TEACHERS' PERCEPTIONS OF THE INDIVIDUAL CASE STUDIES' LITERACY PERFORMANCE AND THEIR USE OF COMPUTER TOOLS

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ABSTRACT

This paper presents the results of a study aimed at investigating how and why secondary school students use spelling and grammar checkers to aid them in their English writing. The study was a result of close observation over many years of how some students use computers effectively to support their writing, while others make just as much use of computers, but struggle to read and write in English. Six Year 8 students (as case studies) were selected to participate in the study based on their performances in validated standardised literacy tests. Two case studies in each of the scoring categories of 'high', 'medium' and 'low' were observed during their English writing activities with and without the use of computers. The students were interviewed about their self-ratings and experiences. Their teachers were also surveyed and interviewed to validate points of concerns. The students' perceptions indicated that the regular uses of computer tools (spelling and grammar checkers) at Years 8 and 9 aided them in their English writing, but they did not retain the skills that the tools offered.

KEYWORDS

Students, reading, writing, computer literacy, spelling and grammar checkers.

1. INTRODUCTION

Since computers became part of domestic, industrial and educational environments, new and innovative technologies have created changes and challenges in all fields. Children (the Net-Generation) are more perceptive and willing to exploit the electronic devices by engaging in the digital culture to construct self-identity and community (Mountifield: 2006). The school aged children live in the emerging world (Atkin 1998), a world of transition and with a global and local focus. The use of electronic medium/ICT has influenced the way young people perceive and transform the traditional written language into a language of their own, shaped by short conventional text messaging and online-chatting (Harris 2008). The Net-Generation has the opportunity to use the computer and their tools (spelling and grammar checkers) to present their work in a traditional form rather than in the variety that they invented. Many students trust the spelling and grammar checkers because they are very unsure of their own spelling and grammar (Sinclair 2010).

2. THE PURPOSE OF THE STUDY

The purpose of the study was to investigate how selected secondary school students' use of computer-based spelling and grammar checkers relates to their language literacy development. In relation to language, literacy is commonly defined as the ability to read and write effectively in a range of contexts (Forster 2009: 12). In today's society, both language and computer literacies are of major concern to scholars and educators. The study explores the relationship between the development of students' language literacy skills and their computer use in both school and domestic environments, since school tasks and activities are digitally produced with the support of resources from the internet.

3. RESEARCH METHODS

I have adopted a triangulation approach including both quantitative and qualitative methods using a mixed methods design for this two-phase study. In Phase 1, the selection of the six case studies was conducted through administering standardised literacy tests prepared by the Australian Council for Educational Research (ACER) to three Year 8 classes of 65 students. The tests provided information relating to students performance of their reading and writing and a survey sought their perceptions of the usefulness of the tools. The quantitative data from the first phase was sequentially integrated into the second phase where qualitative methodology was used to obtain a deeper understanding (McMillan and Schumaker 2006, Creswell and Garrett 2008) of the influences of the tools on the students' English writing. To elicit qualitative data, I observed the students in their classes, analysed their writing and interviewed them and their teachers.

4. RESULTS

The six students who made up the case studies were three girls and three boys. They were selected and categorised into three levels according to their ACER test results. A boy and a girl from any given performance level were selected from the same class. The case studies are referred to by a code that represents gender and test performance: G for girl, B for boy; H for High, M for Medium and L for Low test performance. Their teachers are referred to by a code TH (Teacher of the High achievers, TM (Teacher of the Medium achievers) and TL (Teacher of the Low achievers). Their identities are coded as shown in Table 1.

Table 1. Case study participants.

Students	Gender	Test performance group	Case Study Code	Teacher Code
1	Girl	High	GH	TH
2	Boy	High	BH	TH
3	Girl	Medium	GM	TM
4	Boy	Medium	BM	TM
5	Girl	Low	GL	TL
6	Boy	Low	BL	TL

The remainder of this paper is divided into three parts. The first part presents the profiles of the six case studies in terms of their achievements on the ACER tests. The second part focuses on the teachers' views of the case studies' English reading and writing skills. The third part reveals the strategies that the case studies employed while they composed their English writing. In Phase 2, the in-depth individual interviews were conducted and recorded after close observation of the participants in the classrooms.

4.1 Part 1 - The Case Studies' ACER Tests Results

The results in Table 2 reveal a pattern differentiating between the performances of the case studies on the tests. The percentile ranking of the reading vocabulary results was calculated using the guidelines supplied by the test producers (ACER). GH's and BH's vocabulary results were ranked at the 97^{th} – 98^{th} percentiles. As a result they were labelled the high achievers, while, GM's and BM's reading vocabulary results were ranked at the 57^{th} – 66^{th} percentiles and they were labelled as the medium achievers while GL and BL were labelled as the low achievers as their results were ranked at the 17^{th} – 26^{th} percentiles. A similar pattern characterised, the grouping of the case studies' results in the writing test, as can also be seen in Table 2 above.

No percentile was calculated for the writing test. The writing pieces were assessed on the content/context, language and "on balance" total (the scores for the content, language and on balance are added). As shown in Table 2, GH's and BH's writing pieces met most of criteria in the ACER guidelines. They achieved scores between 26 and 27 out of 30 in the writing test and were classified as high. The writing by GM and BM met some of the criteria and achieved scores between 16 and 20 out of 30 and were classified as the medium. GL and BL achieved between 6 and 12 out of 30 on their writing pieces and were classified as low. The high achievers wrote lengthy and expressive pieces of writing on each of the topics. The medium achievers wrote less but demonstrated a distinguishable story-line and attempted to incorporate the characters' names but the

characters were not well defined and showed little evidence of selection and control of the content to achieve specific purposes. The low achievers' writing was very brief and did not contain many different ideas. Their writing consisted of a few sentences showing basic understanding of the demands of the task. They also had difficulty with language skills such as vocabulary, spelling, grammar and handwriting.

Table 2. ACER test results for the case studies.

Case studies' ACER tests results					
Case studies	**Vocabulary Max = 40**	**Vocabulary Percentile**	**Adjusted Comprehension Max = 43 (Raw Comprehension Max = 21)**	**Comprehension Percentile**	**Writing Max = 30**
GH	32	98	30	89	26
BH	31	97	34	93	27
GM	20	66	20	53	20
BM	18	57	21	57	16
GL	12	26	15	35	12
BL	10	17	16	38	6

4.2 Part 2 - The Case Studies' Ratings of their Reading and Writing and their Teachers' Perceptions

Concurrent with students filling in the questionnaire, their teachers provided evaluations of their students' reading and writing capabilities. The case studies' responses to the survey are compared to the perceptions of their teachers in Table 3.

Table 3. Case studies' self-rating in reading and writing in English and their teachers' perceptions.

Case Studies' self-ratings in reading and writing in English and their teachers' perceptions					
Case Studies' self-rating					**Teachers' perceptions**
Case studies	**Self-rating of reading in English**	**Self-rating of writing in English**	**Self-assessment of vocabulary development since Grade 3**	**Teachers**	**What assumptions can you draw from your experience as a classroom teacher about the students' reading?**
GH	Very good	Very good	A great deal. The wide reading I engaged in was of a great help.	TH	She reads widely and has high expectations of herself.
BH	Very good	Very good	I had to work hard on my vocabulary. My parents are the key as well as my reading of books.		He is a big challenge – he reads widely and is knowledgeable
GM	Very good	Good	My vocabulary has not developed as much as I would like it to.	TM	She is OK but is capable of reading better than she has been.
BM	Very good	Good	Not a great deal.		He can read better if he consistently practises reading.
GL	Good	Poor	Definitely not.	TL	She is no challenge, does not read, can be frustrating. She is very quiet.
BL	Poor	Poor	Definitely not.		He is a big challenge not only in the lack of reading but also keeping the same exercise book from one lesson to the next.

Table 3 displays the students' self-rating in English (reading and writing) and their teachers' perceptions of their literacy capabilities. High achievers rated both their reading and writing in English as very good. The medium achievers rated themselves from very good to good while the low achievers rated themselves from good to poor. They were also asked to comment on their vocabulary development. The comparisons are almost the same between the case studies' and their teachers' perceptions, except for BM who does not practise reading.

4.3 Teachers' Views of their Students

Teachers were asked in the survey to describe the performance of the individual case studies in their English subject. They were also asked to comment on the individual student's general comprehension, whether students carefully read the written instructions provided in order to complete the set tasks/activities (in a general classroom setting or in the computer laboratory). This approach was also used to provide additional perspectives on any discrepancy derived from students' views of their capabilities. The teachers' responses are shown in Table 4 below.

Table 4. Teachers' rating of the case studies' comprehension.

Teacher's rating of the individual case studies				
Teachers	**Case studies**	**Describe students' general comprehension**	**Do you think students carefully read the instructions provided to complete the set tasks/activities?**	**Do you think students carefully read the instructions provided on the computer to complete the set tasks/activities?**
TH	**GH**	Excellent.	GH always does read the instructions carefully, and, if she is not sure of the set activity she seeks assistance.	Not really appropriate for types of activities undertaken in English.
	BH	Excellent.	BH always does read the instructions, and, if he is not sure of the set activity he seeks assistance.	Not really appropriate for types of activities undertaken in English.
TM	**GM**	GM's general comprehension is good. Overall she understands and can answer questions usually with clear evidence and example.	Usually GM reads the instructions provided without too many problems.	GM usually reads the instructions provided without too many problems.
	BM	Okay, but only when BM puts in the effort to listen.	At times, but sometimes BM forgets to read all information.	At times, but sometimes BM skips through the initial information and goes into other activities.
TL	**GL**	GL's general comprehension is good. Overall, she understands but finds it difficult to express herself when it comes to respond to certain topics or issues.	Reads the instructions but if they are still not clear to GL, she does not ask for explanation. She does the work as she knows best, even if it is all wrong.	Reads the instructions but if they are still unclear to GL, she does not ask for explanation. She briefly works on the set activities where she requires regular assistance.
	BL	BL's comprehension is OK at times. There have been issues with him to complete any sort of work. He tends to get sidetracked with other things to avoid completing the work.	BL does not read the instructions at all. Sometimes, he copies the work from his class mates.	Does not read the instructions at all, sometimes, he does other things which are not related to the set activities on the computer.

Table 4 shows the teachers' responses were the same for both students in their class. The teachers' description of the case studies corresponds to the students' answers in Table 3 TH described GH's and BH's reading and general comprehension skills as "excellent". TH commented that both GH and BH always read the written instructions carefully and sought assistance if they were not sure of the set activities. Throughout

my observation period, TH expected the students to handwrite their first drafts until they reached the curriculum expectations. I had a discussion with TH about the persistence of the handwriting strategies. The response was that "this group is a high achiever group and I would like them to remain at this level by ensuring that their vocabulary and grammar are up to standard. Students are not allowed to use computers while they are drafting". Graham et al (2000: 630) support TH's handwriting strategies to conclude in their study that "… handwriting [is] causally related to learning to write" (Graham and Harris 2006: 67 – 68).

TM was satisfied with GM's general comprehension as GM usually answered the questions with clear evidence and provided examples. GM usually "reads the instructions provided without too many problems", both with and without the aid of the computer. TM described BM's comprehension as "[o]kay, but only when BM puts in the effort to listen". "…, but sometimes BM forgets to read all information and skips through the initial information and goes into other activities". From the teacher's comments, BM did not follow class instructions and his avoidance of reading the written information suggested that his attention was directed to other activities.

TL responded that GL's "general comprehension is good". Overall, TL felt that GL understood what was expected of her but she found it difficult to express herself "when it comes to respond to certain topics or issues". TL's comments were that GL "does not ask for explanation", even when the instructions "are still not clear to her. She does the work as she knows best, even if it is all wrong". Her teacher's comments recorded in Table 3, TL described GL as "no challenge" very quiet and BL is a "big challenge", he "does not remain in his seat nor pay attention to class instructions". TL reported that both GL and BL were experiencing difficulties reading and writing in English. In line with TL, GL reported that she perceived herself as a "good reader" but a "poor writer", while BL reported that he perceived himself as a "poor reader and writer".

Narvaez (2002: 158) stated that the causes of individual differences in the comprehension of texts along two lines: "reading skill" and "reader knowledge". Malatesha and Aaron (2010: 317) as well as Myer and Wijekumar (2007: 356) stated that vocabulary knowledge is a prerequisite and a critical factor in improving reading comprehension. Fielding and Pearson (1994: 62) reported that teachers should set a stage for students to succeed at reading, they can "supply ample time for text reading, direct strategy instruction, and opportunities for collaboration and discussion". Readers use their knowledge of text structures to build a coherent memory representation, and these structures or relationships are part of their cognitive representation.

Williams' (2007: 199 – 200) work applies to both GL and BL. Specifically BL had reached a stage where his frustration and lack of interest in reading turned to behavioural disruption in contrast to GL, who remained quiet in class. The self-confidence of such students, according to McKenna (2012: 15), may decline as may their interest in what they are learning. These declines may also lead to lack of motivation and school failure. Chen and Lee (2010: 120) asserted that many middle and high school students who have only basic reading do not reach the necessary high level of literacy. They avoid reading, like GL and BL, and miss out on the opportunities to develop further their language literacy skills because they have not yet become autonomous and self-directed readers and learners.

4.4 Part 3 - Main Uses of Computers

The survey included open-ended questions about what the students mainly used their computers for, and the types of activities they regularly engaged in. In the interviews, I extracted their survey responses and gave them their answers as a stimulus for discussion. In the interview, I asked the case studies to elaborate further on their survey responses. The main focus was why the students used the computers rather than handwriting their school-work. The case studies indicated that accessing the internet was their main computer use. Their teachers were also asked about the use of the computers in their English classes. TH responded the use of computers in class was minimal. But TM and TL reported they use the computers for research, word processing and other software applications.

4.5 Case Studies' Reflection on the Use of the Computer Tools

This part sought to find out how confident the students felt about composing their English writing without the computer tools. When the case studies were interviewed, the questions I asked were based on their survey

responses in order to validate their answers. I asked them how they felt when the spelling and grammar checkers were turned off. Their responses were as follows:

GH: I do not totally rely on the spelling and grammar checkers. I usually use the dictionary to check for spelling errors because it uses the word in a sentence to confirm its meaning and its grammatical position. I do not need to use them because my vocabulary and sentence structures are very good.

BH: I do not totally rely on the spelling and grammar checkers. I usually use the dictionary to check my spelling and have my parents to read over the work for both spelling and grammatical errors. I only use them for really long document.

GM: If the spelling and grammar checkers are turned off, I feel that there is something is missing. I rely on the red and green squiggly lines to indicate to me that I have misspelt a word or my sentence structure is incorrect. When you get use to the computer tools, it is hard to work without them. I suppose we become dependent on them. **BM:** I do rely very much on the spelling and grammar checkers. The red and green lines are good things to have because they show me that the underlined words or the sentences are wrong. The spell checker helps you for time being but it is not beneficial in a long term.

GL: I am hopeless. If the spelling and grammar checkers are turned off. I told you earlier that I am a poor speller. I always use the spelling and grammar checkers to correct my work

BL: I do rely very much on the spelling and grammar checkers. But I still do not know which the correct word to choose from the list. I always choose the first word on the list because it is correct. I find the grammar a bit confusing.

Reflecting a more on autonomous view of literacy, GL and BL select one of the suggested words displayed or ignore the suggestions and leave the word unchanged, whether it is correct or not (Heift and Rimrott 2008: 211). An ideological view suggests that the process is not this simple, that other factors may intervene in the process of apparently 'selecting' the correct option. Ljungdahl (2010: 345) states that some students will just choose any word from a list of alternatives on the spell checker if they are poor spellers. This applies to BM, GL and BL in the study, where the intended content is lost (Galletta et al (2005: 82 - 86). An example was given by BH about his younger sister and his father's action of turning off the spell checker on their home computer. The reason was that his younger sister had started to use abbreviations, had begun chatting online, downloading information from the internet, and her spellings had started to deteriorate.

When it came to choosing the right word from the spell checker, GL's comment was that "…, I do rite click and click ignore". She elaborated in the interview that if she chose to use the electronic spelling list, "seconds later after I switch the computer off, I do not remember how to correctly spell the same word". She always relied on the spell checker, because she felt that she was "a poor speller". GL claimed that she used "the grammar checker all the time".

4.6 Frequency and Estimated Time of Computer Use and Reading

The case studies were asked to include the frequency of computer use and estimate the extent of their home computer use and reading per session. They provided estimated times in hours and minutes per session. The times were converted to minutes per week to enable comparison of the time fractions that they included. The case studies' responses are shown in Table 5.

Table 5. Frequency and estimated time of personal computer use and reading per week.

Frequency and estimated time of PC use and reading per week			
Case Studies	**Frequency use of home computer**	**Estimated minutes per week using home computer**	**Estimated time in minutes reading per week**
GH	Every second day	480	300
BH	4 times a week	360	420
GM	Every day	840	20
BM	Every day	840	No response
GL	Every day	1680	No response
BL	Every day	2100	No response

The data in Table 5 show the estimated time in minutes per week. GH and BH used their home computer four times a week or approximately every second day. GH's estimated time using her home computer was 480 minutes (8 hours) per week, while BH used his home computer for 360 minutes (6 hours) per week. GH spent two more hours using the home computer than BH. GH's estimated time spent on reading was 300 minutes (5 hours) per week, while BH's estimated time spent on reading was 420 minutes (7 hours) per week. BH spent two more hours more on reading than GH. TH reported that both students were "excellent" readers and writers. GM and BM spent more time using their home computers of equal time of 840 minutes (14 hours) per week than reading the printed text. GL and BL used their home computers "everyday". GL accumulated estimated time of 1,680 minutes (28 hours) per week and BL spent 2,100 minutes (35 hours) per week. They did not respond to reading time at home. As the data indicate that GM, BM, GL were indeed digital readers.

5. CONCLUSION

This paper was divided into three parts. Each part addressed a key element of how the secondary school students (the six case studies) used the computer tools to enhance their English writing. Their English teachers also reported on how they perceived each individual student's performance and achievement in their classes. The six case studies and their teachers were surveyed and interviewed in order to validate and establish any relationship between computer and language literacy skills. The first part presented the profiles of the six case studies in terms of their achievements in the ACER formal tests. At this stage, they were in Year 8 when they sat the ACER specimen tests (reading vocabulary, reading comprehension and writing). As shown in Table 2, the tests results revealed a pattern differentiating the performance of the case studies on the tests. The pattern of performance distinguished high (GH and BH), medium (GM and BM) and low (GL and BL) scores measured across the three literacy tests.

Part 2, the teachers (TH, TM and TL) gave their views of the case studies reading and writing as they perceived the students in their classes. TH's perceptions of GH's and BH's achievement in reading and writing performance were of a high standard. TM reported that when GM and BM produced their work on the computer appeared much neater and spelling and grammar were checked, corrected and easily redrafted. TL described GL's and BL's reading and writing skills as very poor. The data suggested high expectations of oneself and self-motivation are the motives to successfully acquire language literacy skills.

The data in Part 3 indicated that the case studies' self-ratings on their literacy concepts compared with the outcomes of the ACER tests were complemented by their teachers' perceptions of their performance in the English classes. GH and BH read widely (5 to 7 hours per week) and were self-motivated. They were influenced and encouraged by their parents who read to them so that GH and BH were read to during their growing up years. Both students found the wide reading very beneficial in the development of their literacy skills. By comparison the medium achievers, GM read for 20 minutes per week and BM did not read at all. The data showed a significant difference in reading time between the high (GH and BH) and the medium (GM and BM), where the GM and BM found reading "boring". Their results in the ACER specimen tests showed average to above average scores. The data also revealed that GM and BM sought other sources such as the computer tools (spelling and grammar checkers) to enhance their English writing, but only in a non-reflective manner. By contrast, GL and BL did not read at all. Their results in the ACER specimen tests were below the national average. Both students found reading "very boring".

The data suggested that the lack of exposure to interest in reading may have had implications. These implications of the study revealed that it is necessary for teachers to teach students how to use the electronic spelling and grammar checkers and dictionaries in any language at schools. So the students can use them correctly rather than guess and select the words and sentences randomly from the provided list by the tools. These tools should become part of the teaching curriculum for all school age students.

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