



The effects of word processing on the deep revision skills of selected developmental writers  
by Shelley Marie Ellis

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education  
Montana State University

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Abstract:

This research investigated whether Montana State University's population of developmental writers, when provided access to word processors and accompanying skilled instruction, would achieve deep revision in their writing.

The problem of the study was to discover, using holistic readers/ graders and Basic Writing 001 students' writing samples, whether deep revision improved on drafts produced by hand as measured against drafts produced using the word processor.

The population of this study included MSU's developmental writers, defined as US citizens or permanent residents working on a first bachelor's degree, i.e., neither of the student's parents nor guardians had a bachelor's degree; low income; and/or persons with disabilities, including hidden and/or learning disabilities. The students were also often low-skilled, speakers of a native tongue other than English which they use in their homes, and/or possessors of strong negative attitudes toward writing.

The procedures in the study included the appropriate identification of a population, a systematic method for measuring independent variables, and a systematic method for obtaining information concerning whether there exists a significant difference with regard to deep revision skills on final scores between drafts produced by hand and drafts produced using the word processor.

The data indicated, first, that students who handwrote their work scored significantly lower than students who word processed their work; the use of a word processor positively affected the quality of deep revision. Second, students younger than 25 years of age performed significantly better on their word processed work than did students 25 years of age and older. Third, it appeared to make no significant difference whether a writer was male or female insofar as that individual's final mean scores on either handwritten or word processed work; gender played no role in successful revision. And finally, it made no significant difference whether a writer was Caucasian or non-Caucasian insofar as that individual's final mean scores on either handwritten or word processed work; race played no part in whether or not a developmental writer can compose well or poorly, regardless of the tool.

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This thesis has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies

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## ABSTRACT

This research investigated whether Montana State University's population of developmental writers, when provided access to word processors and accompanying skilled instruction, would achieve deep revision in their writing. The problem of the study was to discover, using holistic readers/graders and Basic Writing 001 students' writing samples, whether deep revision improved on drafts produced by hand as measured against drafts produced using the word processor.

The population of this study included MSU's developmental writers, defined as US citizens or permanent residents working on a first bachelor's degree, i.e., neither of the student's parents nor guardians had a bachelor's degree; low income; and/or persons with disabilities, including hidden and/or learning disabilities. The students were also often low-skilled, speakers of a native tongue other than English which they use in their homes, and/or possessors of strong negative attitudes toward writing.

The procedures in the study included the appropriate identification of a population, a systematic method for measuring independent variables, and a systematic method for obtaining information concerning whether there exists a significant difference with regard to deep revision skills on final scores between drafts produced by hand and drafts produced using the word processor.

The data indicated, first, that students who handwrote their work scored significantly lower than students who word processed their work; the use of a word processor positively affected the quality of deep revision. Second, students younger than 25 years of age performed significantly better on their word processed work than did students 25 years of age and older. Third, it appeared to make no significant difference whether a writer was male or female insofar as that individual's final mean scores on either handwritten or word processed work; gender played no role in successful revision. And finally, it made no significant difference whether a writer was Caucasian or non-Caucasian insofar as that individual's final mean scores on either handwritten or word processed work; race played no part in whether or not a developmental writer can compose well or poorly, regardless of the tool.

## CHAPTER 1

## INTRODUCTION

Any research which proposes to examine the relationship between developmental writers and the use of word processing --that is, whether using a computer to compose can improve student writing skills--must necessarily examine in general terms the issue of that specific technology as it is related to the acquisition of composition skills. In other words, it is important to think about how developmental writers use such technology; whether, as word processing technology rapidly develops and is utilized by writers, developmental writers are missing out; and if the cresting tidal wave of computer applications will swamp these often technologically maladroit users.

As early as 1916, John Dewey envisioned the classroom as a vehicle for social change, emphasizing ways in which classrooms could foster the cooperative and community-building competencies he believed necessary for inclusive and participatory democracy. However, it is no secret that many of today's citizens have been rendered powerless by the computer revolution, which may be said to have begun in higher education when personal computers invaded the academy in large numbers beginning in the early 1980s (Faigley, 1997). A decade later, in 1990, an Associated Press national

poll of 1,002 adults taken by ICR Survey Research Group of Medi, Pennsylvania, found that 46% of those responding say they are being "left behind" as technology develops; what they are most lacking in order to better keep up, they say, is knowledge and money.

The term "at-risk" is nowhere more apropos than when we, the computer literate, speak of the growing ranks of people pushed aside by technology's march. Says Ramon Morales, executive director of Playing To Win, a computer training center in Harlem, "If you don't have an opportunity to learn, to have access to the technology, what invariably will happen is . . . a two-tiered society." One tier will be made up of proficient technology users located for the most part in the business and university sectors; the other will consist, simply, of the technologically disenfranchised and therefore politically marginalized. Obviously, our academic world has undergone a powerful change since the days of Daniel Chandler, who recalls how, long ago, Martin Heidegger "deplored the proliferating use of the typewriter" because it "snatches script from the essential realm of the hand" (Chandler, 1994).

Clearly, many have been abandoned in our technological rush toward learning electronically, sometimes for economic reasons, sometimes because technologically maladept students --those occupying the lower tier--simply have no access to computers, and sometimes because the university power elite has labeled developmental students inept or deficient. DiPardo (1993) states this issue in stark terms:

we [in higher education]. . . wonder at the audacity of institutional good intentions, at policies and programs that promise to cherish diversity and promote the academic success of these [developmental] students--often in the absence of any fine-grained understanding of who they are, what their past and current struggles involve, and what sorts of support might help them. We need to close the recalcitrant gap between good will and substantive action. (p. 4)

These disadvantaged students' troubles are multiplying as the cost of living outside the electronic world spreads from merely having fewer job opportunities to sweeping social and cultural disadvantages. Persons who are skilled at the art of communication--signified frequently in both the world of work and of academia as writing--can participate in the "expansion of their worlds," according to Minock (1997), director of only one of hundreds of Writing Across the Curriculum (WAC) programs at universities across the country. But persons who are not proficient at the art of communication embody the downside of the electronic age--that our elegant technology threatens to victimize rather than revolutionize.

Nevertheless, a committed enclave of composition teachers throughout the landscape of higher education who use the prevailing technology are finding spaces in their writing classes where institutional power can be challenged and where students who have been labeled as deficient can succeed (Faigley, 1997; Gaudiani, 1996). Recent research indicates

that we are becoming thoroughly accustomed to computers, that the perceived benefits of computers are outweighing the awe-inspiring aspects of the technology--mainly fear and anxiety (Dupagne & Krendl, 1992). This is good news to those writing instructors who feel they teach something valuable for their students' lives and who wish to assist their developmental writers toward innovative and productive ways of acquiring their baccalaureate degrees.

Traditionally, junior high and high school were the places where most of today's undergraduates first learned about computers; many 18-year-old freshmen were manipulating hypertext in the second grade. What happens, then, if one graduated high school as recently as the 1970's, before the exponential growth of computers, and is entering the university for the first time? Clearly, that individual may have limited, if any, knowledge of the basics of computer technology, let alone any other kinds of core technologies. Frequently, such an isolated person will seek out the services of Advance By Choice (ABC) at Montana State University-Bozeman, a resource and tutorial department designed to assist students toward the goal of graduation; that student may, then, find himself or herself eligible, as a "developmental writer," to enroll in one of MSU-Bozeman's Basic Writing 001 courses, where the use of word processors is expected and encouraged.

Research concerning the intersection of developmental writers and word processing is still new and findings remain unsettled, but computer-aided instruction in the university

classroom, though in its infancy, appears to be significant at all levels of developmental composition instruction (Gerrard, 1993; Pennington, 1993). However, the literature is fraught with complex and often contradictory findings. One piece of research touts the word processor's ability to entice developmental writers into making major, deep revisions; the next essay bemoans "smokescreen" revision, or the tendency to make only surface changes, as the word processor's major downfall; still another article will tell us that the traditional linear three-stage model of writing, i.e., prewriting, writing, and revision, is outmoded. In spite of such complex and sometimes contradictory information, it appears that developmental writers' attitudes toward composition, particularly revision, improve noticeably when they write with word-processing packages (Gay, 1990; Hunter, 1984; Adler-Kassner & Reynolds, 1996). This is encouraging news for students who not only have poor writing skills but have been convinced they have few ideas worth sharing.

At least one early idea about the word processor as a writing tool--that it is a "miracle machine" capable of improving student writing independent of other variables--has indeed been debunked. Studies continue to show that when left alone, developmental writers are not likely to take full advantage of word processing technology (Cross, 1990; Cullen, 1988; Hunter, 1984; Nichols, 1986). Nevertheless, if a trained teacher/coach is part of the writing milieu and appropriate instructional strategies are utilized, it is

possible for a developmental writer to achieve far more than the traditional surface revision--that is, the more conventional type of modification where the student writer corrects only spelling and the occasional sentence fragment or other prominent grammatical error. With the word processor as a tool, functional keyboarding skills, a committed teacher/coach, and flexible and user-friendly writing software, the student may accomplish what is known as deep revision, or the successful modification of a piece of writing on the more complex levels of internal paragraph development and whole essay revision. In other words, the writer may "re-see" his or her writing--the authentic meaning of "re-vision."

Then, perhaps, developmental writers, who regard writing as "a line that moves haltingly across the page, exposing as it goes all that the writer doesn't know" (Shaughnessy, 1977), will begin to regard academic writing as an opportunity to express themselves, to communicate, to make meaning of their college experience and of their lives.

#### Statement of the Problem

The problem of this study is to discover, using trained holistic readers/ graders and Basic Writing 001 students' writing samples, whether developmental writers' mean deep revision scores will improve on final drafts produced by hand as measured against final drafts produced using the word processor.



### Need for the Study

Currently, little of the research conducted on the effect of the word processor on revision has involved either the adult developmental writer or the overall quality of revisions. Most research has involved very young writers (either elementary or junior high school age) or able writers (either professionals or successful college writers), not college-age developmental writers. Moreover, that research has focused mostly on attitudes toward writing in general and/or particularly narrow kinds of revision rather than on the quality of deep revision (McAllister & Louth, 1988; Kinzer & Leu, 1996).

If instructors at the university level expect their students to write competently, then it is to some extent up to those instructors to enable students toward that goal. It is also important to educators to know whether the technology available to them will do what the sweeping generalities of the software packagers often say it will do. Although many students are already capable of manipulating computer technology, or are able to bring themselves up to speed independently, many are not. Financial constraints as well as anxiety and a pervasive fear of technology often prevent this disenfranchised population from entering into a true community of discourse. As Hull (1988) states, "This population of students, who for whatever reasons are lagging behind the rest of the university population, must be helped toward competence."

One reason these students lag behind their peers may be explained by the work of Murray (1980), who found that competent writers spend approximately 85 percent of their writing-task time on prewriting/prethinking and 14 percent on revision, leaving only 1 percent for actual writing or drafting. Poor writers, on the other hand, spend almost all of their writing-task time on the revision stage. In other words, "incompetent" writers try to elaborate on ideas they haven't yet even carefully selected or organized in any meaningful way. They tend to pick at their writing, wasting time on correcting spelling errors or exploring the software's thesaurus for more attractive words, rather than giving their attention to issues of deep revision.

Mina Shaughnessy, an early researcher in the area of developmental writers, takes some pains to enumerate why it is important to help developmental writers achieve minimal competency. She talks about

. . . the reality of academia, the fact that most college teachers have little tolerance for the kinds of errors basic writing students make, that they perceive certain types of errors as indicators of ineducability, and that they have the power of the F. [Also], there is the urgency of these students to meet their teachers' criteria, even to request more of the prescriptive teaching they have had before in the hope that this time such instruction might "take." (1977, p. 122)

The fact that prescriptive writing, more colloquially known as "follow-the-handbook-rule" writing, often never "takes" widens even more that gap between the successful student and the failure, the one who has never been able to "master the dominant code" (Grimm, 1997). Although developmental students have rich and varied life experiences, their writing is typically held in low esteem by academicians because their essays normally have no sense of audience, poor support for a thesis, faulty organization, and defective sentence structure. These limitations bring them into direct conflict with their college professors, who expect them to conform to the constraints of academic discourse (Posey, 1994, p. 232).

In order to shed light on this dilemma, many studies have addressed the phenomenon of developmental writers using word processors to compose classroom assignments, but those studies have frequently been too brief or too simple, or they have dealt exclusively with elementary, junior high, and/or high school populations or with already competent writers, but generally not with developmental writers at the college level. Clearly, more research is required which examines college-age developmental writers who write with word processors. Research is also thin in the area of the examination and interpretation of the collaborative behavior of college-age developmental writers who have not historically seen themselves as belonging to a community of writers (Hull, 1988). But developmental writers need more than access and introduction to a cut-and-paste operation,

since if left to their own devices, they simply won't use the equipment (Cross, 1990; Cullen, 1988; Hunter, 1984; Nichols, 1986); they will use it as a glorified typewriter.

Also needed is an actual change in instruction, a movement from the traditional lecture-and-recitation format toward a coaching-facilitating-collaborating model. Developmental writers require help in developing an understanding of the dialogic nature of writing--that the response of an audience must be the key to mediating one's writing (Allen, 1997), and that writing ought not to occur in a vacuum but rather in a spirit of collaboration among peers, with the teacher acting as a knowledgeable coach rather than as an omnipotent pedagogue. Two decades' worth of researchers have noted that word processing encourages collaborative efforts more than does handwritten composition. The potential, then, is greater for improving student compositions if teachers will allow students to discuss their work as they use computers to write (Rodrigues & Rodrigues, 1986). Clearly, a competent and committed teacher can help a novice writer move from being a knowledge-teller to becoming a knowledge-transformer by using the word processor as a tool in his or her classroom.

#### Theoretical Framework

It is becoming increasingly important that teachers of developmental writers understand the impact that word processors have on the composition skills of their students.

More and more educational institutions are realizing the possibilities of technology that are available to them through the use of computers; consequently methods of instruction are undergoing ponderous but impressive changes (Allen, 1997). For example, as personal computers have become enormously more powerful in memory and speed, they are challenging the relationship between familiar developmental writing pedagogy and the new technology which redefines it. The lecture-and-regurgitation format is finally giving some ground as distance learning pedagogies and the theory and practice of the "virtual university" enter our academic discourse. And with the coming of the Internet and the World Wide Web, another major renegotiation of developmental writing pedagogy and teacher authority is in progress (Faigley, 1997).

Developmental writers, far more frequently than their proficient peers, write in a linear fashion: they prewrite, they draft, they revise. However, when they use a word processor to compose, do they still write in this linear way? Much research in this field appears to indicate that the developmental writer does not compose in that manner when using the word processor, that he or she spends far more time on the third step of that process--revision--at the point when he or she should be spending time drafting (Flower, 1986). So for the developmental writer, revision essentially becomes "drafting," a hopeless situation in that it is impossible to revise that which does not, essentially, exist. If such is the case, we need to know if that linear theory of

writing is, indeed, the best way for a developmental writer to compose and if the word processor enhances or detracts from that process. Most current pedagogical theory revolves around the idea that revision is a key component in successful student writing. Though the findings are mixed, it appears that especially for college age developmental writers, the word processor powerfully enhances deep revision skills.

The equivocal nature of the findings in this field can be partly, if not entirely, attributed to inadequately designed studies, particularly regarding length of time (most are too short); the subjects' poor keyboarding skills (many studies do not control for this contaminating variable); and the students' limited experience with the software they're asked to use (most students are struggling far too much with the intricacies of the software to pay focused attention to the substance of their compositions). Obviously, the mere presence of a two-thousand-dollar PowerMac is not enough to inspire developmental writers to improve their revision skills, particularly since these individuals are normally rather linear in their writing behaviors; because they may simply bring their unproductive old habits to a new writing environment; and because they are fearful of the technology. It is also true that in many respects, any pedagogical notion might temporarily provoke good writing, if an intriguing context were also provided (Sirc, 1997), regardless of the presence or absence of a fancy word processor.

Theoretically; however, practice still makes perfect in the field of composition as it does in other areas; therefore, it makes sense for research examining improved writing skills to take place utilizing an adequate number of writing samples over a sufficient period of time of time with students who have been provided competent instruction in order to achieve proficiency with their word processing software. Teachers of developmental writers, like all other educators, regard writing proficiency as a compelling representation of an important academic gatekeeper; it follows, then that developmental writers should be able to use the "media of literacy" (Faigley, 1997) as it becomes more and more available to them.

#### Questions to be Answered

First, although it was not stated as a formal hypothesis to be tested, the researcher wished to discover whether the order of writing prompts received--i.e., whether a student who received a "write by hand" prompt before a "write using the word processor" prompt, or vice-versa--would indicate a difference in final mean scores.

The following major question was then addressed in this study:

(1) Was there a significant difference in mean deep revision scores between final drafts produced by hand and final drafts produced using the word processor?

The subsequent three questions have to do with the independent variables of age, gender, and ethnicity:

(2) Was there a significant difference in the word processed final mean scores and the handwritten final mean scores between those students aged younger than 25 and those students 25 years and older?

(3) Was there a significant difference in the word processed final mean scores and the handwritten final mean scores between male students and female students?

(4) Was there a significant difference in the word processed final mean scores and the handwritten final mean scores between Caucasian students and non-Caucasian students?

#### General Procedures

The procedures in the study included the following: the identification of a population (MSU-Bozeman's developmental writers enrolled in two sections of Basic Writing 001 during the Fall semester of 1995), a systematic method for measuring independent variables, and a systematic method for obtaining information concerning whether there exists a significant difference with regard to deep revision skills in mean scores between final drafts produced by hand and final drafts produced using the word processor. A detailed discussion of the procedures is delineated in Chapter 3.

The scores on 26 handwritten rough drafts and 26 revised handwritten samples and 26 word processed rough drafts and 26 revised word processed samples were the dependent variables;



the independent variables were age, gender, and ethnicity. Students in two different sections of English 001 during Fall semester of 1995 turned in a total of 26 handwritten and 26 hand-revised writing samples, and then 26 word processed and 26 word processor-revised writing samples, for a total of 104 complete data sets.

The control/experimental group was the same; therefore, this research did not concern itself with the process of matching pairs of students and/or controlling for every potential variable; the specific variable this study concerned itself with was deep revision and its relationship to handwritten as opposed to word-processed writing.

It was important to address the variable of teachers' comments on student writing. In other words, if a teacher were allowed a free hand to comment as he or she saw fit on a student's rough draft, such comments might range anywhere from "Good work! Develop your ideas a little bit more and be attentive to grammar and mechanics, please" all the way to what composition instructors commonly call line editing, i.e., the close examination and commenting upon each and every word, sentence, and paragraph in a draft. It is neither feasible nor ethical to interfere too critically with a teacher's historically comfortable way of responding to student writing. However, for the purposes of this study, the Basic Writing 001 teachers were asked to limit their comments to those addressing development, focus, organization, and issues around grammar and mechanics. All of the instructors agreed that these are the areas they would

normally respond to in any case, regardless of this study's rubrics dealing with these selfsame criteria. The instructors were asked not to line edit their students' work, as well; instead, each instructor responded in the margins of the draft, using arrows to clarify location, next to places the student might develop ideas, focus a thesis, reorganize details or support material, or self-edit for grammar and/or mechanics. In this way, the potentially contaminating variable of dissimilar teacher responses was controlled for as well as can be expected in an area of study involving extremely subjective teacher behavior regarding student writing.

A final variable having to do with keyboarding competence was addressed in this research. Many students in the general university population do not have good keyboarding skills, but many others do. Developmental writers are no different in this regard. In an attempt to level the playing field for the two sections under investigation, a one-hour orientation to the software being used in the course (ClarisWorks) was provided to each section of Basic Writing 001 (see Appendix A, "How to Use Claris Works" Instruction Guide) and none of the 26 students was asked to write for a grade until at least three weeks into the semester. During those three weeks, students with poor keyboarding skills spent several hours using a program called "Typing Tutor" until they could reach a proficiency level of approximately thirty words per minute. After this time, it was felt that each student possessed sufficient keyboarding

proficiency to make him or her reasonably equal to the other students in the class.

Three one-way analyses of variance and a t-test for individual samples were performed to test the hypotheses to compare the final mean deep revision scores on word-processed versus handwritten student writing samples. Those results are presented in Chapter Four.

### Limitations and Delimitations

#### Limitations

(1) This study was limited to those students enrolled in Fall semester's 1995 Basic Writing 001 course who also matched the descriptive criteria for eligibility utilized by Montana State University-Bozeman's Advance By Choice department.

(2) The location of the study was limited to the Macintosh computer lab in Hamilton Hall, which also functioned as the classroom for Basic Writing 001.

(3) Student computer use was limited to twelve terminals in the computer lab, one for each student if the class were fully enrolled.

(4) The independent variable in this research was limited to the word processor and its accompanying software (currently ClarisWorks 4.0), both of which are the same for all students enrolled in the Fall semester 1995 Basic Writing 001 course.

(5) The conclusions drawn from this reserach are limited to those developmental writers who match the defined characteristics of this research's study group.

#### Definition of Terms

ABC/Advance By Choice: an MSU-Bozeman student support service organization which assists undergraduates toward success in college.

Basic Writing 001: A writing course for developmental writers which is designed to bring them up to speed for their required College Writing I/English 121 course.

College Writing I: MSU-Bozeman's required freshman writing course.

Computer Literate: A concept describing an individual who is intuitively able to manipulate any computer to access any information he or she wishes with little or no assistance.

Deep Revision: Improving writing at the structural level, i.e., fine-tuning organization, elaborating on ideas using examples and details, improving word fluency, and diagnosing and remedying internal logic difficulties.

Developmental Writer/Basic Writer: a first generation bachelor's degree candidate, neither of whose parents nor guardians had a bachelor's degree; often low income; sometimes physically or psychologically disabled; frequently low-skilled academically; very commonly speakers of a native tongue other than English; almost always possessors of strong

negative attitudes toward writing. In this study, a student enrolled in 001 is by definition a "developmental" writer. In the text of this research the term "basic" writer is foregone in favor of the more currently acceptable term "developmental" writer, but in the References Cited section and in the title of the Basic Writing 001 course, as well as in researchers' quotes, the term "basic" is retained.

Drafting: the elaboration on and exemplification of selected organized ideas and/or problems, attention to audience, and the development of complete sentences and detailed paragraphs.

English 121: MSU-Bozeman's required freshman composition course; synonymous with College Writing I.

Linear Model of Writing: the traditional three-stage model of writing, i.e., prewriting, writing/drafting, and revision.

Prewriting: generating, selecting, and organizing potential ideas for an essay.

Revision: making fundamental changes in the meaning and mechanics of the existing text. In its truest sense, to "re-see" a piece of writing.

Surface Revision: Error correction on the level of spelling, punctuation, and minor editing.

Word Processing: Writing on a computer using software designed specifically for composition (as opposed to software designed to create graphics or spreadsheets, for example).

Summary

Determining whether word processors aid students in the creation of better and more thoroughly developed compositions is a complex task indeed, but motivation to discover if that interface is beneficial on a deep revision level is unanimously supported by two decades' worth of research; nearly all studies over the last fifteen to twenty years appear to concur that word processors stimulate students to invest themselves more personally and intellectually in their writing. Even so, and in spite of the fact that universities purchase expensive hardware and software and provide cutting-edge labs for their students to word process their work, few additional instructional resources are available for those marginalized and disenfranchised developmental students who have a myriad of learning disabilities, who have limited or nonexistent keyboarding skills, who are debilitatingly fearful, who are socioeconomically disadvantaged, who do not speak English well (or at all), who are computer illiterate-- and who are therefore nearly powerless in the face of a powerful university community of scholars.

As a result of the findings from this study, educators of developmental writers at the college level may even more clearly comprehend that competent instruction along with proficient use of a word processor can improve developmental writers' composition skills, thereby narrowing the gulf between the have's and the have-not's and gaining them

admittance into an influential and scholarly fellowship of intellectual peers.

## CHAPTER 2

## REVIEW OF LITERATURE

Universities today, far more than in the past, are charged with educating not only the college-ready student but the lower-skilled, underprepared student as well. In particular, the student whose writing capability is "developmental"--that is, his or her skills are developing but not yet competent for college-level work--are of interest to this author and to other composition teachers at the university level because much of one's success at university depends on strong writing skills. As more and more students come from ethnic, social, and linguistic environments unfamiliar with academe, demographers suggest that these students, many of whom are the first in their families to attend college, know little about what is expected of them at the university and often have a limited expectation of success.

Obviously, students do a great deal of writing during their college careers. Just as evident is the ubiquitous word processor, now a staple in campus labs, the presence of which ties in with the fact that by many estimates, as much as 90% of all computer use on the average college campus is for word processing (Turner, 1987). Since a great deal of the research during the last thirty years points directly to



revision as the key to successful writing, it seems critical to examine the relationship between the developmental writer and the word processor that he or she is more commonly being asked to use.

However, the findings in this area remain unsettled. Studies which have not shown consistently substantial results have been embedded with one or more design flaws. One design issue centers on the length of treatment. The studies that employed longer treatments consistently produced significant results (Hawisher, 1987). For example, both Kaplan (1986) and Wooley (1985) designed studies of five and two weeks, respectively, and in both studies there was no particular increase in quality. Cirello (1986) and Sommers (1986), on the other hand, employing treatments of 20 and 16 weeks, respectively, found significant improvement in overall writing quality. Clearly, it is questionable whether a brief length of treatment will allow sufficient time to deliver effective, process-based instruction (Reed, 1990; Pollock, 1985). Writing proficiency develops very, very slowly.

Then in the late 70's and early 80's came the introduction of "user-friendly" personal computers, whose word processing packages changed considerably the landscape of writing classrooms; suddenly the composition teacher's work was even more intricate. Not only were writing teachers to educate and empower the ready and the not-so-ready alike, they were to use computers to do so. Most instructors rose to the challenge. After all, wasn't this technology superior to the traditional handwritten process? Wouldn't the

computer "make" students' writing better by virtue of its simple presence in the room?

However, because of their students' limitations with standard written English, instructors were--and still are, unfortunately--drawn to software packages that review only sentence level skills, grammar, and punctuation. While other students were using the computer in innovative, productive ways, developmental writers were retreating to early mainframe CAI. That attitude continues to drive the developmental software market (Posey, 1994; Fox, 1990).

In order to properly review the complex array of conflicting literature in this area, the review is divided into two parts. Part one discusses the issue of conventional writing tools versus the word processor; part two examines revision issues and student and teacher attitudes as those elements apply to the role of the writing teacher.

#### Conventional Tools vs. Word Processors

A general understanding of writing improvement--that such improvement involves growth, movement, process, and progress, not a perfected product--has been particularly enhanced by using the word processor, according to much work in this domain (Cross, 1990; Cullen, 1988; Hunter, 1984; Nichols, 1986). But Hawisher and Fortune (1989), two of many leading names in this field, found no significant difference in the quality of writing by developmental writers who wrote with word processing packages as compared with those who

wrote with conventional tools. Such widely differing results ought to make researchers and educators examine more carefully the common generalizations--right or wrong--about writing by hand as opposed to composing on a word processor.

For example, rewriting by hand has recently come under fire for many reasons. First, the work of rewriting by hand may be a serious impediment to writing in and of itself (Owston, Murphy, & Wideman, 1992) due most frequently to poor penmanship or, less commonly, to inadequate small motor control. Furthermore, revision of one's writing by hand can be slow and is often untidy (especially for developmental writers), might be far too narrow and private, especially in a collaborative academic setting, and is certainly nonobjective--that is, a writer frequently has no sense of distance from his or her work and therefore no ability to assess that work objectively. As Mina Shaughnessy, a leading researcher in the area of developmental writers, states, "Writing is a slow developing skill, and handwriting may slow that skill down even more" (1976, p. 146).

On the other hand, there exists much contradictory research about computers: that the public nature of the screen display may prompt students to read each other's work and so promote more peer review and editing (Owston, Murphy, & Wideman, 1992; Jones, 1995); that the simple physical distance the monitor creates helps students look at their writing more objectively and listen to criticism less defensively (Moran, 1990); that word processors increase the student's level of audience awareness (Owston, Murphy, &

Wideman, 1992); that neat printing heightens pleasure and pride in one's written work, thereby bringing more critical attention to it (Bridwell, Sirc, & Brooke, 1985); that word processors foster a sense of control and independence over one's work (D'Agostino & Varone, 1991); that students simply write more (Nash & Schwartz, 1987); that the freedom to write down ideas is enhanced because students know any or all pieces and parts of their compositions can be salvaged and that their errors can be corrected ad infinitum until a draft is completed (Bridwell, Sirc, & Brooks, 1985); and finally, that somehow, in the ideal classroom, with the ideal teacher and the ideal software, the ideal student will achieve both surface and deep revision and will subsequently become competent to join the university culture.

On the negative side, computers have functioned as obstacles to the writing process. For instance, one cannot see one's entire composition; such a distraction may be detrimental to mature, or global/holistic, writing practices (Owston, Murphy, & Wideman, 1992). Furthermore, the demands of some complicated software packages may distract a writer from revising his or her essay at more than the microstructural level. Additionally, "pretty" surface level revisions and/or the neatness of hard copy may become so attractive that deep revision practices suffer (Collier, 1984; Keifer, 1995); in this same vein, a student's simple lack of keyboard mastery may contribute to a focus on surface revision rather than revision which demands skillful keyboarding (Owston, Murphy, & Wideman, 1992). In-progress

intervention, a common teacher behavior in computer writing lab/classrooms, is not always welcome (D'Agostino & Varone, 1990); conversely, students who are left alone with their machines, an equally common teacher behavior in computer writing lab/classrooms, are not likely to take advantage of the technology (Cross, 1990; Cullen, 1988; Nichols, 1986). Some believe that our current user-friendly technology may encourage writers to compose before they have thought sufficiently (Lutz, 1987), but even when adequate thought has taken place, it is a challenging task to keep a sense of the paper as a whole (Haas & Hayes, 1986).

So much needs to be taken into account when attempting to properly examine developmental writers in a writing milieu that it ought to be expected that the results of twenty years' worth of research are varied. Such a concoction provides rich grist for the mill of writing research.

Obviously, bean counting is effortless; measuring the deep revision skills of fearful and low-skilled developmental writers, however, is not bean-counting.

#### Revision, Attitude, and the Role of the Teacher

In spite of the conflicting findings in this area, some facts are generally accepted: For example, regarding revision, McAllister and Louth (1988), in their study of 102 college-level developmental writers, found that word processing does indeed have a positive effect on the quality of revision of developmental writers. King, Birnbaum, &

Wageman (1984) noted quality improvement in writing of ten college-level developmental writers using word processors, and Ethchison (1989) observed that students spent more time producing text as well as working with text in ways not usually seen when writers compose by hand. Hawisher (1989), commenting in an exhaustive review she undertook of 42 studies examining the relationship between developmental writers who used word processors, all conducted between 1981-1988, found "conflicting results when examine[ing] two variables: revision and quality. Slightly more studies found an increase in revision as found no increase in revision, and fewer studies found improvement in quality as found no improvement." Yet, in that same exhaustive 1989 study, Hawisher speaks about the undeniable gains which result from using a word processor, including positive attitudes toward writing with computers, fewer mechanical errors, and for many students, longer pieces of writing. As with all areas under study in this field, findings about revision are mixed and complex, though generally positive (Resnick & Strasma, 1996; Dickson, 1995; Elbow & Belanoff, 1995).

Most writing teachers now generally welcome computers in their classes; much has changed since 1979, when Lichtman (1979) found that a majority of teachers (55%), this author included, thought computer technology to be a dehumanizing tool (Dupagne & Krendl, 1992). Still, writing instructors may ask what influence the word processor has on developmental writers' attitudes about writing. Many developmental writers themselves believe writing with a word

processor improves the quality of their writing (Cross, 1990; Goldsmith & Robertson, 1988) as does Kirkpatrick (1987), who noted increased concentration, confidence, independence, and a willingness to collaborate. Rodrigues (1985) found a general attitude improvement, and Gay (1990) states that developmental writers who typically have negative attitudes toward writing may have the most to gain from using a word-processing package in class. Finally, Hawisher and Selfe's (1989) meta-analysis of 42 studies conducted between 1981 and 1987 showed that students exhibited consistently positive attitudes toward revision when they used computers (Erickson, 1992). However, results overall consistently show that the computer alone does not itself empower developing writers; much current research suggests that the classroom learning context for this group of developmental writers is especially important for future studies.

In sum, regarding teaching issues, Sommers and Collins (1984) found computers to be helpful in classrooms when they are used integratively, along with sound teaching methods. Teacher attitudes toward computers can influence student achievement; that is, students instructed by teachers with positive attitudes toward the technology demonstrated improved performance (Dupagne & Krendl, 1992). Furthermore, according to Hawisher (1989), writing on word processors often increases fluency, length, and development--but when merely "introduced" into the classroom, sans qualified teaching, they do not improve writing proficiency (Clark, 1985). Cullen (1988), Hunter (1984), and Kirkpatrick (1987)

found that developmental writers who used computers for writing in basic writing courses along with teachers who emphasized revision made complex and extensive revisions, suggesting again the critical role of the teacher. And Bernhardt, Edwards, and Wojahn (1989) discovered that the teacher had a pronounced effect on whether the students' overall writing skills improved. These same researchers stated, additionally, that those who have attempted to document the various effects of computers on student writers have produced inconclusive evidence.

#### Summary

Even with the utopian classroom situation, a model teacher, the perfect student, and an ideal software package, no machine can "teach students to write" regardless of that technology's sophistication or ease of use (Bridwell-Bowles, 1989). Much research in this field has been conducted but findings are still unsettled and contradictory. Furthermore, the field is relatively new and as such, requires further investigation. What, then, are the implications of such a mixture of research for this study's problem?

For developmental writers, it is becoming increasingly clear that computer literacy is a "basic skill." Like college composition generally, developmental writing has long been perceived as populated by individuals who are marginal at best: expendable, temporary, properly the responsibility of the high schools, and a "drain" on English departments



specifically and colleges and universities in general. Regardless of such a pervasive attitude, this population--not temporary, not expendable--must be prepared to take its rightful place in a technologically literate community of scholars (Horner, 1996). Instructors must take advantage of what works best, and developmental writers often work best in a computer-enhanced curriculum.

As well, there are vital implications for instructors of writing. Until recently, many teachers have expressed disappointment that breakthroughs in education technology have not realized their expectations for revamping education. Teachers at all levels are under pressure to use the technology available to them, but simply possessing the tool does not in itself persuade teachers--or their students--to use it. Still, the literature about word processors and writing indicates cause for optimism. One crucial implication of the existing research is that the teacher's role will continue to change from simple information-dissemination to information-sharing. Teachers must remain sensitive to, be prepared for, and be able to adapt to change. Finally, teachers must set up a computer writing environment that enhances the students' ability to use the word processor to generate ideas, draft, revise, edit, and collaborate with each other and with their instructor.

Lastly, regarding writing improvement: As stated previously, the research in this area is typically inconclusive. Therefore, it remains important to examine developmental writers' use of word processors under various

circumstances, especially college-age developmental writers, a population which is currently underexamined and underrepresented in the literature. It appears that when students properly utilize a word processor, increased word production occurs (Collier, 1981) and is accompanied by increased sentence-embedding transformations (synonymous with this work's definition of "deep revision"); therefore, the use of a word processor could mean positive changes in syntactic fluency and text effectiveness. Revision, too, should be examined under various circumstances. Revising a piece of work within a single writing session may not change that product dramatically, but over a period of time, if students are examined under long-term circumstances which allow them to become familiar with their software and its accompanying commands, the number of text-enhancing revisions may increase.

Finally, it makes sense for teachers to separate the initial learning of a word processing system as much as possible from the composing task itself. This need not be the case for every writer, but writers who are unsure of system commands and who are not proficient typists often find editing more complex, even difficult (Nichols, 1986). Add to this situation developmental writers who are unsure of the rules for composing, and they may become even more dogged in their eternally unproductive hunt for errors in just-written text. Therefore, teachers need not confound the developmental writer's composing task with a simultaneous challenge to master unfamiliar word processing packages.

This chapter has discussed the literature in two sections: the issue of conventional writing tools versus the word processor; and revision issues and student and teacher attitudes as those elements apply to the role of the writing teacher. It is evident from this review that stereotypes and generalizations about the "proper" tools one ought to use to write demand examination; and that revision skills, students' and teachers' attitudes toward word processors, and teachers' roles are key factors in any intelligent discussion of the issue of writing improvement. Computer technology, when accompanied by committed and sound instruction, may be part of the solution, but how that technology is used is essential to the success of any composition program.

## CHAPTER THREE

## PROCEDURES

Population Description

MSU-Bozeman's developmental writers were defined using a set of eligibility criteria designed by Advance By Choice (ABC), an MSU-Bozeman student support service program which assists undergraduates toward success in college. If the student fulfills ABC's requirements, then he or she is automatically eligible, through the auspices of that program, to enroll in a Basic Writing 001 course. The only way a student may enroll in Basic Writing 001 is by meeting the eligibility criteria of the Advance by Choice program; the regular student population may not choose Basic Writing 001 unless ABC's criteria are met. Enrollees of a Basic Writing 001 course were by definition, then, termed "developmental writers." Following are the criteria used by ABC to determine an individual's eligibility to receive program benefits:

First, the person must be a US citizen or permanent resident and working on a first bachelor's degree. In addition, he or she must meet one of the following criteria:

--First generation - neither of the student's parents nor guardians had a bachelor's degree;

--Low income - verification of taxable income is necessary by submitting a copy of the previous tax year's 1040/1040A/1040EZ forms; and/or

--Persons with disabilities, including hidden and/or learning disabilities.

These students are also, though not always, low-skilled; are very commonly speakers of a native tongue other than English which they may use in their homes; and are almost always possessors of strong negative attitudes toward writing. However, such descriptors only serve as guidelines; all groups of "developmental writers" have their own special characteristics. Mina Shaughnessy (1976), one of the first educators to attempt to characterize developmental writers, pointed out that one school's developmental writer "may be another's regular or advanced freshman." And even within a developmental writing program, Jensen (1986) adds that students will differ from class to class.

In general, though, a developmental writer's written work demonstrates little or no sense of audience, a fundamentally poor sense of organization and support for a thesis, and syntactically immature sentences. Moreover, such students have an underdeveloped sense of word choice and standard written English grammatical conventions (Posey, 1994). These kinds of writing limitations, among other academic concerns, have historically brought developmental writers into conflict with the expectations of their college professors.

Sampling Procedure

Montana State University-Bozeman is a four-year, coeducational, state university located in southwestern Montana. It was established as a land-grant, agricultural college in 1893. Degrees offered include the baccalaureate, master's, and doctorate. The university is accredited by the Northwest Association of Schools and Colleges. Enrollment is 11,246 students as of Fall term 1996 and is composed of 95 percent white, 1 percent Asian, 1 percent black, 1 percent Hispanic, and 2 percent Native American students, with 15 percent of all students being from out of state. Fifty-three percent of enrolling freshmen ranked in the top one-fifth of their high school class.

When freshman students enroll at MSU-Bozeman, they are provided many occasions to explore the resources of this university before classes begin each Fall term via orientation sessions, some of which last a full week. One opportunity given them during this orientation week is a simple hour-long writing placement test, an informal tool used in an attempt to flag those freshmen who may have obvious difficulties with writing. If students taking this test show evidence of poor writing skills, they may be referred to Advance By Choice (ABC), a tutorial, counseling and study skills support service program on campus whose focus and mission is to help students with poor academic competency become successful university graduates. According to the results of the writing placement test, students may be

processed and placed in a Basic Writing 001 section. Two to three sections of 001 are offered during the Fall term, and two to three sections are offered during the spring term.

The sample under investigation for this study consisted of the entire population (26 students total; 13 students in each section) of students referred by ABC enrolled in two sections of Basic Writing 001 during the Fall semester of 1995.

The size of a typical Basic Writing 001 class ranges from approximately ten to no more than thirteen students in each 001 section. The entire populations of two sections of the Fall semester 1995 classes were studied; consequently, a sampling procedure in its strictest sense was not employed, other than that process by which students enroll in the course through ABC.

### The Setting

The fundamental design of a Basic Writing 001 course is straightforward: Students are helped in the course to ready themselves for College Writing I, otherwise known as English 121, which is the required freshman writing course that these 001 students are being prepared for in Basic Writing 001. The assistance these developmental writers receive comes in the form of a specially-trained, process-oriented writing teacher who has experience working with this particular population, along with an accessible word-processing package (currently ClarisWorks) loaded onto the hard drives of the

computer lab's Macintosh PowerMacs; students maintain their own text files on floppy disks. There is one terminal for each student; a maximum of thirteen terminals is available.

Keyboard skills are taught if they are needed (one of many self-directed, self-explanatory typing tutorial programs is currently available; the one presently in use is "Typing Tutor"), and mastery of the word-processing program is facilitated through a hands-off policy where students perform all keyboard functions themselves while the teacher guides them with verbal directions, using the "How to Use Claris Works" guide (see Appendix A). The computer lab, where the Basic Writing courses meet twice weekly, is closed during classtime to the regular MSU-Bozeman student population. Students compose whole essays from the start and use the feedback and responses of their instructors, each other, and Writing Center tutors as an aid to revision.

The assignments are complex and demanding; students are required to compose acceptable college-level essays, and they are expected to react critically and in a sophisticated manner to outside readings. Drill-and-practice is kept to a minimum, and collaboration among students writers is encouraged. Some studies (Kirkpatrick, 1987; Rodrigues, 1985; Selfe & Wahlstrom, 1986) suggest that computers can foster collaboration among writers, which is a component of the writing process seen almost universally by writing teachers as a useful revision tool. This issue of collaboration builds on the theory, now being researched at the Center for the Study of Writing at Berkeley, that people



learn from their peers, independent of instructor intervention (Bruffee, 1984, 1988).

In a typical Basic Writing 001 class, there is much class discussion and interaction with other students and with the instructor concerning reading and rewriting. Papers assigned in the course are subject to a series of changes, and the teachers advance the idea at the beginning of the semester that revision in its truest sense--that is, to "re-see" a piece of writing--is a major component of the course. Though Cross (1990) and Deming (1987) state that if developmental writers are required to write drafts, they tend to revise at a private, microstructural level, a substantial portion of other studies discuss the concept of computers as tools to enhance deep revision, that is, to de-emphasize the computer as a private workspace so that developmental writers might truly become a part of their writing community.

MSU-Bozeman's Basic Writing courses are taught by interactive teacher/coaches with professional interests in the needs of developmental writers. All 001 teachers have several years of experience with this population and recognize the diverse cultural backgrounds from which their low-skilled writers come and the fears and self-doubts they bring with them to class. Still, no Basic Writing teacher is an "enabler" in the term's pejorative sense; students understand the requirements of the course and are coached to fulfill those requirements independently in ways that will prepare them for their required College Writing I coursework. All 001 instructors ask for a great deal of class discussion,

student-to-student and student-to-teacher feedback, and individual responsibility insofar as homework assignments are concerned. Perhaps most distinct about Basic Writing instructors, though, is their willingness to use the word processor in their writing courses as one way to liberate students from traditional--and too often unsuccessful--instruction. They have adapted to their own changing roles and have revamped their own ideas about prewriting, drafting, and the linear concept of writing to the benefit of themselves and their students.

#### Hypotheses Tested

The major hypothesis of this research, stated in null terms and tested at the .05 level of significance, was as follows:

(1) There was no significant difference in mean deep revision scores between final drafts produced by hand and final drafts produced using the word processor.

The subsequent hypotheses were tested separately for each of the following two groups: those students receiving handwriting prompts first and word processed prompts second, and those students receiving word processed prompts first and handwriting prompts second. These remaining hypotheses, with regard to the independent variables of age, gender, and ethnicity, stated in null terms and tested at the .05 level of significance, were stated as follows:

(2) There was no significant difference in mean deep revision scores of students <25 years of age and 25 years of age and older between final drafts produced by hand and final drafts produced using the word processor.

(3) There was no significant difference in mean deep revision scores of males and females between final drafts produced by hand and final drafts produced using the word processor.

(4) There was no significant difference in mean deep revision scores of Caucasians and non-Caucasians between final drafts produced by hand and final drafts produced using the word processor.

#### Methods of Data Collection

In order to properly examine the subjects of this research (developmental writers at the college level), a design format closely resembling one used by McAllister and Louth (1988) was employed. Four readers/graders were trained to examine and holistically grade 104 individual student essays: 26 handwritten rough drafts and 26 revised handwritten samples; and 26 word processed rough drafts and 26 revised word processed samples from two sections of Basic Writing 001 gathered during Fall semester of 1995. The four readers/graders assessed those students' written responses against a set of criteria designed to describe deep revision. The process, in general terms, was delineated as follows:

1. Initially, each of the two separate classes received a one-hour orientation to the ClarisWorks software in the Writing Center's computer lab, where Basic Writing 001 classes are held. This one-hour orientation covered eleven basic processes: turning on the machine; inserting a floppy disk; booting up a blank file; typing two paragraphs of sample writing; editing, saving, and printing that work; cutting and pasting; quitting; and spellchecking. More sophisticated operations such as spreadsheet applications and database procedures were not covered (see "'How to Use Claris Works' Instruction Guide," Appendix A). Keyboarding and editing procedures were covered in order to remove them as confounding factors, thereby allowing students to focus on the substantive nature of their compositions.

2. Students in one of the two classes were asked to handwrite a reaction from an agreed-upon teacher prompt. One class period (fifty minutes) was given to write that short reaction.

3. The instructor commented in writing on those first 13 handwritten drafts, which were then returned to the student writers. Instructors were requested to limit their comments to those addressing development, focus, organization, and issues around grammar and mechanics.

4. Students in that initial class of 13 revised their first handwritten drafts; one class period (fifty minutes) was used for that revision; in that way the revision conditions were controlled.

5. All first and second handwritten drafts were collected.

6. An assistant retyped all 26 sets of handwritten responses--13 sets of first drafts and 13 sets of revisions--for readability and to prevent bias insofar as poor handwriting might have been concerned. All teacher/reader comments and/or numbers were deleted. To maintain anonymity, students' names were replaced by subject numbers.

7. Students in that initial class of 13 were then asked to word process a reaction from an agreed-upon teacher prompt. One class period (fifty minutes) was given to word process that reaction.

8. The instructor commented in writing on those first word processed drafts, which were then returned to the student writers. Instructors were requested to limit their comments to those addressing development, focus, organization, and issues around grammar and mechanics.

9. Students in that initial class of 13 revised their first word processed drafts; one class period (fifty minutes) was used for that revision; in that way the revision conditions were controlled.

10. All first and second word processed drafts were collected.

11. An assistant retyped all the sets of word processed responses--13 sets of first drafts and 13 sets of revisions--for readability and to prevent bias insofar as different fonts, sizes, or styles of type might have been concerned. All teacher/reader comments and/or numbers were deleted. To

maintain anonymity, students' names were replaced by subject numbers.

12. In order to control for the phenomenon of students learning how to write better as a result of their teachers' comments on their draft from one set of written work to the next, the order of submissions was reversed from one class section to the next class section. That is, the initial group of 13 writers was asked first to handwrite a first and second draft and second to word process a first and second draft, and then the second group of 13 writers was asked to reverse the process--i.e., the second group was asked first to word process a first and second draft and second to handwrite a first and second draft.

13. Four trained readers/graders, using this study's criteria to describe deep revision, holistically graded all revised essays, both handwritten and word processed. Three scores were given each revised sample. Through a process of reading, rating, and discussing, the readers/graders arrived at a consensus of standards, i.e., those three scores were normed so that one score was ultimately given to each sample. See Appendix B, "Rubrics for the Holistic Scoring of a Paper."

14. The trained readers/graders were at all times blind to the conditions.

15. All teachers operated under the same general experimental conditions.

The Writing Samples

When individuals outside of academia attempt to describe a college-level writer, they may assume that student to be capable of writing competently, if not actually quite well; they often presuppose that the student has learned, most likely in high school, how to write successfully enough to satisfy the requirements of a freshman-level university composition class. However, at MSU-Bozeman, a certain small proportion of students do not possess those qualifications necessary to ensure their success in college courses requiring writing--in other words, nearly all college courses. Nevertheless, those low-skilled, anxious, and frequently marginalized students are indeed potential college graduates, and MSU-Bozeman's instructors are expected to treat them as such.

Following, then, is a sampling of one 001 student's piece of writing, produced from a handwriting prompt and retyped for readability. This handwritten sample is presented to provide the reader with a clearer idea of what it means to instruct and remediate a developmental writer. Following the handwritten sample is a revision of that same piece of writing, meant to exemplify in a general way the concept of "deep revision," or the successful modification of that piece of writing on the more complex levels of internal paragraph development and whole essay revision. The first handwritten sample is labeled "Rough Handwritten Draft" along with the student writer's first name. The second handwritten

sample is labeled "Revised Handwritten Draft" along with the student writer's first name.

Thomas's Rough Handwritten Draft:

The article, "france blows it again", discuss how France released a niclar test devise, their first one since 1991. As a result the french enviromentlists and antinucler activities filled protest. The protest leading to a battle between the police and protestor. Many people was injured and a police office was beat senselessly.

This a majer issue in france and to the rest of world. France does not want to have to relay on other country for defence but yet they are getting no support from the public. It is all just a chose of the French govt a good defence or happy people.

Thomas's Revised Handwritten Draft:

I recently read an article in the September 18, 1995 issue of Newsweek titled "France Blows it Again," by Sam Seibert, with Bureau reports.

Southeast of tahiti France conducted a nuclear test just last week. It was the first test done since 1991. The shocks where felt in Papeete, the capital of French Polynesia where enviromentalists and antinuclear activists were having a sit-in which turned in to a riot.

Only 41% of the french agreed with the testing, but most of the french people thought that France needed more nuclear weapons while the French polynesia didn't want the testing done around them, because it might destroy the marine life.

I don't think that any country should be doing any nuclear testing. We already have too much nuclear power in this world. This test went okay this time, but what's going to happen the next time or the time after that? Whats going to happen if we go to war and the whole world gets nuked. It's not very fun knowing that someone almost anyone could just push the wrong button and poof we'd all be fried. The only good thing I can think of would be that Russia might have attacked us a long time ago if we didn't have nuclear weapons. There is no reason why france should be testing



america has already told Russia that if they bomb a NATO country they will have the USA to deal with.

Presented below is a sampling of one 001 student's piece of writing, produced from a word-processing prompt and retyped for readability. Following the word processed sample is a revision of that same piece of writing, meant to exemplify the concept of "deep revision," or the successful modification of a piece of writing on the more complex levels of internal paragraph development and whole essay revision. The first word processed sample is labeled "Rough Word Processed Draft" along with the student writer's first name. The second word processed sample is labeled "Revised Word Processed Draft" along with the student writer's first name.

Monica's Rough Word Processed Draft:

We have a problem in America and that is "Drugs in the elementary schools." Drugs are entering our elementary schools. We are Americans need to find a solution to this growing proplem. We can not allow our children to become slaves to this silent mindless killer. We the american public need to put an end to the drugs in are schools.

Why are drugs becoming a major proplem as early as forth grade? What are the contributing factor why kids use drugs? Who are the children that are using drugs? Where do these kids get there drugs? What are some of the programs that can help kids stay away and stay of drugs?

Some ideas that might be able to keep children in the early grades away from the drugs might be: (A) skills to resist the peer pressure and the pressure from older kids in Middle School. (B) by teaching the cause and affects of drug abuse; maybe taking a class trip to a detoxification center when someone is going through sever withdrawl. (C) a counseling program, we need to teach are kids how to deal with there emotions when their out of control.

The children using drugs today are the ones who have poor self esteem or social needs, some kids feel it can't happen to me. I'm finding out from my son Robert who is 11 that older kids maybe in the 7 grade or about 13 years old are offer or solicit drugs to elementary school kids. They are being pushed to kids in such places as public parks and playgrounds. I think some of the best solutions to protect our kids before they are approached would be, skill in resisting peer pressure, teaching the cause and affects of drugs and counselling, all these steps are necessary in the process in getting to and keep a drug free school system. Dole if elected wants to work on cutting the teen drug use in half along with his assoc. Jack Kemp. I feel that if we take these step toward drug prevention we will find a solution to this growing problem of drug use in are elementary school. I feel we will be able to save are America culture.

Monica's Revised Word Processed Draft:

We have a problem in America and that is drugs in elementary schools. Drugs are entering our elementary schools. We as Americans need to find a solution to this growing problem. My son Robert, who is 11 years old, said that older kids maybe in the 7th or about 13-14 years old are offering or selling drugs to the elementary school kids. We cannot allow our children to become slaves to this silent, mindless killer. We, the American public, need to put an end to the drugs in our schools. Drug use is not limited to illegal drugs. It also includes alcohol and the use of tobacco products. The percent of reported drug usage in the third grade in the last year is as follows: marijuana, 66%, alcohol, 4%, and tobacco products, 6%.

Why are drugs becoming a problem as early as as the third grade? Children are starting to experiment with drugs at this age. They are going through some difficult changes such as depression and anxiety. What are some other factors in why kids use drugs? According to child psychologist, Debra Hanson, the contributing factors are loneliness and boredom. Where do these kids get their drugs? Children learn from an example. Hanson explains that parents who use drugs will most likely, but not always, have children who are interested in using or selling drugs.

Debra Hanson also states that one substance that children in Bozeman use is Ritalin. It has been sold in town to other kids for approximately \$2.00 a pill so non-attention deficit kids can get a "buss." Other substances such as room deodorizers are being used. These are sprayed into a bag and inhaled, otherwise known as "huffing." Kids inhale other

substances such as glue, paint thinner, paint and gasoline. These are just a few examples of what kids will use to get a high or a buss. The children using drugs today are children who have poor self-esteem or social needs. Some kids feel it can't happen to them. The drugs are being pushed to kids in such places as public parks and playgrounds.

Presidential candidate Robert Dole wants to work on cutting the teen drug use in half. His stand on the illegal drug issue is as follows: He is in favor of mandatory sentencing for anyone who sells drugs near the schools. He wants the death penalty for people who are caught trafficking drugs internationally. Dole wants to increase spending to educate our people on the effects of drug abuse. He also wants to put forth money to help drug treatment.

On the other hand; Clinton does not seem to want to do much about trafficking inside the U.S. The only strategy Clinton offers to combat drugs in the U.S. is to give the public housing authorities the right to evict anyone involved in the sales, use, or trafficking. Clinton is more interested in dealing with the far-reaching affairs of illegal drugs, he is looking at cutting aid to Columbia to help stop illegal drugs. Clinton does admit that drug use among children is still rising, but the overall rate of drug using is going down. I think Dole's policies are far more aggressive towards helping children stay away from drugs.

What are some programs that can help kids avoid drugs? Prevention in early years may hold more promise for controlling drug abuse in adolescents. The timing of preventive programs and the focus on "gateway" substances is crucial. "Gateway" substances are alcohol, tobacco, and marijuana. We must teach preventive programs to our kids before they come into contact with drugs.

Maureen Haven, substance abuse specialist at Wilson School, explains that if children are involved in sports they will have a less tendency to try drugs. Children playing sports receive a natural high from endorphins, which may also help resist drugs. When kids are involved in sports or are on some kind of a team then they won't risk the consequences of being kicked off the team and, or expulsion. Kids who play sports want to be like their heros who play pro ball. If a kid is kicked off the team the childs chance of becoming pro is greatly reduced.

Some ideas that might help children in the early grades, stay away from drugs, might be teaching skills to resist the peer pressure one idea would be to role play what would happen if that child is approached. A second idea might be

to talk to someone who is presently in rehabilitation and get a sense of what is happening to them. A past history of how they got it and what it did for them to be on drugs. The pressure from older kids in middle school can be a difficult challenge. Teaching the cause and effects of drug abuse, and maybe taking a class trip to a detoxification center when someone is going through severe withdrawal.

However, this last idea may not be the best solution for very young kids. Other students could benefit from a counseling program, to teach them how to deal with their emotions, when they're out of control. All of these steps are necessary in the process in getting to and keeping a drug free school system. If we were to take these steps toward drug prevention, we could possibly keep the drug pushers away from the elementary schools and the kids; then we could find a solution to this growing problem of drug use in our elementary school. We would be able to save our American children.

By far the best solution is prevention. This would be the defense so our children, such as my son Robert, could say no to drugs. Then Robert and other children could lead a healthy and hopefully a happy life.

#### Training the Readers/Graders

Four Writing Center tutors were employed as holistic readers/graders. These Writing Center tutors had already been trained as holistic readers/graders as a result of their successful matriculation from the Fall 1995 English 489-90: Tutoring Students Writers course. The course was designed to produce student tutors who could competently assess and holistically evaluate student writing using the criteria for deep revision taught in the course, which closely resembled this study's rubrics for the holistic scoring of a paper. These rubrics are generally accepted descriptors of the competencies being examined for this study, so the inferences about these developmental writers' final mean scores based on

their teachers' writing prompts can therefore be considered valid.

Several levels of performance description, rather than a reliance on just one or two, have been included, and since there are no reliable standardized tests to measure the type of performance on which this investigator wished to compare final mean scores, the rubrics used in this study depended heavily on McAllister and Louth's (1988) work as well as the researcher's own knowledge resulting from 18 years of teaching composition to developmental writers. Although each of the four Writing Center tutors was by definition a competent holistic reader/grader, four additional training sessions using 001 sample papers were conducted to promote grading consistency.

At the beginning of each session, the four readers/graders and the researcher met to discuss the criteria to be used when grading the student writing samples. During those training sessions, the readers/graders scored nine training papers selected randomly from previous 001 writing samples. Each reader/grader was given three writing samples to read and evaluate. Each reader/grader was then given an opportunity to discuss his or her opinions of the papers and why each was rated with a particular score until there general consensus was reached on each reader/grader's three papers.

A fourth paper was then distributed. Each reader/grader was asked to score this fourth paper on the basis of his or her decision about and discussion of the first three papers.

After rating, another discussion was conducted. Finally, a fifth paper was distributed, rated, and discussed. Through this process of reading, rating, and discussing, the readers/graders arrived at a consensus of standards. These sample papers were later made available to serve as benchmarks for consultive purposes during subsequent scoring sessions.

Rubrics for the holistic scoring of a paper from a low of "1" to a high of "4" consisted of the following categories:

#### Rubrics for the Holistic Scoring of a Paper

##### 1. POOR ("1")

a. No focus, development, or details; the essay is filled with clichés and unsupported material with no evidence of critical thinking skills;

b. Dominated by ineffective, unnatural language ("Engfish"), or by difficulties typically attributed to speakers of second languages; few or no examples, no details, and/or no substantial support from resources;

c. Distractingly bad grammar; nearly complete lack of control of language as evidenced, for example, by nonexistent transitions and/or little or no variety in sentence structure

d. Provokes the questions "What's it about?" meaning there is no sense of audience, purpose, personal voice, or writer commitment.

## 2. AVERAGE ("2")

a. Attempts to focus, though that attempt may be artificial, repetitive, or trite. Still, this essay's purpose is usually clear;

b. Has a sense of example, but outside support for a thesis is often just pasted into the essay and does not feel coherent. Many times this essay is a classic "data dump," that is, a collection of outside citations which have been just thrown into the paragraphs at random locations and which do not, of course, effectively coalesce into a readable product;

c. Grammar is still a somewhat distracting problem, but the essay demonstrates some organization and language control;

d. Demonstrates some organization and sense of meaning; there is rudimentary evidence of critical thinking skills in this essay, but the overall logic may still be flawed. Evidences a sense of purpose.

## 3. GOOD ("3")

a. Focused

b. Develops points through good, but not stellar, examples;

c. Grammar is non-obtrusive; shows noticeable but still imperfect command of language, so that errors still appear, especially at the sentence level. Transitions are used competently but not elegantly;

d. Shows variety in sentence structure, some originality, some voice; there exists some understanding of the concept of audience and purpose.

4. EXCELLENT ("4")

a. Tightly focused, but not necessarily perfect; this essay is original in its purpose/thesis;

b. Memorable examples and details, so this essay is provocative and challenging to read; the writer has thought critically about each point he or she brings up, often evidencing a dry sense of humor; the essay uses outside support in remarkable, original, and surprising ways. Citations, for example, are inserted in neat, readable ways and resources are never overused;

c. Noticeable language control, i.e., mature sentences and grammar; elegant in its sentence structure and variety, and grammatically flawless--or nearly so;

d. Sense of audience; distinct and sincere voice; originality; no errors in logic. Clear sense of purpose.

Reliability of Holistic Grading

The 001 students' writing samples were graded holistically on a four-point scale ("Poor," "Average," "Good," and "Excellent" corresponding to a "1," a "2," a "3," and a "4" respectively); such a scale is preferred over the other two major means for assessing writing--analytic and primary trait--because it takes less training time and less time to actually use than either of the other two methods (Huot, 1996). Furthermore, while holistic grading is not



meant to be diagnostic, it can be utilized to measure improvement in writing (McAllister & Louth, 1988). The evaluation of writing assignments is inherently extremely difficult, but using a holistic grading instrument designed around a four-point scale, reliability of .88 can be achieved if certain factors are controlled in the design (McColly, 1970), namely:

1. Selection of the writing topics must be consistent; students were given a basic read-and-respond prompt (they were asked before classtime to read a short article and then, when the class met next, to summarize it and respond in an extemporaneous fashion to that article) and were expected to respond only to that prompt.

2. An adequate rating scale was necessary.

3. Rough drafts and final drafts on all 104 samples must be graded simultaneously so that contaminating factors would not enter into the scoring.

4. Students must be given sufficient time to complete the test, at least 50 minutes, which is normally enough time to write approximately 200 words.

5. The study made use of four trained evaluators who had extensive background in English usage and training in holistic grading as a result of their successful matriculation from English 489-90: Tutoring Student Writers.

6. Bias must be eliminated by retyping and coding students' papers.

### Inter-Rater Reliability

The intention of determining inter-rater reliability is to calculate the degree of agreement between independent raters. The underlying assumption is that consistency and standardization were maintained across time and location. In current traditional writing assessment, agreement is "a necessary ... condition for validity; without a sufficient level of agreement between raters, a writing assessment procedure can not be valid" (Huot, p. 555). Lee Cronbach, a prominent measurement expert, takes the stance that validity and reliability "must link concepts, evidence, social and personal consequences, and values" (p. 14). He demands that a valid procedure for assessing writing must have positive impacts and consequences for the teaching and learning of writing. In lieu of those contentions, the inter-rater reliability for this research was determined utilizing Cronbach's Alpha. The interrater correlation across all scales was determined to be .86, indicating satisfactory reliability.

### Experimental Treatment

This research consisted of the documentation and interpretation of a contemporary phenomenon: developmental writers who are charged, as a matter of course, to use word processors in their writing classes. Students were measured to see if their deep revision skills improved when they were directed to use the word processor as a writing tool rather

than doing their work by hand. Four trained readers/ graders judged both rough and revised drafts of 52 student papers written by hand against rough and revised drafts of 52 papers written by students having access to a word processor. Both assignments were similar; the only difference was that one set of student writers did their writing by hand, and the other set of students used a word processor. The order of prompts from one group of writers to the next was reversed in order to prevent the phenomenon of students learning how to write better as a result of their teachers' comments on their draft from one set of written work to the next. The criteria which define "deep revision" were employed to assess the quality of writer proficiency.

It was essential to identify critical extraneous variables which might have impacted the outcome of this study, especially since a considerable number of other studies in this field are flawed. Based on much of the computer-based writing research done to date, a consistent design concern is length of treatment and total number of samples; the longer the treatment and the greater number of data sets, the more likely it is that the results will be significant (Hawisher, 1988). Such a design requirement makes sense because it would never be expected that skills as complex as writing would change meaningfully in a brief period of time, nor would a statistically insignificant number of samples be capable of indicating that deep revision had been achieved.

The issue surrounding the length of treatment in this study was dealt with by allowing sufficient time for the student writers to draft and redraft--in other words, no single surprise-prompt work was examined. Rather, students were given sufficient time to write, read their teachers' comments, and rewrite.

Age, gender, and ethnicity emerged as other variables which affected the issue of design. Regarding age, for example, studies involving older students have consistently produced significant results (Hawisher, 1987). For instance, investigations involving high school students and college freshmen found meaningful gains (Cirello, 1986; Sommers, 1986) whereas studies involving elementary-grade students did not (Wetzel, 1985; Wooley, 1985). Gender and ethnicity have not been thoroughly examined in other studies, but those variables may have a heretofore unknown impact on revision skills.

The variables of teachers' comments on rough drafts and keyboarding proficiency were the two final variables needing attention. To control for the variable of teachers' comments on student writing, the Basic Writing 001 teachers were asked to limit their comments to those addressing development, focus, organization, and issues around grammar and mechanics. All of the instructors agreed that these were the areas they would normally respond to in any case. They were asked not to line edit their students' work, as well.

The final variable having to do with keyboarding skills was addressed by providing a one-hour orientation to the

software being used in the course to students in each section of Basic Writing 001 (see Appendix A, "How to Use Claris Works" guide), and allowing none of the 26 students to write for a grade until each student possessed sufficient keyboarding proficiency to make his or her skills reasonably equal to the other students in the class.

Three one-way analyses of variance and a t-test for individual samples were utilized for testing the hypotheses to discover if there was a difference between groups due to the way those groups were categorized on the three independent variables of age, gender, and ethnicity. A one-way ANOVA means the dependent variable (in this case, student scores on writing) was analyzed for interaction with one other independent variable--age, gender, or ethnicity.

The level of alpha at which the results of the tests of significance were evaluated was set at .05, indicating that there was a 1 in 20 chance of a Type I error, meaning a true hypothesis would have been rejected. In other words, this study's analysis may have indicated that there was a relationship when there wasn't. A Type II error means a false null would have been retained, i.e., the analysis may indicate that there was no relationship when there was. It is critical to avoid a Type II error because such a finding would mean that no action might be taken on an important issue. A Type II error might discourage further research, a more serious issue than committing a Type I error, which might (only) mean that unnecessary resources would be allocated to a nonexistent situation. If the probability

level were set at .01, there would have existed less potential of committing a Type I error, but more potential of committing a Type II error. The p was therefore set at .05.

#### Precautions Taken For Accuracy

(1) The data were entered into the Montana State University-Bozeman Computer System through a terminal under the supervision of Dr. Eric Strohmeyer and Dr. Larry Baker;

(2) The Statistical Package for the Social Sciences (SPSS) package was employed for the analysis of variance and the t-test for individual samples;

(3) The accuracy of the information entered was verified by another party; and

(4) All subjects not meeting the criteria stated were eliminated from the study.

#### Summary

This study attempted to provide information concerning the interaction of developmental writers with word processors, that is, did a developmental writer's work improve significantly from rough draft to final draft when he or she used a word processor as opposed to writing by hand?

Data were collected for the study with the assistance of two of Montana State University-Bozeman's instructors of Basic Writing 001, whose students in two sections of 001 held during Fall semester 1995 provided both the handwritten and word processed writing samples used in this study.

This chapter included the procedures used for this study; it described the population, the procedures, the hypotheses tested, the criterion measures, and the statistical analysis of the data.

## CHAPTER FOUR

## DATA ANALYSIS AND FINDINGS

Introduction

The purpose of this study was to investigate whether developmental writers, when provided access to word processors and accompanying carefully controlled instruction, would achieve deep revision in their writing as defined using a four-point holistic evaluation scale. The study used holistic readers/graders and 26 Basic Writing 001 students' writing samples to discover whether deep revision improved on final drafts produced using the word processor as measured against final drafts produced by hand.

A substantial proportion of the current research conducted on the effect of the word processor on revision involves either very young writers or able writers, not developmental writers. However, Montana State University-Bozeman considers its population of developmental writers as potential college graduates, so it is to a considerable extent up to MSU-Bozeman's instructors to enable these students toward that goal. It is also important to educators to know whether the computer technology available to them and their developmental student writers will help toward developing competence for this population of students who have not "learned to speak our language, to speak as we do,



to try the peculiar ways of knowing and selecting, evaluation, reporting, concluding, and arguing that define the discourse of our community" (Kreinert & Merickel, 1995, p. 285).

The results of this research are presented under four major headings: (1) the method of data collection; (2) a description and accompanying profile of the participants of the respondents; (3) a description of the holistic scoring instrument along with the results and discussion of a t-test for individual samples; and (4) the general findings of the study organized according to the four hypotheses tested and their results.

#### Method of Data Collection

Students in two different sections of English 001 (with 13 students enrolled in each section) during Fall semester of 1995 turned in a total of 26 handwritten and 26 hand-revised writing samples, and then 26 word processed and 26 word processor-revised writing samples, for a total of 104 complete data sets. Quantitative data were then gathered in the following manner: The scores on 26 handwritten rough drafts and 26 revised handwritten samples and 26 word processed rough drafts and 26 revised word processed samples were collected. Finally, the readers/graders were trained to examine and holistically grade those 104 individual student essays against a set of criteria designed to describe deep revision.

Description of the Participants

MSU-Bozeman's developmental writers were defined using a set of eligibility criteria designed by Advance By Choice (ABC), an MSU-Bozeman student support service program which assists undergraduates toward success in college. An enrollee of Basic Writing 001, described as a US citizen or permanent resident and working on a first bachelor's degree; a first generation bachelor's degree, i.e., neither of the student's parents nor guardians had a bachelor's degree; a low income individual; and/or an individual having disabilities, including hidden and/or learning disabilities, was then, ipso facto, a "developmental writer." If the student fulfills ABC's requirements, then he or she is automatically eligible, through the auspices of that program, to enroll in a Basic Writing 001 course. The only way a student may enroll in Basic Writing 001 is by meeting the eligibility criteria of the Advance by Choice program; the regular student population may not choose Basic Writing 001 unless ABC's criteria are met. Enrollees of a Basic Writing 001 course were by definition, then, termed "developmental writers."

Developmental writers were also defined as those individuals who were, though not always, low-skilled; speakers of a native tongue other than English which was used in the home; and almost always possessors of strong negative attitudes toward writing. In general, a developmental writer's written work consistently demonstrated little or no

sense of audience, a poor sense of organization and support, syntactically immature sentences, an underdeveloped sense of word choice and poor control of standard written English grammatical conventions.

Profile of the Respondents

Overall, 17 of the respondents were younger than 25 years of age, and 9 of the respondents were 25 years of age or older. There were 11 males and 15 females and 20 Caucasians and 6 non-Caucasians in the group. Table 1 delineates participant data for the demographic variables of age, gender, and ethnicity.

Table 1. Range of Ages, Frequencies, and Percentages for the Characteristics of Age, Gender, and Ethnicity.

CHARACTERISTIC	N	%
Age		
Less than 25	17	65.4
Equal to or greater than 25	9	34.6
Total	26	100
Range of Ages		
18-22	15	57.7
23-27	6	23.1
31-44	5	20.2
Gender		
Males	11	42.3
Females	15	57.7
Total	26	100
Ethnicity		
Caucasian	20	76.9
Non-Caucasian	6	23.1
Total	26	100

### The Holistic Scoring Instrument

The developmental writers who were the subjects of this study provided writing samples which were graded holistically on a four-point evaluatory scale. The grading of writing assignments is inherently very difficult, but with holistic grading on a four-point scale, reliability of .88 (McAllister & Louth, 1988) can be achieved if certain factors are controlled in the design, namely: consistent selection of the writing topics; an adequate rating scale; simultaneous grading of rough drafts and final drafts on all 104 samples; sufficient time provided to complete the test; provision of carefully trained evaluators; and the elimination of bias by retyping and coding students' papers. Refer to Chapter Three, Procedures, under "Rubrics for the Holistic Scoring of a Paper" for more detailed information.

As also mentioned in Chapter Three, the question exists as to whether the order of prompts received--i.e., whether receiving a "write by hand" prompt before a "write using the word processor" prompt, or vice-versa--affects deep revision skills. In order to control for the phenomenon of students learning to write better as a result of their teachers' comments on their drafts from one set of written work to the next, the order of prompts from one group of writers to the next was reversed. Section 01 students were asked to handwrite their work first and word process second; Section 02 students were asked to word process their work first and handwrite it second.

Certain acronyms have been used in this study for the sake of clarity (HWCHG, WPCHG, HWFIN, and WPFIN). In order that the reader might more readily understand the terminology used in the subsequent Tables 3 and 4, the acronyms HWCHG, WPCHG, HWFIN, and WPFIN are explained in Table 2 below:

Table 2. Explanation of the Acronyms HWCHG, WPCHG, HWFIN, and WPFIN

Acronym	Definition
HWCHG	Handwriting change from rough to final draft
WPCHG	Word processing change from rough to final draft
HWFIN	Handwritten final score
WPFIN	Word processed final score

#### t-Test for Individual Samples

The t-test for individual samples was utilized to determine whether the mean change from rough draft to final draft (for those students receiving handwriting prompts first and word processing prompts second) was significantly different at the alpha level of .05 than the mean change from rough draft to final draft (for those students receiving word processing prompts first and handwriting prompts second). The p value associated with the calculated t-test indicated

how often a difference as large or larger would be found when there was no true population difference.

Group one (whose prompt order was handwriting first/word processing second) showed a mean final score improvement from rough draft to final draft of .519 and .750, respectively. Group two (whose prompt order was word processing first/handwriting second) showed a mean final score improvement from rough draft to final draft of .634 and 1.00, respectively. Table 3 below illustrates the results of the t-test for individual samples.

Table 3. t-Test for Individual Samples Indicating the Difference Between the Means from Handwritten Rough Draft to Final Draft versus Word Processed Rough Draft to Final Draft

GROUP	Mean	SD	t-value	df	2-tail Prob
HWCHG	.519	.590	-.64	12	.536
WPCHG	.750	1.23			
WPCHG	.634	.747	-1.19	12	.259
HWCHG	1.00	.722			

An analysis of these data indicate that the mean change from rough draft to final draft of those students who handwrote their work first and word processed it second was not statistically different than was the mean change from

rough draft to final draft of those students who word processed their work first and handwrote it second.

It is interesting to note, however, that the order of prompt appeared to make a difference with respect to group two (the word processing first/handwriting second group); their improvement on rough to final handwritten draft was 1.00, while group one (the handwriting first/word processing second group) showed an improvement of .750 on rough to final word processed draft. A more detailed analysis of this difference is presented in Chapter 5 under the subheading "Conclusions."

#### Hypotheses Tested

The hypotheses examined in this study are organized as follows and presented one at a time:

Hypothesis 1 stated that there was no significant difference in mean deep revision scores between final drafts produced by hand and final drafts produced using the word processor.

Hypothesis 2 stated that there was no significant difference in mean deep revision scores of students <25 years of age and 25 years of age and older between final drafts produced by hand and final drafts produced using the word processor.

Hypothesis 3 stated that there was no significant difference in mean deep revision scores of males and females between final drafts produced by hand and final drafts produced using the word processor.

Hypothesis 4 stated that there was no significant difference in mean deep revision scores of Caucasians and non-Caucasians between final drafts produced by hand and final drafts produced using the word processor.

### Results

Hypothesis 1 stated that there was no significant difference in mean deep revision scores between final drafts produced by hand and final drafts produced using the word processor; the decision was made to reject the null. The data indicate that the final mean scores of those students who handwrote their work were statistically different than the final mean scores of those students who word processed their work. In other words, those students who handwrote their work scored significantly lower than did those students who word processed their work. See Table 4 below for a presentation of these data.

Table 4. Final Mean Score Analysis of Students Handwriting Their Work and Students Word Processing Their Work

GROUP	Mean	SD	t-value	df	2-tail prob
HWFIN	2.38	.526			
WPFIN	3.22	.593	5.97	25	.000*
DIFFERENCE MEAN	.836				

\* Significant at alpha = .05



Hypothesis 2 stated that there was no significant difference in mean deep revision scores of students <25 years of age and 25 years of age and older between final drafts produced by hand and final drafts produced using the word processor. See Table 5 below for a presentation of the means for these two groups of students:

Table 5. Final Mean Scores Between Students Less Than 25 Years of Age and 25 Years of Age and Older on Word Processed Finals and Handwritten Finals

	Word Processed Finals Mean	Handwritten Finals Mean
Less than 25	3.3	2.2
25 and older	2.8	2.4

See Tables 6 and 7 below for analyses of the data for handwritten final mean scores and word processed final mean scores:

Table 6. Handwritten Final Mean Scores Analyzed by the Independent Variable of Age

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	.363	.363	1.33	.259
Within Groups	24	6.54	.272		
Total	25	8.79			

Table 7. Word Processed Final Mean Scores Analyzed by the Independent Variable of Age

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	1.51	.519	5.01	.0346*
Within Groups	24	7.27	.303		
Total	25	8.79			

\* Significant at alpha = .05

The decision was made to reject the null on word processed final mean scores; however, the decision was made to retain it on handwritten final mean scores. In other words, students younger than 25 years of age performed significantly better on their word processed work than did students 25 years of age and older.

Hypothesis 3 stated that there was no significant difference in mean deep revision scores of males and females between final drafts produced by hand and final drafts produced using the word processor; the decision was made to retain the null. See Table 8 below for a presentation of the means for these two groups of students:

Table 8. Final Mean Scores Between Males and Females on  
Word Processed Finals and Handwritten Finals

	Word Processed Finals .Mean	Handwritten Finals Mean
Males	3.0	2.45
Females	3.3	2.33

See Tables 9 and 10 below for analyses of the data for  
handwritten final mean scores and word processed final mean  
scores:

Table 9. Handwritten Final Mean Scores Analyzed by the  
Independent Variable of Gender

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	.093	.093	.328	.571
Within Groups	24	6.8	.283		
Total	25	6.90			

Table 10. Word Processed Final Mean Scores Analyzed by the Independent Variable of Gender

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	.932	.932	2.84	.104
Within Groups	24	7.85	.327		
Total		25	8.79		

The decision was made to retain the null; in other words, it made no significant difference whether a writer was male or female insofar as that individual's final mean scores on either handwritten final product or word processed final product.

Hypothesis 4 stated that there was no significant difference in mean deep revision scores of Caucasians and non-Caucasians between final drafts produced by hand and final drafts produced using the word processor; the decision was made to retain the null. See Table 11 below for a presentation of the means for these two groups of student writers; then see Tables 12 and 13 following Table 11 for analyses of the data for handwritten final mean scores and word processed final mean scores:

Table 11. Final Mean Scores Between Caucasian Students and Non-Caucasian Students on Word Processed Finals and Handwritten Finals

	Word Processed Finals Mean	Handwritten Finals Mean
Caucasian	3.1	2.3
Non-Caucasian	3.3	2.6

Table 12. Handwritten Final Mean Scores Analyzed by the Independent Variable of Ethnicity

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	.620	.620	2.37	.136
Within Groups	24	6.28	.261		
Total	25	6.90			

Table 13. Word Processed Final Mean Scores Analyzed by the Independent Variable of Ethnicity

	Df	Sum of Squares	Mean Squares	f Ratio	Prob
Between Groups	1	.092	.098	.271	.607
Within Groups	24	8.69	.362		
Total	25	8.79			

The decision was made to retain the null; in other words, it made no significant difference whether a writer was Caucasian or non-Caucasian insofar as that individual's final mean scores on either handwritten or word processed work.

## CHAPTER FIVE.

SUMMARY, CONCLUSIONS, AND  
RECOMMENDATIONS FOR TEACHING AND RESEARCHSummary

Any research which proposes to examine the relationship between developmental writers and the use of word processing must also consider how developmental writers use such technology; whether, as word processing technology rapidly develops and is utilized by writers, developmental writers are missing out; and if the cresting tidal wave of computer applications will swamp these often technologically maladroit users.

With that groundwork firmly in mind, the purpose of this study was to provide information about and relevant research concerning the interaction of developmental writers with word processors. That is, do a developmental writer's deep revision skills improve substantially from rough to final draft when he or she uses a word processor as opposed to writing by hand?

Data were collected for the study with the assistance of two of Montana State University-Bozeman's instructors of Basic Writing 001, whose 26 students in two sections of 001 held during the Fall semester of 1995 provided both the handwritten and word processed writing samples evaluated in

this study. To gather and analyze the data for this investigation, the researcher reviewed the current literature in the field of developmental writing as it interfaces with word processing, stated four hypotheses, selected 26 subjects, selected and constructed measuring instruments, administered and scored 104 writing samples, performed data analysis on those samples, drew conclusions, and made recommendations.

The literature in the field of developmental writing instruction using word processors is mixed but intriguing. Many studies on writing improvement over the last two decades in particular have been conducted on younger writers of elementary or junior high school age, or on able writers, but very little of that research has dealt with developmental writers at the college level. Additionally, many studies, especially those conducted during the 1980's and 1990's, examined very small sample sizes--sometimes only three or four writers--and those subjects were frequently observed over an extremely short period of time.

There is also conflicting research dealing with the advantages and disadvantages of handwriting versus word processing as they inform the writing improvement of developmental writers. Some of the literature states that "pretty" surface level revisions and/or the neatness of hard copy may become so attractive that a student's deep revision practices suffer; other studies state that no significant difference exists in the quality of writing by developmental writers who write with word processing packages as compared



with those who write with conventional tools. Such widely differing results may continue to prompt researchers and educators to examine more thoroughly common generalizations about writing by hand as opposed to composing on a word processor.

The population of developmental writers at MSU-Bozeman is viewed as a group who will potentially graduate from the university system, but only with committed assistance from instructors and administrators willing to understand their complex backgrounds and frequent and debilitating lack of academic capability. Normally, this population of students is not at the forefront of the university's academic consciousness; it is common practice to overlook them or to require some other department (normally the English department) to "remediate" them. Nevertheless, MSU-Bozeman's instructors and administrators have implicitly, if not explicitly, agreed to take on at least a portion of the responsibility--along with the federal government--of considering how best to assist these students toward their goal of earning a baccalaureate degree. Whether or not developmental writers should be going to college, whether or not they should have learned how to write better in high school, whether or not university resources should be allocated toward these developmental writers, they are here, educable, and ambitious for themselves, their families, and their futures.

Not only developmental students but all university students need competent writing skills to reach the goal of

graduation. Nearly every class offered at the college level requires some writing, but developmental writers are historically non-proficient compositionists. Computer labs with up-to-date word processing programs exist in many locations on MSU's campus, but this population of students may be particularly non-adept at using them, much more so than their computer-literate-since-birth and often much younger and more self-confident counterparts--those "citizens of era media" (1996, p. 100), as Catherine Stimpson has designated them. Therefore, this study attempted to discover whether the training in and regular use of workable, understandable software along with skilled coaching/teaching would result in writing improvement, defined in this research as improvement in deep revision.

The hypotheses examined in this study were developed to show whether or not a statistically significant relationship existed between final mean scores on handwritten work and final mean scores on word processed work. More specifically, the researcher wished to discover whether, if a student wrote on a word processor, that work would be better than the work of a student who had done his or her writing by hand, "Better" being defined in this research as "deeply revised." The variables under examination were age, gender, and ethnicity; those variables were built into the design, and three one-way analyses of variance and a t-test for individual samples were performed to test those hypotheses in order to compare the final mean deep revision scores on word-processed versus the final mean deep revision scores on

handwritten student writing samples. Other variables needing attention were the type and overall quality of teachers' comments and the proficiency or lack thereof of students' keyboarding skills. Each of these variables was controlled for as well as could be expected in a study where the subjective behavior of teachers and students and their accompanying skills and attitudes are to some extent out of any researcher's control.

### Conclusions

The results of this research allowed the investigator to draw the following conclusions:

First, although it was not stated as a formal hypothesis to be tested, the researcher wished to discover whether the order of writing prompts received--i.e., whether a student who received a "write by hand" prompt before a "write using the word processor" prompt, or vice-versa--would indicate a difference in final mean scores. An analysis of these data indicate that the mean change from rough draft to final draft of those students who handwrote their work first and word processed it second was not statistically different than was the mean change from rough draft to final draft of those students who word processed their work first and handwrote it second.

It is interesting to note, however, that the order of prompt did indicate a difference with respect to group two (the word processing first/handwriting second group); that

group's improvement on rough to final handwritten drafts was 1.00, while group one (the handwriting first/word processing second group) showed an improvement of .750 on rough to final word processed draft. It appears that when a student handwrites his or her work first and word processes it second, scores improve slightly but not significantly. Conversely, when a student word processes his or her work first and handwrites it second, scores improve much more-- from .519 to .750 for group one and from .634 to 1.00 for group two, respectively. This is a difference of approximately a half a "unit," or more colloquially, a half a "grade."

It is the opinion of this researcher that the experience group two receives with the word processor as the first means of writing--its ease of revision and flexible cut-and-paste operation, for example--translates successfully to subsequent handwritten work. That is, students quickly and readily understand when they use the word processor that revision does not necessarily occur in the traditional linear fashion; rather, they understand that they can revise "from the inside-out," as it were. Those capabilities learned on the computer would appear to benefit them on their handwritten work. Apparently, though, the reverse is not true.

Hypothesis 1: There was no significant difference in mean deep revision scores between final drafts produced by hand, but there did exist a significant difference in those scores on final drafts produced using the word processor; the null was therefore rejected. In other words, the data

indicate that those students who handwrote their work scored substantially lower than did those students who word processed their work. Though twenty years' of research in this area continues to provoke analysis, it can be said with a reasonable degree of confidence that if other variables are controlled, the use of a word processor has a beneficial effect on the quality of deep revision. It does not appear that such a difference can be attributed to any single factor more specific than the process of composing on the word processor.

Hypothesis 2: There did exist a significant difference in mean deep revision scores of those students less than 25 years of age over those students 25 years of age and older between final drafts produced by hand and final drafts produced using the word processor. The decision was made to reject the null on word processed final mean scores but to retain it on handwritten final mean scores. To state this more precisely, students younger than 25 years of age performed significantly better on their word processed work than did students 25 years of age and older. In this researcher's opinion, such a difference might be attributed to the fact that younger students have had much more extensive lifelong exposure to technology, most specifically personal computers, than have older students. Students under 25 have essentially grown up with computers; students over 25 may not even have grown up with a microwave or an answering machine, let alone a personal computer. That exposure to

technology at a young age has a distinct connection to the quality of the user's final written product.

Hypothesis 3: There existed no significant difference in mean deep revision scores of males and females between final drafts produced by hand and final drafts produced using the word processor. The decision was made to retain the null. In other words, it made no particular difference whether a writer was male or female insofar as that individual's final mean scores on either handwritten or word processed work. At one time, it could have been--and frequently was--said that males were more proficient at using technology; they were exposed to it more in their work, for example, or they were more "tool-oriented." However, the makeup of the work force and society's attitude insofar as appropriate gender roles are concerned have changed enough to allow this researcher to say with some confidence that computer use, at least for developmental writers at the college level, has become gender blind.

Hypothesis 4: There existed no significant difference in mean deep revision scores of Caucasians and non-Caucasians between final drafts produced by hand and final drafts produced using the word processor. The decision was made to retain the null. It appears to make no significant difference whether a writer was Caucasian or non-Caucasian insofar as that individual's final mean scores on either handwritten or word processed work. Race plays no role in whether or not one can write well or poorly, regardless of the tool. Not only is computer proficiency gender blind for

developmental writers at the college level, it is color blind.

It can be concluded from this study that writing on a word processor has a noteworthy effect on the quality of developmental writers' deep revision skills. Since the potentially contaminating variables of age, gender, ethnicity, teachers' comments on written work, and keyboarding skills were reasonably well-controlled, such a difference cannot be attributed to any single factor more specific than the process of composing on the word processor.

#### Recommendations for Teaching and Research

The findings of this research have direct relevance for educational practices. As such, the following recommendations are made to instructors of developmental writers and to those university administrators and management personnel who participate in decisions affecting the education of these students:

First, the order of writing prompt did indicate a difference with respect to group two--the word processing first/handwriting second group--whose improvement on rough to final handwritten drafts was significant: a difference of approximately a half a "unit," or more colloquially, a half a "grade." More carefully focused studies could be arranged to examine thoroughly whether developmental writers do indeed learn how to handwrite their work more successfully from simply using a word processor. It is intriguing to follow up

on this idea. If developmental writers are indeed linear writers, and if their success at writing that way has been limited, and if the use of a word processor can help them understand in a concrete way that writing does not have to be linear to be successful, it would follow that an abundant area for study exists. To this researcher's knowledge, there has been no research conducted in this realm.

Second, this study's data indicate that those students who handwrote their work scored significantly lower than did those students who word processed their work. It can be concluded that writing with a word processor results in better work overall. Furthermore, it is the opinion of this investigator that although teachers of developmental writers have always known anecdotally, by observation on a daily or weekly basis, that their students write better on word processors, those instructors might be encouraged to look more carefully at how a word processor could be better utilized to serve these students' needs. For example, is one brand of word processing software better than another? Is the cut-and-paste operation, crucial to revision, easier on a Macintosh than it is on a PC?

Instructors ought also to consider analyzing more carefully their own internal definitions of "good writing." A scale such as the one used in this study to define "deep revision" might be of benefit to all composition teachers, not only those who interact most frequently with developmental writers. Furthermore, collaborative writing software, such as "Daedalus" or "Common Space," two programs



currently receiving widespread attention in writing classes around the country, might be examined as tools to enhance writing proficiency. Although this study did not focus on collaboration per se, such writing software regularly makes use of prompts designed to improve deep revision practices.

Third, students participating in this study who were younger than 25 years of age performed considerably better on their word processed work than did students 25 years of age and older. In this researcher's opinion, such a difference is due to the fact that younger students have had far more lifelong exposure to technology than have older students. It would behoove university instructors, management, and upper administration to understand that older students need to be more quickly brought up to speed insofar as using the prevailing technology. In many instances, the older student's many years of learning places him or her at a singular advantage over younger classmates; such does not appear to be the case, though, when older students are asked to word process on a computer.

#### Additional Concerns

In the half-decade since this investigation was first begun, the growth of research in the field of developmental writers' use of computers to improve their skills has been slow but profound. Computer assisted writing instruction as it interfaces with developmental writers is still an adolescent pedagogy, exhibiting enormous strengths and obvious weaknesses and idiosyncrasies. Writing faculty now

have over two decades of experience with computer-based pedagogy, and the use of high-end, computer-based technology in the general freshman level writing classroom, for example, has evolved to the point of vigorous scholarly inquiry. Nevertheless, current investigation into the specific area of developmental writers and how they might be assisted toward competence--both with the technology and in their writing skills--is still thin. Investigation into this area ought to be continued, with an emphasis on long-term examination of college age developmental writers, a population that remains at the fringes of the university mainstream.

Furthermore, the provocative question of why students write better using a word processor remains to be thoroughly understood. The orientation that the subjects of this study received certainly familiarized them with certain operations designed to increase fluidity, exemplification, and detail expansion, most specifically, the cut-and-paste operation, but questions remain having to do with attitude (i.e., does an improved attitude act as an impetus to write better?) and ease of operation (i.e., is revising simply more fluently accomplished on a word processor, with its inherently fast and easy text manipulation, than it is with a pencil or pen?). There are few studies in this area which deal effectively with the developmental student's attitude as it pertains to the end result. More thorough studies examining attitude toward the word processor and writing as they interact on the final product could be conducted.

In a Chronicle of Higher Education editorial, Griffith and Connor (1989) suggest several strategies for improving developmental composition pedagogy. These include the creation of a student-centered classroom, the subordination of skills to content, the establishment of connections to students' own lives, and the replacement of lecture-and-regurgitation and drill-and-practice with critical thinking types of problem-solving activities. Those who instruct developmental writers know that such maladroit students should never be taught using drill, memorization, and recall no matter how administratively expedient such techniques may be.

Writing is a tool for critical and analytical investigation that functions as a meeting ground that privileges neither technology nor existing teaching patterns, but takes into consideration the particular needs of developmental writers and patterns a pedagogy around their empowerment as "critically engaged citizens of the university of discourse" (Freire, 1994). Policymaking and intervention into the lives of, and education of, other human beings is critical, as is the justification of educational practice, particularly for a population of students who have historically been ignored, marginalized, compartmentalized, or otherwise disenfranchised. There is power in the written word, as any educated individual in power will tell you; therefore, issues around the politically sensitive zones of diversity and multiculturalism as they interact with writing

expertise can provide an abundant area for further scholarly inquiry.

Many questions remain: what position should instructors of developmental writers and researchers who examine concurrent pedagogy have toward computerized communication in our basic writing classrooms? How might the personal computer and similar technologies stymie or support writers' processes? And what role should computerized communication play in educational institutions for which writing classes prepare students to communicate professionally and/or academically?

Technology is not a toy. In the hands of intelligent and compassionate educators, it is a dynamic tool that we in academe are only beginning to understand as a means to level the academic playing field for all of our students.

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APPENDICES

APPENDIX A

"HOW TO USE CLARIS WORKS"

INSTRUCTION GUIDE

**HOW TO USE CLARIS WORKS**

1. Turn on the COMPUTER using the switch around the left rear side of the computer. Wait until all the icons appear completely. Then put your disk in.
2. Double click on your disk icon if the desktop showing your files is not already opened up at the left. Pay no attention to the Hard Drive (HD) desktop if it is open.
3. Double click on the document square to the left of the words "Claris Double Click" located on YOUR disk's desktop if you want to start a new document. DON'T double click on anything on the Hard Drive's desktop. After all the icons have appeared, you will be ready to type. Your disk has been formatted in a way acceptable to most university instructors. Don't worry about spacing and fonts--it's all ready to go.
4. If you want to continue working on a previously-created document, do step 1 and step 2 but then double click on the document square next to your paper's name; your paper will open up.
5. Tabs are automatically set on the ruler at one-half inch. You do not have to set manual tabs; just press the "tab" key and your cursor will move to the right one-half inch at a time by itself.
6. To get rid of a word, double-click between any two letters of the word; the word will highlight. Press "delete" and the word will be gone. To delete a line, click three times quickly anywhere in that line, and it will highlighted. Pressing the "delete" key will make that line disappear. To get rid of a whole paragraph, click quickly four times between any two words anywhere in that paragraph. Follow previous directions for single words and sentences.
7. If you make a mistake, don't touch anything. Right away, drag to "Undo" under the "Edit" menu Your most recent operation will reverse itself.
8. To save: (THIS IS **IMPORTANT**. GO SLOW AND FOLLOW DIRECTIONS.)
  - A. The first time you wish to save your work, use the "Save As" command under the "File" menu. Type the name you want to call your document directly onto the keyboard. The highlighted words "Claris Double Click" will disappear as you type. Then click on "Save."

B. Whenever you want to save again after that first time, use the "Save" command under the "File" menu, NOT the "Save As" command.

**Remember: Use "Save As" the first time.  
Use "Save" every time after that**

9. To print: MAKE SURE YOU SAVE BEFORE YOU PRINT.

A. Under the black Apple menu is the word "Chooser"; drag down to it and open it up.

B. Click on the Apple talk icon (off to your left) to highlight it.

C. Click on the ImageWriter 2 or 3 icon (to your right) to highlight the printer you want.

D. Close the menu by clicking once on the empty box in the upper left hand corner of the menu.

E. Then drag down to the "Print" command under the "File" menu.

F. When the printing box appears, make sure the quality of print you want is activated.

G. BEFORE YOU PRINT, LINE UP THE PRINTER PAPER RIGHT. Ask a lab assistant if you don't know how to line up the printer paper.

10. To get your paper out, follow the directions on the printers. If you do not follow these directions and you start cranking on the printer's roller bar, a lab assistant will holler at you.

11. To Quit: Drag under the "File" menu down to "Quit." When your original desktop arrangement appears on the screen, drag your disk icon into the trash, but don't turn the computer off. Also, don't use the "Shutdown" command. Follow the directions on the green sheets on the walls around you for "How to get your disk back."

12. To spellcheck, drag to "Writing Tools" under the "Edit" menu; highlight "Check Document Spelling."



APPENDIX B

ABBREVIATED RUBRICS FOR THE  
HOLISTIC SCORING OF A PAPER

Abbreviated Rubrics for the  
Holistic Scoring of a Paper

## 1. POOR ("1")

- a. No focus, development, or details; the essay is filled with clichés and unsupported material with no evidence of critical thinking skills;
- b. Dominated by ineffective, unnatural language ("Engfish"), or by difficulties typically attributed to speakers of second languages; few or no examples, no details, and/or no substantial support from resources;
- c. Distractingly bad grammar; nearly complete lack of control of language as evidenced, for example, by nonexistent transitions and/or little or no variety in sentence structure
- d. Provokes the questions "What's it about?" meaning there is no sense of audience, purpose, personal voice, or writer commitment.

## 2. AVERAGE ("2")

- a. Attempts to focus, though that attempt may be artificial, repetitive, or trite. However, this essay's purpose is usually clear;
- b. Has a sense of example, but outside support for a thesis is often just pasted into the essay and does not feel coherent. Many times this essay is a classic "data dump," that is, a collection of outside citations which have been just thrown into the paragraphs at random locations and which do not, of course, effectively coalesce into a readable product;
- c. Grammar is still a somewhat distracting problem, but the essay demonstrates some organization and language control;
- d. Demonstrates some organization and sense of meaning; there is rudimentary evidence of critical thinking skills in this essay, but the overall logic may still be flawed. Evidences a sense of purpose.

## 3. GOOD ("3")

- a. Focused
- b. Develops points through good, but not stellar, examples;
- c. Grammar is non-obtrusive; shows noticeable but still imperfect command of language, so that errors still appear, especially at the sentence level. Transitions are used competently but not elegantly;

d. Shows variety in sentence structure, some originality, some voice; there exists some understanding of the concept of audience and purpose.

4. EXCELLENT ("4")

a. Tightly focused, but not necessarily perfect; this essay is original in its purpose/thesis;

b. Memorable examples and details, so this essay is provocative and challenging to read; the writer has thought critically about each point he or she brings up, often evidencing a dry sense of humor; the essay uses outside support in remarkable, original, and surprising ways. Citations, for example, are inserted in neat, readable ways and resources are never overused;

c. Noticeable language control, i.e., mature sentences and grammar; elegant in its sentence structure and variety, and grammatically flawless--or nearly so;

d. Sense of audience; distinct and sincere voice; originality; no errors in logic. Clear sense of purpose.

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