instructing the same fundamentals in two distinct approaches. One of my objectives was to do this. I conducted three official meetings with each instructor during the semester to present them with information on the therapy and to guarantee that they carried it out in line with the protocols. I also made sure that they were following the procedures. I kept my research questions a secret from everyone and did not share any details about the other professors who were taking part in the study with anybody else.

Before moving on to stage two, the instructors completed the first stage of the therapy's introduction with the students in their genre group by having them go through the first two stages. Because it was a necessary addition to the conversation that had already been going on about audience analysis up to that point, the initial phase, which centred on familiarity with the various types of writing and was shown to the class during the second week of the semester was carried out in this manner. This was done because it was carried out as part of the first phase. The conversation had progressed to that degree up to that moment.

When instructors started teaching the instructional unit that had been given to them, the second phase went into effect. This phase, which centred on the mastery of specific genres and was put into place when teachers first taught the unit, came into action.

Because the treatment occupied 30–50 minutes of each class session, the teachers could make better use of the remaining time in their control portion by giving longer lectures, participating in more in-depth class discussions, and participating in activities. For instance, Instructor B suggested that students submit a response to an item received from a website that is particularly committed to the process of looking for work. The website in question is notably devoted to the process of looking for work. These articles addressed various subjects, including the most effective method for college students to highlight their talents on a resume, the top ten reasons why readers find resumes "annoying," and the most common blunders individuals make when writing cover letters. An additional illustration demonstrates how both Instructor H and I increased the amount of time allotted to their command sections by incorporating an in-class exercise in which students put the instructions for course registration through a user-testing scenario provided on the websites of our respective universities. This was accomplished by having the students test out the instructions for course registration on our websites. Again, this was something that we accomplished together. Another example displays how Instructor H and I extended the amount of time given to their control sections by incorporating activities in class. Even though these exercises were both beneficial in that they helped to reinforce the content that was taught in their respective modules, none of them was able to clarify the genre's formal features in the same manner as the treatment did.

### **3. Results**

According to the findings of the MANOVA, there were three main effects, but there was only one single exchange (see Appendix C for complete statistical output). The results of the statistical investigation are shown in Table 2, which can be found further down this page. In this part of the report, I will organize the findings by the two questions presented throughout the research.

The investigation into the treatment's effects was the major focus of the first research question. To be more specific, I was intrigued by the process by which the participants

developed their technical writings to address the target audience, the aim of the work, the structure, the design, the style, and the editing. In order to answer this issue, the findings of the primary effect of the study, which was the group, will be described in the next part.

**Table 2.** A Statistical Breakdown of the Primary Effects and Their Interactions

Variable	Pillai	F	P
Group	0.28	29	0.00
Broad	0.23	10	0.00
Year	0.08	3	0.00
Broad:Gender	0.07	3	0.00

### 3.1 Main Effect of Group

On each of the six DVs, there was a difference between the control and genre groups that might be considered statistically significant ( $V = 0.28$ ,  $F = 29$ ,  $p.001$ ;  $2 = .20$ ). This difference might be considered was statistically significant. Every single DV had this particular variation in behaviour. When each DV was thought of in isolation, it was found that each one had the potential to achieve statistical significance. This section will begin by presenting these quantitative results, and then it will continue by enhancing these statistics with excerpts from the writings and comments provided by the participants. After all, we will wrap up this part by drawing some conclusions and offering some advice.

#### Audience

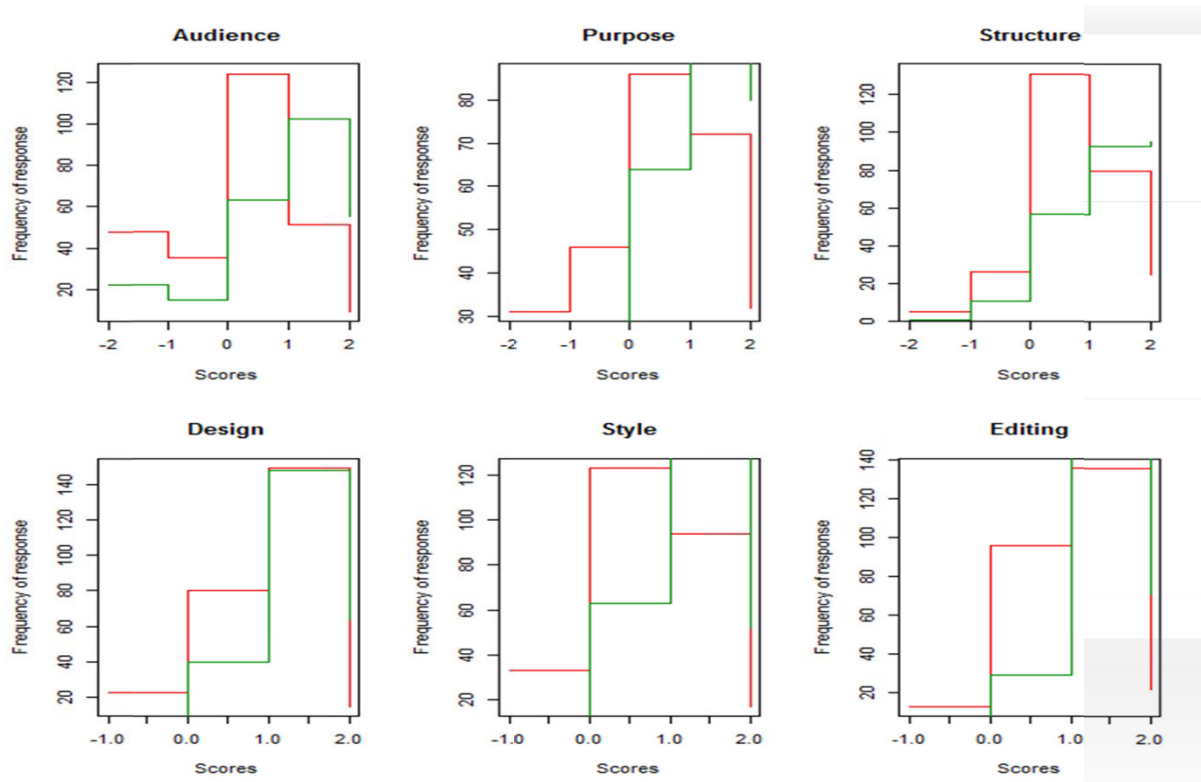
The participants' technical articles were evaluated based on how well they met the intended audience's needs. In addition to this, the audience that was targeted considered the ethical repercussions of the procedure that was used to do this task. As a result, it was determined that there was a statistically significant difference between the means of the control group, which were  $-0.23$  (median =  $1.00$ , standard deviation =  $1.06$ ) and the genre group, which was  $0.59$  (median =  $0.00$ , standard deviation =  $1.14$ ), using the formula  $F = 80.6$ ,  $p.001$ ,  $2$ .

However, even though the students ethically approached the communication scenario, the overall scores for both groups fell within the Competent level of competency range. This indicates that the texts frequently featured some mismatches to the demands their audiences placed on them. The fact that the pupils achieved the best possible mark for the Competent level does not change the reality that this is the case. The test group had a little more difficulty than the control group when it came to be conscious of the people listening to them. The following three samples are taken from participants' employment letters, and they demonstrate some of the difficulties that were brought up, including how participants altered the texts and how they presented their credentials to potential employers:

After working at a hospital over the whole summer and then again during the winter break, I feel entirely at ease in an environment that is more comparable to an office. During my job there, I developed a strong grasp of the responsibilities that an office has to carry out to retain its clients' happiness in a world that, at any given moment, may be thrown into disarray. This was beneficial to me. My interest in the field was piqued when I performed some research on your firm, which I recently finished doing. Currently, I am debating whether or not to make a purchase. Not only is the area around Dallas, Texas, a highly attractive site for your headquarters, but you also give wonderful incentives to your staff members and the families of those staff members. Both of these factors contribute to the high level of desirability of the area. The appeal of your firm as a whole is enhanced by the presence of both of these aspects. One of the younger nurses working in a field where the bulk of the other nurses are in their 40s and 50s, I will be one of the nurses that I will be working. Most of the other nurses are either in their forties or fifties. Because of this, I will be able to extend the amount of time I spend in this location and be given the opportunity to perform shifts up to twelve hours long.

In each of these scenarios, at least a portion of the target audience is made aware of the problem, yet, the actual implementations do not live up to the expectations originally set. In his assignment reflection, the author of response (a) said that his time volunteering at the hospital set him apart from the other candidates in the competition. This was the

factor that most separated him from the other applicants.



**Figure 1.** Comparison of the control group and the genre groups using the frequency plot for the Group main effect.

On the other hand, how he was put to death did not provide any specifics of this responsibility. In a manner not unlike that described above, the author of b) demonstrated awareness by presenting the results of his investigation into the organization. However, the presentation put more of an emphasis on what the firm could provide for the student as opposed to what the student could provide the company. In the end, but not least, the author of point (c) talked about her youth and passion, most likely to establish her longevity; nevertheless, doing so came at the price of her possible future workers. This was surely not the least of her mistakes.

The genre group addressed the audience with the same sorts of incorrect applications as in (a), (b), and (c), but they did so on a less regular basis. As can be seen in the Audience panel of Figure 1, the genre group, represented by the green line, crafted a greater number of texts with a Strong or Superior awareness of the audience compared to the control group, which is represented by the red line. In other words, the green line indicates that the number of texts with a Strong or Superior audience awareness is higher in the genre group. This can be seen in



comparison to the number of Writings with an Excellent or Very Strong Awareness of Whom They Are Addressing that were crafted by the control group. This may be noticed when compared to the number of texts written by the control group with a Strong or Superior sensitivity to the audience. The authors who made significant contributions to the development of this genre are recognized through the prevalence of specific examples, like the one provided here, in the works they produced.

I have always had a deep affection for all kinds of animals, but it was specifically my fascination with wolves that, as a result, I decided to get a degree in wildlife management in college. Although I have always had a profound affection for animals in general, I have always had a particular fascination with wolves. At [insert the name of the institution], I focused my studies on wildlife management, and during my time there, I could choose from a wide range of courses connected to my field of study. When it was all said and done, my overall grade point average was 3.79. I was active when I was voted Vice President of the Range, Wildlife, and Fisheries Club, planned a telemetry project with a couple of the graduate students and chaired two meetings when the President was absent and not available to do so. I also organized a telemetry project with a couple of undergraduate students. In addition to that, I was in charge of coordinating a telemetry project with a few of the undergraduate students. In addition, I participated in the Wildlife Quizbowl as a member team, which required me to go to the meetings of the Texas Chapter of The Wildlife Society and the Western Student Conclave meetings in order to compete in competitions and attend meetings. This was something that I did in order to fulfil my responsibilities as a member of the team. In addition, while staying at Three Bar Ranch in Arizona, I participated in a mule deer research project and assisted in capturing other tiny animals. During the time that I was present, this was carried out.

The author included particulars that exemplified her achievements, such as a grade point average of 3.79, and she backed up a general assertion with particulars, such as an example from her own life ("My passion for animals..."). It would be beneficial for the story to have a better order and additional content relevant to the curriculum.

### **Purpose**

The participant's capacity to express the objective of their technical writing intelligibly was graded using a rubric titled "purpose," and it was determined whether or not the participants

were successful in doing so. Compared to the genre group, the control group had a mean of 0.10 (the median was 0.00, and the standard deviation was 1.17), while the genre group had a mean of 0.86. (the median was 1.00, and the standard deviation was 1.04) There is a difference between the two groups that have the potential to be regarded as statistically significant (1, 455) = 63.40, p.000, 2 =.07

Both groups were given scores within the range of "Competent," demonstrating that the students substantially articulated their desired objective, but not in a clear way as shown by the scores. Again, those in the control group had a harder problem implementing these assumptions (see Figure 1), and their attempts frequently featured calls to action that were either inadequately developed or were not explicitly conveyed. In addition, the control group's attempts were frequently unsuccessful. The following examples, which were taken from a wide range of different literature, highlight some of the issues that need to be dealt with:

The number of people who join our group must increase by at least fifty per cent in order for us to meet our goals. This is something that will be able to happen if new community members, such as yourself, sign up to become a part of our organization. Because this is a charitable organization, we are going to want as much assistance as we possibly can get, not only from those who are currently involved in the organization but also from those who have participated in the organization in the past, as well as from potential new active members of the organization. Therefore, to provide you with a higher level of service, we ask that you consider becoming an active member. A prosperous career in the agriculture industry is one of my goals, and one of the things I need to do to get there is to increase both my theoretical understanding and practical skill.

At this point, I am in the third year of my biology education at this particular university. While looking through the papers, I was browsing the internet when I came across your job posting for a veterinary technician, and I became interested in the position immediately... My present employer will look forward to hearing what I have to say about my future leave because they will be interested in what I have to say about it. Please contact me by phone or email if you cannot talk to me on October 2 or any time before that day so that I can make other arrangements. If this is the case, kindly let me know as soon as it is feasible. The earliest time for following up on my application is October 2, which will take place at the latest.

I made a transaction on your website for a pair of 179 Pontoons on December 11 this year. This deal was for the purchase of a pair of pontoons. After giving them much thought for a while, I concluded. Nevertheless, out of all the skis and ski brands available to me, the Fischer was the one I bought. I wanted to spend my money specifically on these skis. I got to this conclusion after giving them much attention for a long. Again, after giving them much thought over an extended period, I concluded. I eventually looked at them after an interminable amount of time had passed. The very first time I could test out these specific skis was during the three-day weekend that spanned the 26th through the 28th of January. The pontoons turned in a performance that was very good during the initial few runs that were carried out, which were carried out to test them. The impression I was left with was that they were, without a shadow of a doubt, the greatest pair of skis I had ever owned.

The author of item (e) requested that the reader likewise become a member of the organization after first making an explicit declaration of her purpose, which was to grow membership by fifty per cent. However, she did not offer any information about how one may become a member of the group to participate in the events it organizes. Next, the candidate's aim statement, which can be found in section (f) of the resume, does not include either the organization or the job they are looking to get in the next step in their career. The item (g) author did mention the open position posted in his cover letter; however, he did not specifically request that his application be considered for the position being offered. The author of the item (g) included an uncertain "follow-up" in the final line of his letter; nonetheless, he did not seek an interview, which is the objective you should have in mind while writing an employment letter in the first place. The author of item (g) also did not provide a clear "follow-up" in the final line of his letter. This is a result of the author of the item (g) failing to make further contact with the employer. Finally, the author of the letter (h), which had four paragraphs, hid the claim he made in the third paragraph, as stated at the end of the letter.

Although they occurred less frequently, the errors included in the strategy that the genre group used to accomplish their goal were comparable to those listed in (e)-(h). This group generated a larger number of calls to action that were assessed as Strong or Superior, as seen in the Purpose panel of Figure 1. These calls to action stood out among others because of the degree of precision they contained, which included the following items in particular:

The second get-together will be held in room 122 of the Human Sciences building on October 24 at seven o'clock in the evening. I want to strongly encourage you to make it a top priority to get involved with this incredible organization and request that you do so as soon as possible. If you have any queries in the meanwhile, please do not hesitate to contact me, and I will try my best to answer them. You will be able to gain the abilities that are necessary to work in an environment where wine is served if you follow the steps that are stated in the following guidance. If you follow these steps, you can develop these talents.

In the final paragraph, the individual who wrote the recruiting email stated that I suggested that the recipient attend a certain conference. Before describing the actions that need to be taken to complete her instructions, the author of (j) provides some background information for her readers in a manner that is slightly distinct from the prior example.

### **Structure**

The many technical papers submitted by the participants were analyzed through the prism of structure to better understand the degree to which the participants could effectively adopt the necessary structural standards. These structural rules comprised the ordering of significant parts and the use of headers and transitions in the document's design. Analysis of statistics showed that there was a statistically significant difference between the means of the control group (median = 0.00, standard deviation = 0.85) and the genre group (1.05, median = 1.00, standard deviation = 0.89) ( $F = 87.71, p.000, 2 = .09$ ). The control group had a median value of 0.00 and a standard deviation of 0.85. The following was the group's average performance when they were used as a control: (median = 0.00, standard deviation = 0.85)

Even though the participants in the control group received an average score in the Competent category, which indicates that they typically adhered to the structural principles of the texts, it is possible that they incorporated confusing headers and transitions as well as tiny illogical arrangements. This is because the texts were graded on a scale from most competent to least competent. For instance, the extract from a recruiting email displayed in clause (k) begins with an attention grabber in the form of a rhetorical question. This is done to get the reader interested in what is to follow. This inquiry is posed at the very beginning of the passage being read. Following this, a passage leads into the next part, which is captioned "What is ASTF?" However, because the author does not explain the organization at any point, the title is deceptive, and the

transition between concepts does not make any sense.

Have you ever been in a situation where you needed to express a concern or make a recommendation about how the atmosphere in the architectural building may be improved, but you had no one to talk to about it? For example, have you ever been in a situation where you had no one to talk to about how the atmosphere in the architectural building may be improved? But, on the other hand, have you ever been in a scenario where you couldn't talk to anyone about it? For instance, have you ever found yourself in that position?

### **What is ASTF?**

Now is your time to find out. It demonstrates that the Architecture Student Task Force is the most significant component of developing a link between the student body and the school's management. This is your chance to find out this information. You have the opportunity to be one of the few people who contribute to improving the curriculum that the College of Architecture offers at our school, and you should make the most of this possibility that has been presented to you.

Additionally, the texts that the control group produced usually lacked strong structural requirements, which made reading difficult and negatively influenced the degree of safety. This was one of the factors that contributed to the study's findings. A conclusion, which should state that the work at hand has been completed and (or) outline what the reader ought to do next, is also included. is a convention that is frequently included in instruction manuals. Other conventions frequently included in instruction manuals include the following: For instance, a conclusion should reference the fact that the assignment has been finished. In addition, the conclusions may include other resources, such as advice on how to do maintenance or troubleshooting and the material already presented there (Markel, 2012). The following is a summary of the findings about the building of a cylinder that may be used in scuba diving does not meet these standards, which has led to the introduction of possible safety concerns:

At this point, the scuba cylinder needs to be completely put together before it can go through an inspection to look for any potential problems that might jeopardize its safety. It is essential to remember that for the cylinder to be used for scuba diving, it must first be checked by a qualified scuba instructor to ensure that it has been completely filled with gas. Therefore, it is of the

highest significance to make certain that the entire process of getting ready to go diving is done in an ideal manner. This is one of the most important things you can do to ensure a safe and enjoyable diving experience.

Because the phrases in (1) are presented in the order that they are, it is unclear who is responsible for checking the cylinder for safety and whether it is the reader or the diving instructor who will evaluate the safety during the completion check. This is because the phrases are presented in the order that they are. This is the order in which the phrases are presented in sentence (1). In addition, the conclusion includes a note that discusses "extra processes" associated with diving, but it is not entirely clear what these processes are. Students were encouraged to write for an audience that had just a fundamental understanding of the problem when the description of the project was given; casually explaining additional procedures was confusing and could have led to catastrophic repercussions.

To summarize, control group members commonly had difficulty grasping fundamental aspects of structure, such as the format of letters. Even though this is an extreme case (see Figure 2), the claim letter generated by a senior-year student majoring in civil engineering has formatting flaws that led to the separation of the experimental groups. Both the student's contact information is highlighted, and there is a comma at the end of each line, both of which make the material more confusing and contribute to the fact that it is difficult to comprehend. The student's telephone number consists of one more digit than what was stated there in that regard. There is a problem with the formatting of the greeting, and there is no room after the close for a signature to be included in the message. The claim letter's structure had the most egregious fault; double spacing was used throughout the whole page, and the letter was written in a manner that featured a semi-block indentation. The text is structured using a standard corporate pattern known as semi-block indentation; nevertheless, the addition of double space makes it look more like an academic essay than a business letter would. This is because semi-block indentation is commonly utilized in business writing. This student may have been attempting to reproduce the forms he learned in the undergraduate writing programs that he took by using an indented paragraph structure, as required by both the APA and MLA styles. Both of these styles have these requirements. This is because both styles need the paragraphs to have a space indented before them.

Joe Smith,  
123 Main St.,  
Anywhere, USA 12345,  
(806) 123-45678.

Lewisville Texas Department of Public Safety Office  
PO Box 4087  
Austin, Texas 78773-0001

Dear, Mr. Christian

I am expressing a complaint concerning the service I received while replacing my driver license at the Lewisville Texas Department of Public Safety office on August 9, 2006.

This past summer while in Europe studying abroad I managed to lose my wallet which included my Texas driver license. When I returned to the States I went to the Texas Department of Public Safety office in Lewisville and requested a new driver license. After I received my new license in the mail I then realized that I would have to go and renew my license in a year anyway.

Sincerely, Joe Smith

**Figure 2.** Example of structural components concerns in control group communication.

The genre group obtained scores in the Strong range for Structure, which suggests that students generally followed the structural standards of the texts they were given to analyze. For example, the students used headers and transitions that were significantly explicit, and they logically structured components. The section of an email that is used for recruiting and is presented below (m) has a more robust organizational scheme than the section shown. In contrast to this, the section that is displayed has the following: (k).

The size of our organization's workforce begs the question: why do we have so many people? Because we provide our clients with a wide variety of choices in various categories! It is generally agreed upon that the National Future Farmers of America (FFA) Association is the most powerful student group in the United States. Regarding the overall number of members, Texas is miles ahead of the competition thanks to the state's population of over 66,000 residents who belong to the organization. You and the other members of the FFA will have the opportunity to socialize with one another and become more familiar with one another during the yearly conventions that the organization hosts. Each year, members at every level of the organization's hierarchy are given a chance to vote for candidates, and the candidates who

receive the most votes will be considered for appointment to posts that are currently vacant. Anyone interested in participating in one of the many available committees can submit their information online. These committees are charged with various functions, including the organization, management, and funding of various events.

What is the overall length of time that will be needed to complete it? We at the FFA know that everyone's itineraries are crammed to the gills with different events because everyone has such a demanding schedule. Anyone interested in being a part of this wonderful institution can do so in various ways through the many different available channels. There is a place for you whether you want to run for office, compete as an individual, be a part of a team, serve on a committee, compete in talent competitions, attend conventions, or participate in other activities. Whether you want to run for office, compete as an individual, be a part of a team, serve on a committee, compete in talent competitions, or attend conventions, there There is always a way to give, regardless of how much time you have available to contribute; this is true whether you want to run for public office, compete as an individual, be a part of a team, serve on a committee, compete in talent competitions, or attend conventions. There is always a way to give. There is always something that can be accomplished in each given situation. In the game "Free for All," each player takes on someone else's persona.

The body of the text for option (m) is broken up into four headers, with each heading concentrating on a different AIDA convention (Attention, Interest, Desire, and Action). These conventions are intended to operate in a manner that is akin to the pedagogical approach that is used when modelling content of this sort, and as such, they have been developed to function in this fashion. Each headline prompts the reader to consider a topic, such as "How much time is involved?" and then smoothly moves them from one concept to the next.

The genre group, on the whole, had a larger degree of success than the control group when it came to establishing the structural norms of their works. This was compared to the results obtained by the control group. The next paragraph, taken from a manual on flower arranging and found in (n), reaches a conclusion that is simpler to understand and more in line with the norm than the one presented previously.

When you have finished making all the required preparations, the next step is to box everything up so it is ready to be dispatched. This should be done as soon as possible after you have finished



making the preparations. At this stage, the only things left for you to do are connect the card to the front of the arrangement and, if you want, tie a bow around the centrepiece to finish the look. Again, at this point, the only thing left for you is to attach the card to the front of the arrangement. After you have completed the steps in this technique, you may put the vase that contains the flowers back into the refrigerator at this point. Because of this, the flowers will maintain their maximum level of freshness until the time that they are delivered.

After you have finished the current work, some key questions to think about include the following:

Will it fulfil all of the specifications the client has laid down for the project you are working on?

Have they had the experience of feeling that the money that they invested was money well spent?

Do you think that I would have a happy expression on my face if someone were to deliver me this? Do you think that it would?

The Structure of (n) is more in line with the earlier recommendations for writing a conclusion for instructions; these recommendations included any recommendations or inquiries regarding extra maintenance utilized in evaluating quality control. Additionally, these recommendations included any questions used to determine whether or not quality control was adequate. In addition, any questions utilized to evaluate quality control were included in these recommendations.

### **Design**

Within the context of their pieces of technical writing, the participants were graded according to the degree to which they could make effective use of a variety of design features (such as contrast, repetition, alignment, and closeness), as measured by design. This was done to assess the participant's overall level of design literacy. The mean for the control group was 0.58, while the mean amounted to 0.05 for the genre category. The middle point was set at 1, while The value of the standard deviation was calculated to be 0.73. (the value that represented the centre point) was 1.00, while the standard deviation was 0.69). Based on these data, one may deduce a statistically significant difference between the two groups ( $F = .001, 2 = .10$ ).

The fact that the average score for the control group was within the range that corresponds to the competency indicator demonstrates that participants generally included an acceptable match of design features in their texts. The curriculum vitae displayed in Figure 3 was compiled by a student who is now in her junior year and is majoring in fitness and sports sciences. One font is used for the headers, another font is used for the body material, and a third font is used for the applicant's address information. These three fonts are used consistently throughout the text. The text appears somewhat cluttered due to the author's usage of several different typefaces. In the same fashion, the headers in the body of the text are broken up into three unique levels: the first level shows the name of the applicant, the second level indicates the name of each part, and the third level acts to serve as a subheading to the second level (i.e., the "Student Organizations and Scholarships" heading under "Educational Synopsis"). The reader is not provided with a distinct visual indication to begin recognizing the material, which contributes to the convoluted nature of the text's organizational Structure. This is because the text employs several different fonts, sizes, and heading levels, and also, there is a border that surrounds each page.

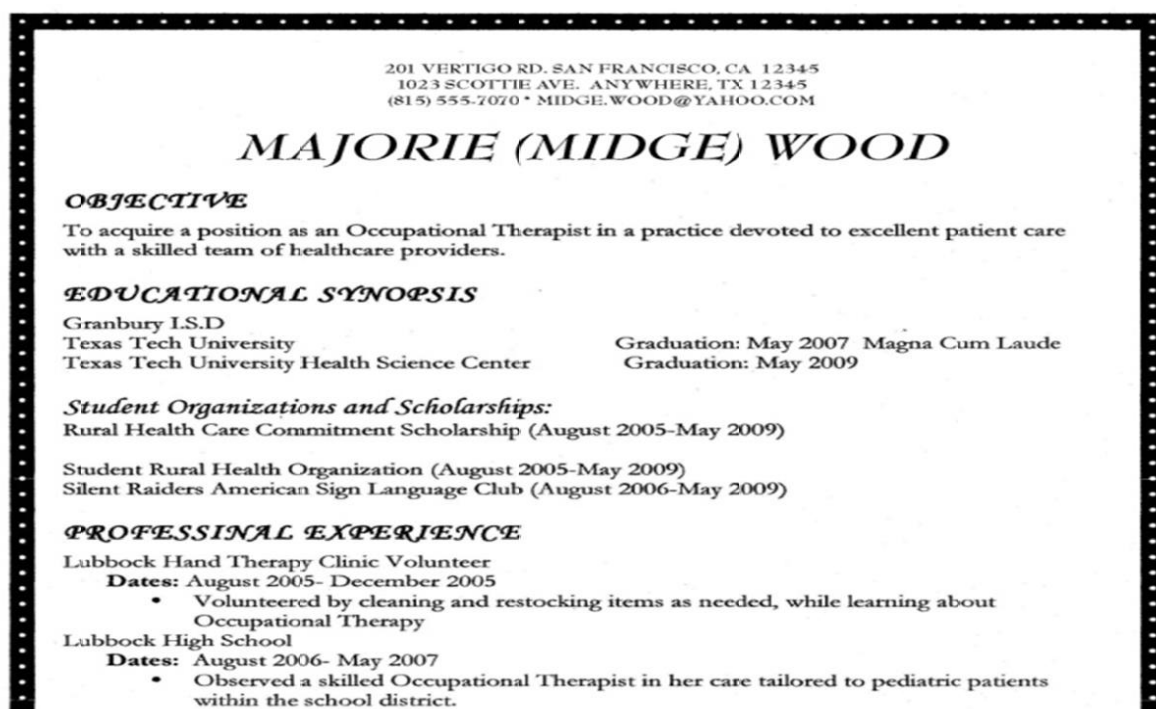
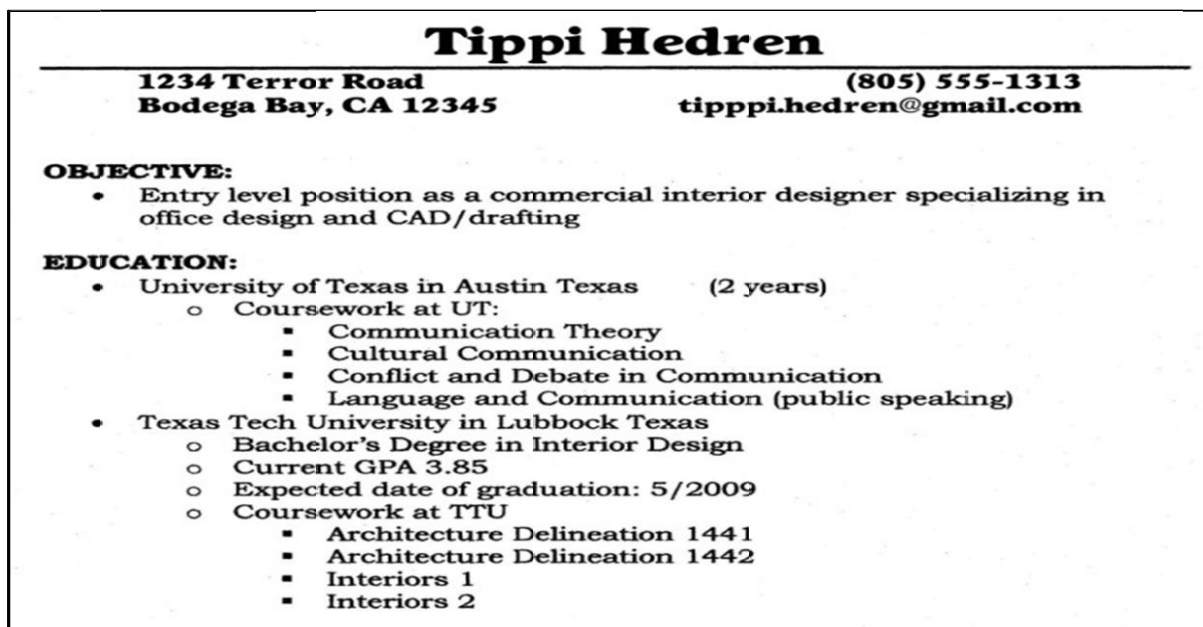


Figure 3. "Competent" design example from control group.

The genre group, on the other hand, received scores in the Good range of the DV, which demonstrates that students generally used design aspects that were an effective complement

for the texts they created. It is possible to draw this conclusion from the fact that the pupils' DV scores were inside the Strong range. A student who is now in the third and final year of her interior design degree produced the curriculum vitae that can be seen in figure 4. The text makes good usage of white space throughout, and also offers a visual hierarchy by boldfacing the headings use of white space across the whole document. In general, the amount of available white space is really effective. However, although the bullets encourage a hierarchical structure inside the organization, the various sorts of bullets do not always group information that is relevant to one another.



*Figure 4.* "Strong" design example from genre group.

## Style

The readability of the paper's substance and the appropriateness of the language were graded by how it was written. The control group had an average score of 0.36 (with a median of 0.00 and a standard deviation of 0.78), whereas the genre group had an average score of 0.88 (with a median of 0.00 and a standard deviation of 0.91). (with a median of 1.00 and a standard deviation of 0.77). The difference between the two groups might be considered statistically significant ( $F_{64.90, p.001, 2} =$ ).

Both groups received scores in the Competent range overall, indicating that participants frequently included language that was a little bit wordy and that there was generally an

excellent fit between the level of formality and complexity and the audience. Both groups received scores in the Competent range overall. In addition, it suggests that participants commonly inserted wording that was quite flowery. The overwhelming majority of the grammatical errors found in both sets of participants were associated with one of the three different categories of communication content. This featured the most favoured straightforward style that might be used for the letter submitting the claim. Examples (o) and (p) demonstrate how the claim was resolved in a manner that is not as crystal clear as one may anticipate it to be (p).

I must investigate the possibility of purchasing a container to transport the flawed hard drive. It would be fantastic if you could provide me with a hard drive that was functionally fixed not too long ago and is now being worked on.

I would appreciate the item being replaced, but if that is not possible, I would be prepared to settle for a credit to your store account or the identical garment in a different colour. Thank you so much for your time and consideration. I am grateful for your kind attention.

Choices (o) and (p) offer evasive explanations of the actions they recommend in their respective scenarios. The writer of (o) gets off to a strong start by asking for a box in which to return his hard disk, which is a smart move. In contrast to this, he continues by saying that a replacement "would be nice too" rather than immediately requesting one be provided. This is a major problem in his reasoning that has to be addressed. Analogously, the author of (p) provides the reader with various potential responses to her assertion rather than disclosing how she would want her claim to be refuted.

In addition, there was a general trend that the participants in the control group picked less effective tones than the choices that the participants in the genre group made. The following instances (q) illustrate the challenges associated with a negative tone, which may be the outcome of a direct writing style (s).

Because I have been one of your most devoted customers for more than 5 years, I have earned the right to put forward particular requirements to the business you run. So please allow me to make the following request of you.

I can only hold out hope that you would consider my concerns and either credit my account or provide a refund of the \$6.50 stolen from me. Thank you in advance for your attention to this matter. If you do not get back to me within a reasonable amount of time with an explanation of how you feel about the situation, I will be compelled to consider several other options.

Within a week, if I do not receive a response from a company representative or the attorney representing the corporation, I will consider this matter resolved. I may be obliged to pursue additional legal action against your organization. I apologize for the inconvenience this may cause you. If this behaviour persists, I will be left with no other option but to take such action.

Both the use of the phrase "demand" in provision (q) and the implied threat that "additional actions may be taken" over a \$6.50 charge in provision (r) point to an inappropriate application of the direct approach. In provision (q), the phrase "demand" is used. In provision (r), the phrase "additional actions may be taken" is used (r).

Nevertheless, the participant's dispute centred on a car bumper and grille that, in his opinion, had been installed improperly. Consequently, he indicated that pursuing legal action, such as what had been done in (s), could be an acceptable way to proceed. The writer's first attempt to discuss this topic with the reader was the claim letter, which raises the possibility of legal action to an exceptionally high degree. The author continues to make use of an inappropriate application of direct style by stating, "I will also refer anyone I talk with to a different shop because of this bad first experience with your shop, which will undo the thousands of dollars you have spent on advertisement," which is an example of an improper application of direct style. The author continues to use an inappropriate application of direct style by stating, "I will also refer anyone I talk with to a different shop because of this bad first experience with your shop." The author of the reflective piece explained that he used a tone that was "formal, but slightly more polite" than he would have done otherwise because he had the preconceived notion that the recipient, the owner of a small custom vehicle business, would be less accustomed to receiving a claim letter than an executive at a bigger corporation. Would be. This is because the writer of the reflective piece believed that the reader is less accustomed to the practice of receiving a claim letter. Because the writer of the reflective piece explained that he used a tone that was He wrote that he believed this because he believed that the reader would have a lower baseline expectation of receiving a claim letter. He believed this because the

reader be less accustomed to the practice of getting a claim letter. The author argued that his claim that the company should cease its advertising campaigns should be taken seriously by providing the following justification in support of his position: "It is more likely that my demands will be met because smaller companies are trying to grow, and one lost customer is more important to them than it is for a larger company that already has thousands of customers."

### **Editing**

The readability of the materials was evaluated based on how the presence of editing mistakes impacted the process of reading the texts employed for technical objectives. The control group's average score was 0.63 out of a possible 1. (with a median of 1.00 and a standard deviation of 0.71). The genre category had an average score of 1.16 overall (with a median of 1.00 and a standard deviation of 0.60 per cent). A statistically significant difference was found between the two groups, with the test results reading  $F = 100.04$ ,  $p.001$ , and  $\eta^2 = .13$ .

The members of the control group's average score were within the range for the Competent category, which shows that students frequently produced written work with between three and four grammatical, mechanical, or typographical mistakes on each page. The text's readability and functionality were somewhat affected as a result of this. The following samples are provided to illustrate a few of the editing mistakes that were found in the texts:

I am unhappy with the product I purchased because the Guitar Hero controller you supplied worked well. This is the primary reason why I am unhappy with my purchase.

When you leave a department store and are trying to remember all the different cards you have been given, this step is helpful because it reminds you to check that you have all of your different cards whenever you log in to the computer to register your purchases. This is helpful when trying to remember all the different cards you have been given. This makes it much simpler to think of all the different cards you have in your possession when you leave a department store.

We ask that you fill out a trial registration form, and you should be ready to meet the new you just a little under a month from now.

When considered within the framework of a claim letter, the absence of the phrase generates uncertainty regarding the purpose of the text. This is true even though deleting the term "doesn't" from (t) is a very little editing mistake. Next, although the change in verb tense in (u) may similarly be considered minor, it does affect how users should check their credit cards to prevent identity theft. This is done to protect themselves from having their personal information stolen. This is done so that they can prevent their personal information from being taken from them. The fact that the student used improper language in (v) ——— "trail form" instead of "trial form" and "that" instead of "than" ——— makes it more challenging to understand the action statement in the recruiting email.

The genre group obtained scores that were inside the Strong range of this DV, which means that participants routinely wrote texts with less than two errors per page, which did not contain an error impairing the reading of the text in any way. This information was gleaned from the results that the genre group obtained.

The second research question was the identification of the effect that the meta-discourse functions had on the therapy being given. I was especially curious about how the experimental group the wide. The results were affected by the type of literature read, as well as the gender, academic year, and field of study of the participants. Specifically, I was interested in how these factors affected the results. Specifically, I was interested in learning more about the outcomes of the experimental group. In order to answer this question, the following provides details about the findings about the principal influences of the Year and Broad variables, as well as the findings concerning the interaction between the Broad factors and the Gender factors.

### 3.2 Main Effect of Broad

In addition, there was a.001, and the value of 2 was.08). Audience, Purpose, Design, and Style, as well as Editing, Each Had Substantial Levels of Influence When Considered Alone Audience, Purpose, Design, and Style each had significant levels of impact when considered alone. The following is a summary of the findings from the Post Hoc Tukey HSD test, which identified a large number of interactions and had a significance level that was lower than 0.05.

**Table 3.** Means scores (and standard deviations) for the three broad text types by Audience, Purpose, Design, Style, and Editing

	<b>Audience</b>	<b>Purpose</b>	<b>Design</b>	<b>Style</b>	<b>Editing</b>
Correspondence	0.12 (1.15)	0.30 (1.26)	0.94 (0.64)	0.48 (0.78)	0.75 (0.64)
Job materials	0.35 (1.00)	0.64 (1.00)	0.75 (0.84)	0.59 (0.84)	1.08 (0.70)
Procedures	-0.08 (1.45)	0.49 (1.29)	0.71 (0.72)	0.91 (0.77)	0.77 (0.77)

In general, the application materials for the position featured appeals to an audience that were much more compelling than the processes and appeals to the purpose that was noticeably more compelling than the letters. In addition, the appeals to the audience and the aim were of far bigger importance than the methods. In addition, the editing process for the content that was pertinent to the job was more in-depth than the editing process for the other forms of writing (see Table 3). These pieces of evidence may show that the participants emphasize the aspects of the work they exploited.

After then, a greater degree of attention was devoted to the design of the message as opposed to the materials and procedures that would be utilized to finish the mission. This was done in order to ensure that the message was received successfully. This outcome is certainly connected to the fundamental design components utilized in letters, the most crucial of which are letterheads and subheadings. These components are utilized in the production of letters.

In conclusion, the techniques included forms of writing that were superior to those applied in the myriad of other materials. This outcome could have something to do with the technique by which the participants advised readers on how to do a task by outlining the procedures in a particular style. The imperative mood, a technique to express orders or make requests, was the primary way this aim was accomplished from a stylistic point of view. This is because The urgent mood is a kind of expression utilized while giving directives or posing questions. In comparison, the writing style offered by the correspondence unit for the claim letter was on the simpler side, while the writing style



provided for the recruiting email was on the more interesting side. If any of these two forms had been used, it could have been more challenging for the participants.

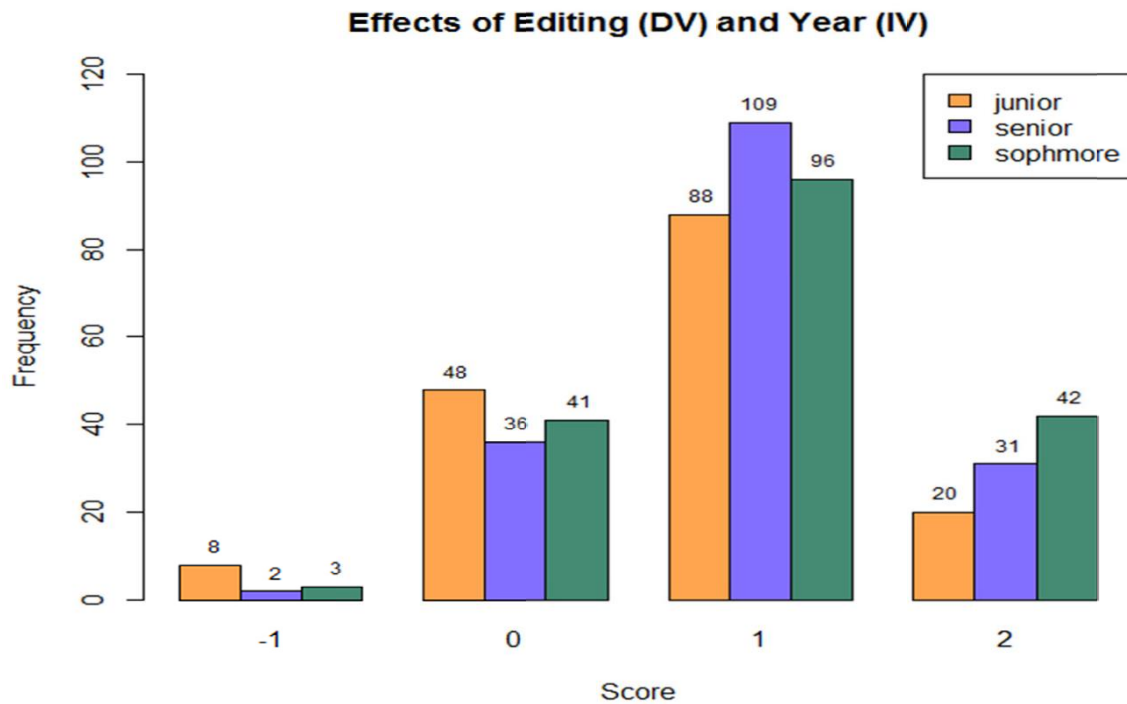
### **3.2 Main Effect of Year**

On the dependent variables, there was a difference between the juniors and seniors that had the potential to be considered statistically significant (Pillai's Trace = 0.08,  $F = 12$ ,  $p.001$ ;  $\eta^2 = .03$ ). The juniors and the seniors were discovered to have this disparity from one another. The Audience, Structure, Design, and Editing components reached statistical significance when studied separately; however, the Post Hoc Tukey HSD test only demonstrated significant interactions within the Editing component.

**Table 4.** The following are the mean scores, as well as the standard deviations, for juniors, seniors, and sophomores according to Editing

	Editing
Sophomores	0.97 (0.72)
Juniors	0.73 (0.74)
Seniors	0.95 (0.65)

Students who were in their senior year and students who were in their sophomore year were able to make more significant improvements to their technical writing than students who were in their junior year (see Table 4). When compared to their seniors, junior writers had a lower percentage of their scores categorized as being in the range of superior and strong, whereas senior authors had a higher percentage of their scores categorized as being in the range of competent and weak (see Figure 5). The errors in editing that may be found in paragraphs (t) through (u), for instance, are an illustration of some of the problems that differentiate juniors from their peers (v).



*Figure 5.* Editing scores within year.

### 3.4 Interaction between Gender and Broad

It was discovered that there was a difference in gender among the authors, and that this difference had a statistically significant interaction with the kind of wide text ( $V = 0.07$ ,  $F(2, 902) = 3$ ,  $p.001$ ;  $\eta^2 = .04$ ). Specifically, it was discovered that the interaction between the gender difference and the broad text type had the following values: It is essential to take into account the relevance of the organization's Purpose in addition to the Structure of the organization. The findings of a Post Hoc Tukey HSD test, which uncovered numerous of the following, are offered below for your perusal and consideration. The findings of the examination provided the basis for these inferences. associating oneself with other people, in addition to the fact that

**Table 5.** The following table presents the means of the participants' ratings, together with the standard deviations, based on the wide text type found in the Purpose and Structure section.

	Purpose			Structure	
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Broad text type	Overall	Female	Male	Overall <i>m</i>	Female	Male
	<i>m</i>					
Correspondence	0.30	0.29	0.31	0.68 (0.87)	0.72	0.62
	(1.26)	(1.29)	(1.22)			(0.91)
Job materials	0.64	0.75	0.45	0.75(1.02)	0.96	0.42
	(1.00)	(0.92)	(1.41)			(0.00)
Procedures	0.49	0.78	0.16	0.62 (0.90)	0.53(0.96)	0.72(0.84)
	(1.29)	(1.17)	(1.37)			

However, the overall averages for both genders across all sorts of writing are all within the range considered competent. This is the case regardless of whether or not the writing was done by hand or on a computer. Female authors generally incorporate aggressive goal declarations into their writing more so than male authors (note the panel on the left of Table 5). This score reveals that all participants generally conveyed their desired objective; nonetheless, they frequently included calls to action that were either underdeveloped or implied in their statements. In the examples, each of these issues is shown by utilizing a different mix of the different kinds of text. In particular, the use of purpose statements by females in their work materials was much higher compared to the use of comparable statements by males in their letters and their processes. This was shown to be the case regardless of the type of statement being examined. This was the case irrespective of whether or not the remarks were included in the materials provided for the task. This was the case when we looked at how people of both sexes used these terms and discovered that it was true. In addition, women used purpose statements that were more forceful in the documents they submitted for positions than in the communication they sent. In addition, women used purpose statements inside their processes that were more persuasive than the ones they used within their letters. It is important to note that people of both sexes experienced the same amount of difficulty with their communication, which, out of the three distinct types of communication, is perhaps the one that has the narrowest focus on its intended outcomes (For instance, the goal of this document is to establish new procedures for utilizing the photocopier in the workplace.) In a similar line, the male authors had the most difficulty determining the aim of their techniques when they were trying to figure out what they were doing. Many of these male authors start their work with

a list of responsibilities that are instructive to the reader rather than beginning their writing with a narrative that establishes the purpose of the piece and the audience for whom it was intended to be read. This is because many of these male authors believe that narratives are more likely to be read by the target audience. In this article, we demonstrate the usage of an example, one of the most typical techniques to orient readers at the beginning of a procedural book.

In addition, the structural quality of the writing that female authors generated was significantly higher than that which male authors generated; however, the total averages for both sexes across all types of text were, once again, all within the range of what is considered to be Competent (see right panel of Table 5). However, they added a few confusing headers and transitions and some tiny illogical arrangements. This score shows that the authors adhered, for the most part, to the structural standards of the texts; however, they did add a few confusing headers and transitions. More specifically, women performed a far better job than men of arranging the information they had available to them in their work. Structure-related problems were present in the cover letter submitted for the employment, and they contained several conventions that were applied incorrectly, as can be seen, most plainly in Figure 2. In addition, there were several concerns with the structure of the layout of the resume, including sections that were not grouped logically and titles that were not instantly comprehensible.

Moreover, there were several typos throughout the document. In addition, to accomplish the task, females established procedures that were far less regimented than the ones that males did. Only in the genre of literature known as processes do male authors tend to construct more robust structures than their female counterparts. Unfortunately, this turned out to be the case.

#### **4. Discussion**

According to the findings, specific instruction was beneficial to the production of technical writings by the genre groups, which led to a stronger understanding of conventional technical writing standards than was shown in the control groups. This resulted from the genre groups being exposed to specific instruction. This was the outcome of the genre groups being presented with genre-specific teaching. Specifically, this was the effect. In

addition, the DVs showed significant associations with the participants' gender, the school year in which they were enrolled, and the type of general literature that they were reading. In this part, I will explore these findings, address some methodological limitations, suggest topics for more study, and give some clinical practice implications. I will also provide some context for these findings.

The first line of inquiry conducted for the study project looked into the outcomes of applying an explicit treatment to the kind of writing being studied. Students who were instructed using the treatment produced writings that displayed a greater sensitivity regarding the audience, the objective, the structure, the design, and the editing when compared to students who were instructed using more traditional teaching methods. This was the case for all aspects of the writings that were produced. This was evident in the pupils' writing abilities, as discussed before. These findings offer the very first experimental insights into how individuals whose primary language is English react to the explicit instruction of technical literature. These individuals had English as their first language. The findings are in line with those acquired from research involving experimental control groups and the direct instruction of academic writing norms, so they are congruent with those findings as well (Carter et al., 2004; Wilder & Wolfe, 2009).

The answer to this first question, which was connected to the discovery that was most important the answer to this first question was the cumulative effect that the treatment had on the children across all of the different domestic violence situations. This response was discovered to be tied to the discovery that was most relevant to this first question. It is vital for technical writing to effectively touch with actual people to successfully elicit a response that will, in the majority of cases, be to the writer's advantage. The examination of the audience and the objective of the writing serve as the foundation for the organization, design, and style of the text, in addition to the process of editing the work. This foundation also serves as the basis for the editing process. There is a widespread concern among genre scholars in North America that explicit training may encourage prescriptivism and overgeneralization of norms. Both of these factors can potentially be detrimental to students' health once they have entered the workforce. These academics have observed that the learning environment of the workplace, which is impromptu and unstructured, is distinct from the learning environment of the classroom, which is structured and ordered,

with instructional units that are meant to build upon one another in order to create a more complex whole (Freedman & Adam, 1996, 2000). Writing is a technique that professional communicators use to persuade companies to take action; yet, in the classroom, instructors provide writing assignments to students to facilitate learning. The degree of precision the student writers offer in their projects may be influenced in some way by the various aims being pursued. For example, offering an excessive quantity of detail in order to demonstrate that they have mastered a certain subject may demand students to include a higher degree of precision in their writing (Freedman, Adam, & Smart, 1994). (Freedman, Adam, and Smart, 1994). [citation needed] On the other hand, some habits, such as overgeneralization and misapplication, are characteristic of the writing process of an emerging author; nevertheless, they are not necessarily equal to purposeful instruction. Rather, these tendencies are symptomatic of a growing writer (Fahnestock, 1993; Romer, 2009b; Williams & Colomb, 1993). (1993); Fahnestock, J. (1993); Romer, 2009b; Williams & Colomb, 1993; and According to the findings of this study, students who wrote in this genre were able to transition from the aims of academic writing to those of technical writing. In addition, they could change their writing in line with the course requirements and the instructions provided in the assignment description. In addition, students who chose to write in this mode were permitted to adapt their work to meet the curriculum's demands and the requirements outlined in the instructions—provided in the assignment description. In addition, students were able to successfully make the shift from the objectives of academic writing to those of technical writing. Compared to the experimental group students, the students in the control group fared badly in these same areas. Additionally, it indicated that the students in the control group struggled more with audience awareness and the underlying structural criteria of certain genres.

The second study question investigated whether or not the therapy process was affected in any way, whether it was for the better or, the worse, by meta-discourse functions. The data showed that the academic year of the students and the broad text style had a significant influence. On the other hand, it was found that the gender of the pupils and the broad text type interacted with one another. The outcome that was arguably the most relevant about this second difficulty was the significance that students ascribed to various sorts of broad texts depending on the genre they were writing, most notably the cover letter and resume.

People assigned to this group produced employment materials that were, on average, more audience-conscious, deliberate, and edited than the materials produced by the control groups. This is compared to the people assigned to the control groups, which produced materials that the control groups produced. Although the ability to analyze audiences was stressed across all three of the teaching modules, the genre groups seemed to have the strongest relationship to the actual job materials. The following is a perspective written by a student in his second year of majoring in international marketing and is presented here for your perusal. The following are the aspects of the lesson that the student felt particularly emphasized their importance to him:

The arrival of summer ushers in an exciting period for many of us, as it heralds the prospect of job or internship opportunities. For many of us, this time of year is great anticipation. My experience producing a curriculum vitae has proven to be a very helpful educational opportunity for me, as it has enabled me to get a better grasp of the fundamentals required to successfully navigate the job market. The job materials assignment I have been given will serve as a model and guide for any potential employer I may apply for in the not-too-distant future. This is because the assignment will serve as a model for the job materials that I will need to submit. This is because the materials for the job assignment were given to me.

This participant was probably able to recognize the immediate relevance of this assignment because they had a job search coming up, and this observation may provide some insight into the reason why work materials, which arguably have less of a clear structure and approach than communications and procedures, were often better created. This participant probably could recognize the immediate relevance of this assignment because they had a job search coming up. Because this participant was going to be doing a job search shortly, they could likely perceive the immediate relevance of this task. These findings provide additional evidence to support the prior observations that students of this genre appeared to effectively shift from the goals of academic writing to those of technical writing. The prior observations were that students of this genre appeared to shift from the goals of academic writing to those of technical writing. According to the earlier findings, students of this type of writing seemed to move away from the objectives of academic writing and toward those of technical writing.

In addition, the job applications that women sent had mission statements and organizational structures written in style far more intricate than what men offered. This was especially the case when compared to the items provided by the guys. It has been demonstrated that female presenters chose more formal registers than male speakers (Finegan & Biber, 2001), which may explain why the findings of this study were different for the two genders. Students who were either in their senior year or in their sophomore year at the time the study was conducted had a greater ability to edit their texts than students who were currently in their junior year of school. Similarly, Boettger and Wulff (2014) found that college juniors typically use less formal grammatical forms in their writing than their peers in their sophomore or senior year of college. This was the case when comparing the writing of college juniors to that of college seniors. It was determined that this was the case. This conclusion may help explain the varied editing strategies discovered in this study's findings. To put it bluntly, the impact size of the meta-discoursal functions compared to the explicit treatment is not one that is substantial. Although the findings do not provide any data that can be considered conclusive, they can contribute to the ever-increasing interest in how social circumstances influence students' responses to writing and particular educational strategies such as explicit teaching. This interest has been growing steadily over the past few years.

#### **4.1 Limitations**

Even though a significant amount of focus was placed on the methodological design and the analysis of the initial quality of participants, one cannot escape the restrictions of having one's own set of constraints. This study is not immune to the constraints of its limits. During this study, which lasted for a total of sixteen weeks, the researchers wanted to find out what kind of an effect it had on the participants if they were only allowed to take one of three classes focused on specific genres. This restriction was in place so that the researchers could compare the results. The fact that the students were only exposed to the therapy for a limited time is presumably the root cause of any findings that did not meet the criteria for statistical significance. Similarly, the purpose of the so-called experiment was not to gauge the students' capacity to pick up new information throughout an extended period; rather, the objective was to assess the student's familiarity with various forms of literary expression. Because it was not a component of the research topic, determining the



extent to which students went on to apply these particular instructions in their future professional writing was not within the purview of this study and so was not one of its objectives.

#### **4.2 Future Research**

Within the framework of a technical writing workshop attended by students majoring in various disciplines of study, the goal of this study was to give first insights into how native speakers of a language respond to an explicit genre instruction. The findings lend credence to earlier research on academic writing and imply that it is beneficial to make specific instructional choices when teaching students who come from various backgrounds and have varying degrees of ability. First, this is because the findings suggest that teaching students with different levels of ability are beneficial. This is because the findings imply that it is to everyone's advantage to teach pupils who have varying degrees of competence. A longitudinal point of view should be utilized in any study that is carried out in the future to explore these upcoming difficulties. This tactic's objective is to maintain contact with the same group of individuals over a whole semester, through each writing class, and after they start working at their respective jobs. In addition, addressing the transference difficulties raised by North American genre theorists more effectively will be possible if research of the sort outlined above is carried out.

#### **4.3 Implications**

It has been demonstrated that explicit instruction is an efficient method; however, teachers still have the responsibility of implementing these strategies to encourage students to comprehend how texts develop, function, and impact the lives of humans. This obligation burdens teachers, who bear the burden of proving that explicit instruction is an efficient method. The fact that the students were given task descriptions pertinent to the real world appears to have been one of the aspects that the students very well received. In particular, the job materials assignment required both experimental groups to write a cover letter and resume for a position they already possessed the necessary qualifications rather than for a position for which they aspired to be qualified one day. This was in contrast to the assignment given to the control group, which required them to write these documents for a position they hoped to be qualified for one day.

In contrast, the assignment handed to the control group asked them to write these papers for a position they aspired to one day be qualified for. Specifically, they were to write these documents for a post at a university. It appeared to contextualize the writing tasks for the students who were learning the genre, which was helpful because it was combined with the explicit treatment. Students may have found it easier to shift from academic to technical writing styles with the help of this method. Teachers can also encourage their students pursuing several majors to conduct independent research into the technical genres linked with each of their fields of study as part of the framework of the study of technical writing in the classroom. This can be done within the context of studying technical writing in the classroom. Taking various technical writing classes simultaneously might be challenging, but this can help reduce some of those challenges. A framework that is supportive of the individual discoveries that each student makes is provided by this method, which is discussed in this article and comprises sessions that are first led by the teacher but transition into activities directed by the students.

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## **Appendix A**

Below is the general outline of the genre treatment

### **Pretest -- Week 1 (Genre & Control Section)**

- Administer writing pretest to both sections, ideally on the first day of class. I need unmarked, ungraded copies of both sections' pretests (20 mins)

### **Introduce Genre -- Week 1 or 2 (Genre Section)**

- Assign Hubert reading the class period before the lecture and In-class Exercise #1
- Lecture on genre—PowerPoint and notes relating to Hubert provided (20 mins)
- In-class Exercise #1 -- In groups, students will revise one genre example based off a given context (i.e., a formal wedding invitation is revised for a casual, Country-style audience). Groups informally discuss final product with the class. (30 mins)

### **Genre-Centered Unit - Week 3-4 (Genre Section)**

Please follow the major stages sequentially as you'll find they have a natural order. These stages should not all be completed in one class period; ideally, they should be taught over 3-4 different class periods. **Control class does not participate in the following instruction.**

#### **Modeling of Genre**

- Model the genre—audience, purpose, format, design, style, and editing—through he provided annotated examples (20 mins)
- Review the assignment description (10 mins)
- Discuss conventions and examples packet (10 mins)

#### **Joint Negotiation of Genre**

- In-class Exercise #2 - In groups of 2-3 members, students will construct an example of a



genre based of a given scenario. As a class, students discuss/defend their final model while the instructor acts as the facilitator (40 mins)

### **Social Implications of Genre**

- In-class Exercise #3 -- In groups of 2-3 members, students will evaluate 3-4 historical examples of the genre. Group members should note how the genre evolves (or decays) over time and reflect on how these changes will influence their independent construction of the genre(s) (30 mins)

### **Independent Construction of Genre**

- Students submit their final draft of the unit. I need unmarked, ungraded copies.
- **Appendix B**

Assessment scale and definitions for the student texts

	<b>+2 (Superior)</b>	<b>+1 (Strong)</b>	<b>0 (Competent)</b>	<b>-1 (Weak)</b>	<b>-2 (Incompetent )</b>
<b>Audience</b>	Excellent match of document to intended audience needs  An ethical approach to the communication situation	Adequate match of document to intended audience needs  An ethical approach to the communication situation	Some mismatches of document to intended audience needs  An ethical approach to the communication situation	Significant mismatches of document to intended audience needs  Questionable ethics	Failure to match intended audience needs  □ Unethical aspects
<b>Purpose</b>	States the intended purpose clearly	States the intended purpose mostly clearly	States the intended purpose, but not clearly.	States the intended purpose in a way that confuses the reader or is illogical.	Does not state the intended purpose

Structure	<p>Follows structural conventions for the genre</p> <p>Uses clear readings and transitions</p> <p>Arranges parts logically</p>	<p>Follows structural conventions for the genre</p> <p>Uses mostly clear headings and transitions</p> <p>Arranges parts logically</p>	<p>Follows structural conventions for the genre</p> <p>Uses a few unclear headings and transitions</p> <p>Includes a few minor illogical arrangements</p>	<p>Fails to follow some structural conventions for the genre</p> <p>Uses ambiguous or nondescriptive headings and transitions</p> <p>Includes significant illogical arrangements that cause difficulty in reading</p>	<p>Fails to follow significant structural conventions for the genre</p> <p>Fails to use headings and transitions successfully</p> <p>Arranges parts illogically</p>
Design	<p>Excellent match of design elements to document genre</p> <p>Effective use of design principles such as repetition, alignment, contrast, and proximity</p> <p>Clear, readable typography</p> <p>Excellent and ethical use of graphics</p>	<p>Good match of design elements to document genre</p> <p>Good use of design principles</p> <p>Clear, readable typography</p> <p>Good and ethical use of graphics</p>	<p>Adequate match of design elements to document genre</p> <p>Implementation of design principles in most areas</p> <p>A few problems with typography</p> <p>Adequate and ethical use of graphics</p>	<p>Poor match of design elements to document genre</p> <p>Poor implementation of design principles</p> <p>Significant problems with typography</p> <p>Poor use of graphics or graphics with questionable ethics</p>	<p>Failure to match design elements to document genre</p> <p>Lack of implementation of design principles</p> <p>Problems with typography that defeat usability</p> <p>Lack of required graphics or unethical graphics</p>
Style	<p>Clear and succinct prose</p> <p>Excellent matching of level of reality and technicality to audience</p>	<p>Almost always clear and succinct prose</p> <p>Good matching of level of formality and</p>	<p>Somewhat unclear or wordy prose</p> <p>Mostly good matching of level of formality and technicality to audience</p>	<p>Significantly unclear or wordy prose</p> <p>Clear mismatches of level of formality and technicality to audience</p>	<p>Unclear and wordy prose throughout</p> <p>Extensive mismatches of level of formality and technicality to audience</p>

	Gender- and culture-appropriate language	technicality to audience Gender- and culture-appropriate language	Gender- and culture-appropriate language	Some problems with sexist or racist language	Significant problems with sexist or racist language
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**Appendix C**

Statistical output from the MANOVA							
		Df	Pillai approx.	F num	DF den	Df	Pr(>F)
(Intercept)		1	0.81	327	6	450	< 2e-16 ***
GROUP		1	0.28	29	6	450	< 2e-16 ***
BROAD		2	0.23	10	12	902	< 2e-16 ***
GENDER		1	0.04	3	6	450	0.01 *
YEAR		2	0.08	3	12	902	0.00 ***
MAJOR		1	0.02	1	6	450	0.26
GROUP: BROAD		2	0.04	2	12	902	0.11
GROUP: GENDER		1	0.01	1	6	450	0.53
BROAD: GENDER		2	0.07	3	12	902	0.00 ***
GROUP: YEAR		2	0.03	1	12	902	0.24
BROAD: YEAR		4	0.05	1	24	1812	0.63
GENDER: YEAR		2	0.04	1	12	902	0.17
GROUP: MAJOR		1	0.02	1	6	450	0.27

BROAD: MAJOR	2	0.05	2	12	902	0.03 *
GENDER: MAJOR	1	0.03	2	6	450	0.03 *
YEAR: MAJOR	2	0.05	2	12	902	0.02 *
GROUP: BROAD: GENDER	2	0.03	1	12	902	0.30
GROUP: BROAD: YEAR	4	0.08	2	24	1812	0.03 *
GROUP: GENDER: YEAR	2	0.04	2	12	902	0.09.
BROAD: GENDER: YEAR	4	0.07	1	24	1812	0.10.
GROUP: BROAD: MAJOR	2	0.05	2	12	902	0.04 *
GROUP: GENDER: MAJOR	1	0.03	2	6	450	0.03 *
BROAD: GENDER: MAJOR	2	0.03	1	12	902	0.47
GROUP: YEAR: MAJOR	2	0.04	2	12	902	0.07.
BROAD: YEAR: MAJOR	4	0.06	1	24	1812	0.32
GENDER: YEAR: MAJOR	2	0.03	1	12	902	0.37
GROUP: BROAD: GENDER: YEAR	4	0.05	1	24	1812	0.64
GROUP: BROAD: GENDER: MAJOR	2	0.02	1	12	902	0.82
GROUP: BROAD: YEAR: MAJOR	4	0.04	1	24	1812	0.85
GROUP: GENDER: YEAR: MAJOR	2	0.03	1	12	902	0.49
BROAD: GENDER: YEAR: MAJOR	3	0.04	1	18	1356	0.34
GROUP: BROAD: GENDER: YEAR: MAJOR	2	0.03	1	12	902	0.34
Residuals	455					

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

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## **Resistance and Identity: A Postcolonial Feminist Study of Ismat Chughtai's Fiction**

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**Abstract:**

Postcolonial feminism has streamed out from the mainstream feminism in the latter half of the 20th century. It is a critique too and the reaction against the mainstream feminism. Postcolonial feminism deals with the social, political and economic marginalization of the third world women which has been overlooked and subsided by the European or mainstream Feminism. It disseminates the struggles and resistance of the “doubly marginalized” woman of the colonized nations. The postcolonial female writer believes that the feminist (mainstream) narratives have

failed to bring the overall issues of third world women in their discourse. The woman, according to them does not share the common identity globally and there is a deep sense of dissatisfaction among them with patriarchy, colonization, and also with the mainstream feministic narratives. Postcolonial feminism seeks to address colonial oppression and turns down the idea of ‘global sisterhood’ as propagated by Western feminism. Whenever one talks about the feminism or post colonialism, they restrict themselves either to the unfair treatment of patriarchal forces in the western and the oppression of the imperial powers. Further they never paid attention to the ground realities of race, ethnicity, coercion, and intimidation of postcolonial cum patriarchal culture of downtrodden and less educated women of underdeveloped nations. The major concern of this paper is to look into Ismat Chughati’s works in the lens postcolonial feminist. And an attempt to deconstruct the patriarchal culture by looking the socio- political and economic conditions of the women and by reconstructing the lost identity of third world women in her work.

**Keywords:** Postcolonial feminism, marginalization, mainstream feminism, colonial oppression, patriarchy, grand narrative, reconstruction.

Ismat Chughtai emerged one of the dominant and recognized literary figures in the Indian sub-continent. Her oeuvre has brought a new vision and created a new dimension not only in Indian literature but the world literature as well. Her art is the art of life’s sake wherein she attempts to revolutionise the Indian society in general and the women’s world in particular. Hegemony, resistance, revolt, identity and marginalisation are some predominant ideas and themes which Chughtai debates in her writing. Born in British India, Chughtai raises the voice of doubly marginalised women in the sub-continent who is not only suppressed by her own people but also by the colonial powers. Chughtai through her narratives demonstrate how the women in general and Muslim women in particular have been hegemonized by the patriarchal and colonial forces. Identity which is very diverse and complex creation in the social and political discourse has been come under question by the author. She through her characters attempt to show the resistance under the colonial regime against the male-dominated society. In her story *The Crooked Line* (1948), she portrays the highly disturbing experience of the marginalised masses. The character Shamman who symbolises Chughtai’s own life and, in this way, author uses Shaman as her own mouthpiece. She revolts, resists and hits back to the colonial patriarchal system which has taken everything under their control. She is an innocent child who

turns to be rebellious and hyperactive when she is being ignored and marginalized. She never succumbs to the lies of other because “Shaman felt as if she had been orphaned. She was feeded by wet-nurse Unna and was taken care by Badi Aapa” (Kesharwani 43).

Portraying the character of Shaman, Chughtai indirectly slams the mainstream feminists who has been side-lining the third world women and overlook their marginality and suppression which is harsher and crueller than the oppression which the western woman face. The following lines show the male-dominated oppression and the colonised women’s resistance when the narrator says:

Manjhu cursed and scolded her...Shamman had been experiencing a desire to hit people. Suddenly, for no apparent reason, she was beset with this urge to hit someone, to knock and crush somebody with her chubby fists...She felt the urge to strike her doll. First she gave it a few mild cautionary slaps, but then she lost control and began pummelling and kicking the doll with her hands and feet. Soon she was shredding it with her teeth and nails, behaving as though she were face to face with a menacing adversary. (11)

The double marginalization can be seen when Shamman is being treated as other and ignored. She feels emotional crisis and mental trauma because the worst experiences which she gets from her surroundings. She feels all the time isolated and dejected. It is the reason she turns out to be rebellious against this male oppression and feels that “she would be seized with a desire to strike somebody” (9). The author in her stories portrays the character of the doubly oppressed Indian women who fears like Shaman and does find any way to express herself. The door of women liberation of the West seems also closed for such voices because they are not being heard there. Like Shaman who “wanted to wipe out this frightful mark and its place new line, a neat and calm line” (249). A sense of uncertainty frequently permeates an Indian woman's identity. This is due to the fact that she is denied roots, even within her own family, in patrilocal, patriarchal society like ours. Much of India considers daughters to be paraya dhan, an alien’s wealth and excluded from full membership and their natal families after marriage. Even in her marital home, her rights are precarious. She might be easily evicted from that house in the event of a marital breakup.

In her another novel *Masooma* which published in 1961 portrays the causes and consequences of social set up and the interrelation between the different members of society with each other. The economic cause is one of the major causes shown by the author during the time of colonial rule and how the woman becomes the victim and turns into a harlot. Chughtai exposes the male hypocrisy and the grand narrative which has portrayed woman a dangerous creature and the blot in the society. It is not woman's choice that she would chose the profession of prostitution but it is the male-dominated society which has compelled her to turn into this profession. The narrator says "Rent for four months, salaries for servants... amount owed to the shopkeeper Electricity bill... The bill from the washer man... School fees for your children... Water rises above my head, drowning me. I float up and take a look. My sixteen-year-old daughter... skipping rope with her friends." (1).

The above passage indicates the different issues and matters the woman has to face and her responsibility in the colonised male dominated society. The darkest narrative of the novel reflects the colonised oppression of the woman's trading women's body and gender inequality, according to the author, was at the pinnacle during the time of colonial era. The woman in the *Masooma* experiences double and sometimes triple marginalization. The author portrays the darkest and cruellest side of colonial rule and the iron-fisted commandments of the patriarchy. The hard-core association between colonialism and patriarchy has kept the woman under their thumb and she is deprived of her basic freedom. Chughtai vehemently slams the patriarchal nature of the society. One of the author remarks: "In fact, patriarchy has the potential to dehumanise the other half of history... Patriarchy operates not only at the personal but also at the political levels; there is a serious interaction between private matters and the various power structures that coexist in society (qtd in Rathore 121)."

Masooma as beautiful and young girls bears the grunts of patriarchy and its unbearable treatment which is delineated in a great detail in this narrative. She is silenced and oppressed by the colonial patriarchal forces which are wholly and solely responsible for her marginalization. Her life takes a worst turn when she is being sold off and then she passes from one person to another, and was christened Nelofar "whose Bismillah was celebrated when she was four... who when she read the Sallam made listeners weep that same Nilofar was now beginning worse than the washer-women in uttering filthy oath" (70). Woman who always especially in the colonial period became the worst victims of the male subjectivity failed to



raise their voice. Chughtai narrates the tale of a woman who defines her terms in relation to the male needs in the society. Her social role and position in society is also assigned by male-dominated society. Woman is not being looked as an autonomous being which is free an autonomous but is and was dependent on other beings. Agarwal remarks “During her childhood, a woman must rely on her father; during her youth, she must rely on her husband's near kinsmen in default; if she has no paternal kinsmen, she must rely on the sovereign.” (Qtd. in Aggarwal, 196).

Not only *Masooma* but Chughtai's every narrative reveals the inner consciousness of the women characters whose lives revolve round their dreams and aspirations and they dependent on them. She emphasises the violence created by colonialists and patriarchs and reveals a concern with the theme of anxiety, predicament, and anguish caused by threats to individual identity, and in relation to reality, her characters find this real world too insensitive, unpleasant, and complex. There are intense issues regarding the protagonist's and their state of predicament which they are experiencing in their daily routine. The women characters of Chughtai's fiction aspire for freedom and self-identity from the male hegemony and colonial oppression

All women characters of Chughtai need freedom and justice to her personality and to her individuality which the existing patriarchal setup with its uneven power division does not grant her. They were as Feroza Jussawalla puts in her poem “Fractured”:

None will hold women

Broken and fragmented

Afraid to touch

Cracked glass,

Like shards of crystal glassware

Dropped in the deliberate abandonment

Of betrayals, wrought by callous men.

x

x

x

Grief is painful to contemplate

In purple pensiveness.” (182)

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## How to Teach English Grammar Effectively

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All languages made use of by human beings in order that they can communicate either in speech or in black and white possess their own grammars. Whether it be one's native language or second language (hereinafter referred to as the English Language), it must be having its grammar. It is like a flit-gun and its grammar is its plunger, and it is the plunger that does set and keep the flit-gun in operation. Wherefore the grammar of a language cannot be thought of as autonomous of the language. Rather it should be said that a language and its grammar are integrated and of it there is no doubt at all. This research article shall wherefore be focusing on how to effectively teach the grammar of the English language.

**Keywords:** English Grammar, Teaching, Learning

It is being found that the most controversial phenomenon in the teaching of English which is being learnt as a second language is the teaching of its grammar. While some opine that the grammar should be taught and its teaching is fruitful, others consider the teaching of the same to be of no use. Those who support the teaching of the grammar of the English language at the time of the teaching of the said language as a second language hold that if the learner of English as a second language knows its grammar perfectly well, he can speak in English appropriately and also he can write in the language correctly. On the other hand, those who support the teaching of the grammar of the English language at the time of the teaching of the said language as a second language hold that it may so happen that the learner of English as a second language who knows its grammar perfectly well will fail to speak in English appropriately and also, he

will fail to write in the language correctly. The former also say that it can be found that people who do not know much of the grammar of English can speak and write correctly and appropriately. But the teaching of the grammar of a language becoming learnt cannot be neglected because of its myriad pivotal. Knowledge of rules helps one monitor language production, oral and written. Of two users with very similar competence in language it is the careful user who generally succeeds better. This is mainly because he uses his knowledge of rules to i) stay away from incorrect use and ii) avoid using aspects/elements of language that he is unsure of. Grammar thus serves as a self-correcting mechanism, although it may also go against the kind of risk-taking which promotes fluency. Knowledge of essential grammar is necessary for the good use of a dictionary. Such knowledge has become indispensable for users of learner's dictionaries . . . which now offer much fuller and more reliable information not only on word meanings but on the grammatical and pragmatic behaviour of words. Especially for grown-up learners, knowledge of grammar builds confidence in their use of language. It also helps them spot, explain and root out errors. For teachers who seek support in the findings of empirical research, studies of bilingual classrooms have shown that even pupils who learn in immersion-type situations (where the foreign language is the medium of instruction), essential grammar does not get learnt until it is taught consciously. Based on a number of such studies done over more than a quarter century in Canada, Merrill Swain (1995), for example, concludes that 'immersion weaknesses clearly relate to deficit in their (the learners') grammatical competence and vocabulary knowledge rather than to discourse aspects of performance. Even rich and prolonged exposure without specific attention to grammar thus fails to guarantee correct use of language. Support for the view that focus on form (that is, on aspects/elements of grammar) pays rich dividends also comes from a number of empirical studies done (e.g. Long and Robinson 1998, Spada 1997, Doughty and William 1998) on the impact of intentional as opposed to incidental learning. (Tickoo 165-66). So, now, it is crystal clear that the teaching of the grammar of English during the teaching of it as a second language is a must. If the learner of English as a second language wishes to have mastery over the language, he has no other alternative but to aptly learn its grammar consciously.

### **The Effective Ways**

It is very important to note that if English grammar is not appropriately taught, learners will fail to learn it, thereby failing to master the English language. It is really a surprise to find that

after having been taught English grammar for a very long time, the majority of the learners are not able to produce their English without innumerable grammatical error. The reason lying behind their being unable thus is they're not being taught the grammar communicatively. They have simply learnt by rote a lot of grammatical rules without using them practically. It indicates that it is not that English grammar is not necessary for learning English as a second language. Rather, it is definitely necessary, though functionally of course. To illustrate this point, if the learner is taught all the English Tense Rules not contextually but theoretically, he cannot practically make use of English adeptly. But it does not at all mean that the teaching of these rules is not necessary. Rather it needs to be taught obviously but contextually. As not teaching something and teaching something contextually are not certainly one and the same phenomenon, not teaching English grammar and teaching English grammar are not one and the same. Irrespective of its being one's first or second language, a language cannot be accepted if it greatly violates its grammar completely. Nor can the same become intelligible if it extensively violates its grammatical rules. Hence, one's speech or writing is bound to necessarily follow the grammar of the language which his speech or writing is in. When one acquires one's native language, he does subconsciously acquire its grammar. It happens so automatically that one need not put extra efforts into action in this matter. But when one learns a language as a second language, one has to learn its grammar. It can hence be safely stated that whenever English as a second language is taught and learnt, its grammar must be taught and learned. It is, beyond the shadow of a doubt, quite essential in this case. In other words, the teaching of the grammar of the language to one whose native language is that language is less important than the teaching of the grammar of the language to one that is learning the language as a second language. Of the many effective ways meant for the purpose of teaching English grammar effectively, those, that are five in total, to be discussed in brief in this paper are contextual teaching of English grammar, inductive method of teaching grammar, meaning-focused instruction, priority-of-fluency-over-accuracy-based teaching of English grammar, and contrastive way of teaching English grammar. It is often found that if English grammar be aptly taught via these ways, it does result in enabling the learner to effectively make use of the grammar to a great extent whenever and wherever he needs to apply it, which he is not able to do if not taught thus. The following is the delineation of the said effective principles, which are most commonly made use of:

English grammar should contextually be taught. While teaching listening, speaking, reading and writing, the grammar needs to get taught. The teaching of these four skills can very easily invite contexts which can help the learner learn various grammatical rules practically, which is the need of the hour. Teaching the grammar in isolation deprives the learner from observing how it works in the language. It should aye get taken care of that the target grammar rule must be frequently used in the material which he is going to contextually learn the same through.

1. To illustrate, a student is told to read a passage having a number of sentences in the Present Indefinite Tense from his English textbook. After he has read this, he is, after becoming informed of the Simple Present Tense, asked to find out those sentences written in the tense. Then he can be asked to write some sentences using this tense.
2. English grammar should inductively be taught. To teach it inductively, the teacher will provide the learner with contextualized examples consisting of the grammatical rule which he wants to teach him and the learner is expected to learn that rule with the help of those examples. In other words, teaching English grammar inductively means teaching it by rendering the learner a number of examples which shall be consisting of the form or structure or pattern he is supposed to learn, thereby leading him through guided instruction to deduce the said form or structure or pattern on his own. The teacher shan't in such case tell the learner straightforwardly at the beginning about the same. For instance, suppose that the teacher wants to teach the learner the present progressive aspect. Now the learner will be first given a contextualized paragraph which contains a lot of sentences in the present progressive aspect. Next the learner will be told that the sentences are in the present progressive aspect and thus he is expected to find out the pattern exclusively meant for the present progressive aspect.
3. The focus must be not on forms at the cost of meanings but on forms through meanings. Because interesting meaningful activities can enable the learner not only to learn but also to acquire the grammar of the target language, i.e., the English language. In this way, the grammar can be learnt both joyfully and fruitfully. It is observed that the learner can learn a great amount of it if he is to learn it through activities related to his real life. The activities need to be meaningful because if they are not meaningful, the learner will fail to find any reason lying behind accomplishing them. Also, if the

activities are meaningful, the learner will find their being related to his real-life situations. It will encourage him to do the activities, thus enabling him to learn the targeted language grammar via using it. In other words, it is using in order to learn and not to learn for using. To illustrate, a student is given and asked to complete a task to complete which he needs to make use of English grammar rules. The task is complaining to the competent authority because of too frequent load-shedding. Thus, the very task related to his real-life situation, for such a situation may arise anytime in his real life. Thereby, this meaningful task can teach him English grammar rules.

4. Fluency should be followed by accuracy. If the vice-versa takes place, it can extensively mar the desire of the learner to learn English grammar. Errors need to be considered a positive sign in the course of learning the grammar, natural, and indispensable. Also, when errors ought to get corrected, it should be done gently and in a nonthreatening way. For example, if the student says, 'I have done the work,' then the teacher may correct this error by having the student to self-correct it or by recasting this error, i.e., by correctly repeating what has incorrectly been said by the former.
5. The teacher should make attempts to compare and contrast the grammar of the native language of the learner with the grammar of the target language. Because if it is done, it stands against the notion that the learner's native language negatively affects his learning the grammar of the target language. There can be many grammatical rules of the target language which can be correlated with many grammatical rules of the native language of the learner. It will motivate the learner to a great extent to easily learn many grammatical rules of the language which he is learning as a second language.

### **Conclusion**

In fine, grammar is not the destination. It is the vehicle which will help us to reach the destination. English grammar will thus surely help us in gaining mastery over English as a second language and therefore it should not be neglected at any cost. But it should definitely be kept on the tablet of the memory that it is meanings and not forms which should be emphasized. Mere knowledge of grammatical rules cannot work. It has been observed many a time that the majority of those that are taught English grammar through the ways mentioned above are capable of applying it in their day-to-day activities when needed.



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