TECHNO MAGIC – WHIZZ OR FIZZ?: STUDENTS' USE OF EDITING TOOLS

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Introduction

This paper presents the results of the first stage of a multi-method study on the editing strategies employed by year 3, 5, and 7 students. In the first phase of this study, Year 5 students were observed as they wrote and edited two pieces of writing; one completed by hand, and the other using a word processing package. This paper discusses the editing skills, processes, and tools used by these students, and how these impacted on their writing. This paper also summarises the information gained from these students and their teachers concerning writing processes and word processing. This study was incorporated as part of the NZCER Purchase Agreement with the Ministry of Education.

Background

In 1998 a new national strategy, *Interactive Education: An Information and Communication Technologies Strategy for Schools,* was published by the Ministry of Education. This strategy is likely to facilitate changes in the priority given to information and communication technologies (ICT) in schools. This research stems from this focus on ICT, and the current emphasis on literacy in New Zealand schools.

Editing is one of the ways students learn the conventions of writing and develop strategies for improving the content of their work. Joram et al (1992) state that "skillful revision is one of the hallmarks of expert writing". The document *Dancing with the Pen* (Ministry of Education 1992) discusses how word processors can be used for revising and number of studies have been conducted in this area (Breese et al 1996; Joram et al 1992; Snyder 1995; Philips 1995). This study develops on this work by looking in detail at the editing part of the writing process and how editing skills differ by age group.

Research aims and questions

This study is primarily about how students edit their work. We have used the term "editing" in place of the term "revising" which is often found in the literature, as editing is a term that is more commonly used in New Zealand classrooms. Editing encompasses both re-crafting and proof-reading. For the purposes of this study we have defined an editing change as "every instance in which a student goes back to something previously written or typed and alters it in some way".
An editing change could encompass altering the spelling of a word, inserting or deleting a word or a sentence fragment, reordering a sentence, or changing the font. Using this definition we examined two main questions:

1) What processes do Year 5 students use to edit their work?
2) How does the use of word processing packages impact on the way Year 5 students edit their work?

Sampling

The two schools selected for this study met the following selection criteria; ICT was integrated into the curriculum, there was a school-wide scheme for the teaching of writing, and the school was large enough to select an adequate sample. The two schools were large, high decile full primary schools. At both schools there was a computer in every classroom with the word processing package MSWord 97 or MSWord 2000, as well as a shared suite of approximately five computers available for use elsewhere on the premises.

At both schools 16 Year 5 students were selected for the study. Using students' class percentile ranks on the Progressive Achievement Tests of Reading, eight students (four girls and four boys) were selected for a high literacy group and eight (four girls and four boys), for a low literacy group. At both schools, students with class percentile rankings under 10%, recent immigrants for whom English is a second language, and students whom school staff suggested would be unsuitable for the study were not included in the sample.

Once students were selected for the study, a letter of introduction and a consent form were sent home with the students to their parents or caregivers. Teachers to be interviewed also received a similar introductory letter and consent form.

Research process and instruments

A multi-method design utilising both qualitative and quantitative data was used for this study. Studies of this type have been shown to provide a more comprehensive understanding of a phenomenon than single method studies (Yin 1994; Creswell 1994; Snyder 1999).

A number of research instruments were developed, piloted, and then used to collect information about the school environment, the opinions of teachers' and students' on writing using a word processor, and the ways in which writing and editing skills were taught and practised. There were four main methods of data collection employed in this study:

- interviews with students,
- observation of students' writing,
- clarification of details about students' writing, and
- interviews with teachers.

Interviews with students

At the beginning of the study each student was interviewed about his or her writing. The interview had a dual purpose: the first was to collect information on students' editing processes, computer experience,

and interest in writing. The second was to provide an opportunity for the researchers to introduce themselves to the students and build rapport prior to the observation period.

Writing tasks

Four writing tasks covering two different genres were developed for this study:

1) Two parallel poetic writing tasks involving the retelling of the Maori legends *Rona and the Moon* (Bacon 1984) and *Kakariki* (Insley 1988).
2) Two parallel transactional writing tasks involving the writing of instructions for the games *Snap* and *Snakes and Ladders*.

Each student completed two tasks, one using a word processing package and the other using a pencil. Half of the students completed the two transactional writing tasks and the other half completed the two poetic writing tasks. As students were observed completing each writing task, information was recorded in two phases. The first set of observations was made during the "writing phase," as students completed their first draft. The second set of observations was made during the "editing phase," as students edited their first draft.

Observation of students' writing

As each student completed the writing tasks a checklist was used to record the editing changes made during the writing process and at the final editing stage. The checklist included a set of categories for surface features such as spelling, grammar, punctuation, and layout and a set of categories for deep features such as paragraphing, re-wording, and reordering. The checklist also included a place to rate students' computer ability and to record whether or not they used a dictionary, other spelling aids, or the spell-check.

Clarification of details about students' writing

After the students had completed each writing task they were asked to identify and explain the changes they had made during the course of both the writing and the editing phases. We then drew students' attention to any other major changes they had made, but not identified, and asked them to explain these.

Interviews with teachers

The seven teachers who taught students in the study were interviewed about:

- the teaching of writing and editing skills,
- whether they took a different approach to teaching these skills when students were using a word processing package,
- their expectations of Year 5 students' editing skills, and
- how often students used word processing packages or other applications for writing, and the type of writing this was for.

Summary of preliminary findings for the Year 5 students

Findings from the student interviews

Students' attitudes to writing

Most students in this study stated that they like writing "a lot" (31%) or "a bit" (41%). Only three (9%) stated that they did not like writing "much" or "at all". The remaining three (9%) were neutral about writing. Most students also stated that they liked writing with a computer "a lot" (28%) or "a bit" (47%). Only one (3%) stated that they disliked writing with a computer. The remaining five (16%) were neutral about writing with a computer, and one (3%) had not used a computer for writing.

Was it easier to write with a pencil or a computer?

Slightly more than half (19: 59%) thought that it was easier to write using a pencil, 11 (34%) thought that writing with a computer was easier, and two (6%) thought it was the same. When students were asked about what was better about writing with a pencil the most common reply, given by 26 (81%) students, was that it was easier or quicker to use a pencil, for example, "… you can write bigger stories faster." When students were asked what was better about writing with a computer they gave a range of responses. The four most common were that:

- the spell-check helped find spelling mistakes – 13 (41%) students,
- writing looked neater – 10 (31%) students,
- tools could be used, for example, different fonts – eight (25%) students, and
- it was easier or faster to type – six (19%) students.

For example,

> *The computer can show you your editing you need to do by*
> *underlining it. You can get the letters in different sizes.*

Students' descriptions of their editing processes

When students were asked to describe how they edited their work nearly all (30: 94%) mentioned that they proof-read for spelling and simple punctuation mistakes such as full stops and capitals. Most (26: 81%) stated that they checked their spelling with the help of a dictionary. Fewer students mentioned that they proof-read to make sure their writing made sense (13: 41%), or that they re-crafted their work by changing words or sentences (10: 31%). The types of editing least mentioned by students involved structural changes such as reordering sentences (1: 3%) or inserting paragraphs (1: 3%). Two students' descriptions of their editing processes were:

> *I read through it again to see if I have written it too quickly*
> *and missed out a letter or put in wrong spelling or if there are*
> *better words – maybe I can find a better word. I look up*

spelling words in the dictionary. I put full stops, capital letters,
and punctuation in if I have forgotten them.
I read it, and give it to the teacher and the teacher fixes the
mistakes.

Editing using a computer

Nearly all students (27: 84%) stated that they edited their work in a different way when they used a computer. Half of the students said that they found editing their work easier when they used a computer, three (9%) found it harder, and 12 (38%) found it the same. The main reason students gave as to why they edited in a different way, and/or found editing easier using a computer, was the availability of spell-check which allowed them to identify or change mis-spelt words.

Students' use of computers for writing

All but one student in this study had used a computer for writing. Most (29: 91%) had a home computer, and most (20: 63%) reported that they had first used a computer at home. Most students stated that they used both school (27: 84%) and home (26: 81%) computers for writing.
Students used school computers significantly less than they used home computers. A small number of students (7: 22%) reported that they used a school computer for writing on a weekly basis. The other students (25: 78%) reported that they used school computers less frequently, that is, once a month or less. In contrast, half the students reported that they made weekly use of a home computer for writing. Students reported a range of writing activities they carried out at home including homework, lists, projects, diaries, letters, e-mail, stories, poems, plays, and recipes.

Students' computer skills

Students were asked about their keyboard skills. All students stated that they could put letters in capitals, and the majority reported that they knew how to add full stops, commas, apostrophes, and speech marks. Approximately three-quarters reported that they knew how to cut and paste, delete unwanted words, change fonts, make paragraph breaks, and use the spell-check function.

Interestingly, although a large proportion of students reported being able to cut and paste, only one was observed using this facility. All the students who stated that they could delete words did so, and approximately half of the students used the tool bar and/or right-click spell-check. Although many students were prompted by the "squiggly" lines most only had a superficial understanding of the function of these lines. Many students attempted to change the spelling of a word or substituted the word with a different one when a red squiggly line appeared, on the assumption that the word had been spelt incorrectly. In many of these cases the prompt related to the student's failure to insert a space between two words or between a full stop and the next word, for example,

      So Rona went to the river to get some more <u>water.It</u> was dark...

Although half of the students made use of the tool bar or right-click spell-check many were confused

about which option to select, or how to select it.

As students were observed completing the word-processing task their keyboard skills were rated on a scale of one to three. A rating of one indicated that students had difficulty finding their way around the keyboard, while a rating of three indicated that they could use the keyboard quickly and easily. Eleven (34%) were given the rating of one, 13 (41%) were rated two, and eight (25%) were given the highest rating.

Findings from the observations

Common editing changes

The data from the checklist were analysed to determine if there were any differences between the type and number of editing changes made at the "writing phase" and "editing phase," and between the pencil and computer conditions. This information gave a picture of which editing skills students made use of as they completed the writing tasks. All students made at least four editing changes, the average number of changes was 20, and the maximum, 61. Students were, on the whole, mainly concerned with surface features such as accurate spelling, grammar, and the placement of full stops and capitals. Some types of editing changes were common to most pieces of writing, for example:

- spelling (97%),
- grammar, for example, tense, plural (77%),
- individual words (73%),
- full stops (72%),
- capitals (70%), and
- layout, for example, changes to spacing (55%).

Students were less likely to use more sophisticated forms of punctuation, for example, changing commas, speech marks, apostrophes, or exclamation marks when they were editing. Interestingly, no students attempted to make any editing changes involving question marks, although there were many opportunities in their writing to do so.

The most common way students re-crafted their work was by changing individual words to improve the quality of writing. Just over half of the students were observed substituting one word for another "better" word in their stories, or adding more descriptive adjectives. These students appeared to get enjoyment out of improving their writing in this way.

Less common types of editing changes

Other types of editing changes only occurred on some of the writing samples. Structural changes, such as inserting paragraph breaks, or reordering sentences or paragraphs, were made in a very small number of the writing samples. The changes made less frequently were:

- commas (33%),

- speech marks (28%),
- apostrophes (18%),
- exclamation marks (9%),
- inserting paragraph breaks (5%),
- reordering sentences (2%),
- reordering paragraphs (2%), and
- question marks (0%).

Similarities and differences between word-processed and pencil-written drafts

The main similarities and differences between word-processed and pencil-written drafts were as follows.

- Overall students made significantly more editing changes when they used a word processor compared with when they used a pencil.
- Students took significantly longer on average to complete tasks when using a word processor as their typing speed was slower than their writing speed.
- The length (word count) of students' writing produced with a word processor was almost identical to that produced with a pencil.
- When students used a word processor they spent approximately the same amount of time editing compared with when they wrote by hand.
- When students used a word processor they did significantly more of their editing during the "writing phase" (this includes correcting keyboard errors as well as changes often prompted by spell- and grammar-checks). In contrast, when students wrote with a pencil they tended to edit more during the "editing phase."

Spelling

Spelling changes were the most frequent editing changes made, with 97% of the writing samples including at least one spelling change. For each piece of writing we looked at three spelling measures:

- the total number of spelling changes,
- how many words each student attempted to change more than once, and
- the maximum number of changes to any one word made by each student.

Differences in the way students approached mis-spelt words were apparent when they used word processors compared with when they used pencils. When students used a word processor they made significantly more (twice as many) attempts at changing the spelling of words. When students used a pencil they made an average of five changes per piece of writing and when they used a word processor they made an average of 10.

The maximum number of mis-spelt words that were altered on a word-processed piece of writing was 45, compared with 17 for pencil written tasks. This difference can be partially accounted for by the fact that students working on the word processor made more initial errors due to unfamiliarity with the

keyboard rather than a lack of knowledge of correct spelling. Another reason for this difference was that students reported that they were prompted by the "squiggly lines" to recognise mis-spelt words.

When students were working on the computer they persevered with more difficult words. This desire to get the word right was prompted by students wishing to remove the "squiggly lines" of the spell-check. As one student stated:

> *The red thing underlining it means it's a mistake so I did it*
> *[changed a word] so that I could be right not wrong.*

When students used a pencil, only two (6%) made more than one attempt to correct any given word. In contrast, when students were using a word processor they tended to persevere for longer, with 17 (53%) making more than one attempt to correct a mis-spelt word, for example,

> *weiy ° whi ° why*
> *nobao ° nobady ° noboby ° nobody*

When students used a word processor the maximum number of times they tried to correct a word was eight. When the students used a pencil the maximum number of times they tried to correct a word was four.

Use of spell-check, dictionaries, and auto-correct

When students used a word processor, 27 (84%) noticeably used the spell- and/or grammar-check "squiggles" to prompt them to change spelling, punctuation, or spacing errors. In addition to this 15 (47%) used the tool bar or right-click to access the spell-check function to correct spelling or grammar, and five (16%) used a dictionary. Students tended to view spell-check as a replacement for a dictionary. When students were writing by hand significantly more (20: 63%) used a dictionary or *Spell-Write* (Croft 1998).

The auto-correct function of the word processing package made automatic changes to the writing of 22 (69%) students, for example, by changing "hte" to "the" or, if the student had pressed return, by inserting a capital at the start of a new line. This function was a mixed blessing for students as some pressed return to get to the next line rather than letting the word processing package wrap the text around for them. This resulted in the start of each line being given a capital, which students found difficult to remove, for example,

> *…when kaka called" Kakariki come here*
> *"so kakariki came over. Then kaka said " you have ugly*
> *Feathers the other birds laugh at you'' Kakariki said"*
> *I like these feathers'' and flew off. And did loops in*
> *The air showing off his feathers. The next day he*
> *Was flying over the forest when kaka called him over*
> *To the branch that kaka was on…*

Re-crafting

Students whose teachers emphasised the importance of re-crafting (word changes, sentence changes, and re-structuring) in their writing programme made significantly more of these types of changes in their writing. Overall students made an average of three re-crafting changes in each piece of writing whether they were working on a word processor or by hand. When students worked on

the word processor they made significantly more changes to sentences at the "writing phase" than when they worked with a pencil. When students worked with a pencil they made more changes to individual words at the "editing phase" than when they worked on a word processor.

It is interesting that the students did not make so many re-crafting changes at the "editing phase" when working on a word processor. There are two likely reasons for this; one is that students did more of their editing as they typed and so had less need to edit at the end. The other is that some students tended to think that the spell-check would find all their mistakes for them, and therefore were only concerned with "removing the squiggles" rather than reading through to check that their work made sense.

Findings from the teacher interviews

Overall, the writing process followed by students was similar across the classes of all the teachers interviewed. Editing had an established and recognised place in this process. Most teachers had similar expectations of the editing skills of Year 5 students. Teachers' expectations and the emphasis they placed on different aspects of editing effected the students' perceptions of these processes, and the ways in which they carried them out. Those students whose teachers placed more emphasis on the importance of re-crafting their work at the editing stage often reflected this emphasis when interviewed about their writing practices. They also tended to spend more time re-crafting their writing and were more likely to alter the wording of their work at the editing stage. On average these students made more changes to words and significantly more (twice as many) changes to the wording and structure of sentences.

Teachers had a range of views about the quality of students' editing when using a word processor. Just under half felt that there was little difference in the quality of students' editing when comparing work done on the word processor with that done by hand. Several teachers felt students made a better job of editing their work when using a pencil. Reasons given for this viewpoint included the difficulty of seeing errors on the screen, that the mechanics of typing got in the way of fluent writing, and that the extra time needed to type had adverse effects on students' concentration. One teacher felt that the quality of students' editing using a word processor was better than that done with a pencil. She felt that the clarity of the text on screen made it easier for children to see errors. She argued that because the word processor was used for publishing, students were motivated to ensure their work was of a high standard. One teacher felt that the spell-check could result in less spelling errors on word processed work.

Most teachers reported that they did not teach students specific skills for using the word processor when editing. Several voiced the opinion that students already had these skills. This view was summed up by one teacher who said that the word processor skills students learn at home "far out ways the skills learnt at school". However observations of students writing on the word processor revealed that some did not know how to use tools such as the spell-check, while others only had a superficial understanding of how to use them.

Most teachers reported that, on average, each student in their class would use the word processor once a month. When asked what types of writing the classroom word processor was used for teachers

reported a range of genre including poetry, narratives, retellings, articles, reports, posters, title pages, homework, and e-mail letters. The genre that most teachers mentioned was poetry. One teacher commented on the usefulness of using a word processor for publishing poetry because of the ability to work with layout possibilities, for example, that work could be centred. Two teachers commented on the need to choose "quick" tasks to be done on the word processor so that all students could have a turn. Poetry was cited as an example of such a task. This view was emphasised by one teacher who said she tried to "steer clear of lengthy stories".

While the word processor was used for writing in all classrooms it was mainly, and in some cases exclusively, used for the purpose of publishing work. With the exception of writing things such as labels, titles, or e-mails, the process of drafting and editing was not done on the word processor. Only one teacher reported that her students usually took their writing from draft through to publication when working on the word processor. Teachers were conscious of the fact that there was only one classroom computer and of the need for all students to have a turn. Taking a piece of writing from the drafting through to the publishing stage is time consuming and so may explain why few teachers used the word processor in this way.

Conclusions

The literature surrounding the use of word processors in the classroom discusses how student use of word processors is strongly influenced by teacher conceptions of writing instruction (Snyder 1999; Dybdahl 1997). The data from this study confirm these views by indicating that students' approaches to writing and editing are largely determined by the classroom context, in particular, by the approach of the teacher to writing instruction. This research shows that where teachers emphasised a particular skill, this was reflected in student attitudes and behaviours. For instance, in this study those students whose teachers emphasised the importance of re-crafting, talked about re-crafting when they were interviewed and re-crafted more when they were observed. Similarly, students lack of skilled use of the editing tools of a word processor can be explained by the fact that their teachers did not teach or emphasise the importance of these skills. Therefore whether the editing tools of a word processor are a "whizz" or a "fizz" depends on the classroom context.

The publication *Dancing with the Pen* (Ministry of Education 1992) describes how word processors can be used for drafting, revising, and publishing. The types of drafting and revising skills expected of students using a word processor and the spell-check function are listed, for example, the emergent writer "starts using a word processor to compose text" and "uses a spelling checker to assist in the spelling of unknown words". The early writer "refine keyboard skills; makes changes on screen" and "uses a spelling checker to extend knowledge of the rules of spelling as well as confirming text". The fluent writer "can use more sophisticated features of a word processor" and "uses a spelling checker to make text perfect". Our findings suggest that although writers met the stages for drafting and editing text using a pencil, many were not able to meet the stated descriptions for revising using a word processor as they had not been formally taught how to use the tools of a word processor for editing.

This study suggests that students could benefit from being formally taught further basic keyboard skills, how to use functions such as cut and paste, and simple ways to use the spell-check. It is important that teachers do not rely on students learning these skills at home. Further development of basic keyboard

skills could include: simple ways to edit or delete words and tips such as not using return at the end of each sentence; using spell-check accurately and knowing its different functions, for example, having an understanding that extends beyond "red lines are for spelling and green lines are for grammar." Students could be taught the range of common reasons as to why red or green "squiggly" lines appear, for example, incorrect spelling, lack of space between words, the use of Maori or unknown words or names, and the lack of capitals after full stops.

Interviews with teachers and students indicated that at school most word processors and other applications were used almost solely for publishing drafts that had been written and edited with a pencil. In essence the word processor was used as a presentation tool only. Parr (1991) suggests that "typing in an already written story" reinforces the idea that the writing process in linear when in fact revision can occur throughout the writing process. Breese et al (1996) concurs with this view by stating that "to write a first draft by hand is compromising the whole nature of the process".

While most classrooms have operated with one computer for 30 students it is easy to see how this situation has developed. But given the increased focus on ICT in the classroom, increasing resourcing, and the fact that many schools now have a small pod of computers available for students to use, it seems timely to re-evaluate this situation and use computer applications as crafting as well as presentation tools.

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