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Providing computer-assisted, two-way feedback in formative assessment: an innovation supporting best educational practice

A thesis
submitted in partial fulfillment
of the requirements for the degree
of
Doctor of Philosophy in Computer Science
at
The University of Waikato
by
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WAIKATO
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November 2012

Abstract

This thesis presents the design and development of an educational ICT innovation called the Quality Assessment System (QAS), intended to: *increase the speed of providing useful, legible and consistent feedback, enhance student engagement in the analysis and improvement of their own work*, and provide an easily-accessible, cumulative history of completed tasks and feedback.

The QAS has been developed to a proof-of-concept stage as a Microsoft Word add-in, which can be used on digital or handwritten work, and has functions to administer resubmissions.

The prototype system was evaluated at a tertiary institution in the field of English for Speakers of Other Languages. I used observations, interview methods, and a Wizard-of-Oz experiment to simulate full use of the software.

The research found that:

- the QAS could foster the rapid provision of consistent, clear feedback;
- the facility to provide digital feedback on handwritten work safeguarded the desire of some students to continue writing their tasks by hand;
- the handling of resubmitted tasks and the comparison of feedback on the first and second submissions (or any other pair of user-selected tasks) was considered very useful;
- some students were emotional attached to handwritten feedback and believed that feedback mediated by computer showed a lack of teacher care for the students;
- administrators believed the QAS would be useful for resolving student-teacher disputes, and as a tool to enhance the robustness of the quality self-assessment system the faculty adhered to.

While I acknowledge the need for caution in interpreting the fieldwork results of small samples, this research places systemisation tools such as the QAS firmly on the agenda for closer investigation.

Acknowledgements

This project would not have been started without the keen eye of my wife, Belma Gaukrodger, who identified an opportunity for me to present my computing work to staff at the University of Waikato in 2005. I thank Belma for setting me off on this academic journey of discovery and personal challenge. I am also very grateful for the support and understanding she showed throughout the difficult times experienced during the course of my studies.

Dr. David A Swain, Honorary Fellow and former Associate Professor and Pro Vice-Chancellor at the University of Waikato, was my chief supervisor for the first three years of my project. To David I am indebted for his extraordinary patience and ability in guiding me into the world of academia, his astuteness in anticipating and helping to resolve my research problems, and for fostering my critical thinking and self-belief to a degree I did not know I could attain.

I should also like to thank Assoc. Prof. Sally Jo Cunningham, Head of the Computer Science Department, and Bill Rogers, lecturer in Computer Science. They took on my research, originating in the Social Sciences, and helped mould it into an original cross-disciplinary contribution in Computer Science. I am grateful for their faith in me and for their belief in my software design, the Quality Assessment System, the catalyst for my project.

Finally, I should like to acknowledge the role of all the above parties in facilitating my successful application to obtain funding. I am particularly grateful to the Postgraduate Scholarships Committee at the University of Waikato for conferring on me the three-year, Bryant Trust Postgraduate Scholarship, and to the Faculty of Computing and Mathematical Sciences for the award of a research scholarship to assist in the final year of my work.

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Chapter 1: Introduction

1.1 An Innovation Supporting Best Educational Practice in Formative Feedback

Feedback, feedforward, feedahead. Formative, summative, diagnostic, progressive, and sustainable feedback. Education research is awash with feedback. So, what is feedback in this project, and why do we need more of it?

The generic definition put forward by Ramaprasad in 1983 prevails as one of the most concise and relevant:

“Feedback is information about the gap between the actual level and the reference level of a system parameter which is used to alter the gap in some way”
(Ramaprasad 1983, p. 4).

We need more of it because it plays an essential role in the education process, and is a proven critical function in closing “the gap” (op. cit.) between students' actual performance and desired performance (Sadler 1989), as further discussed in Chapter 2.

Currently, however, the time required to provide useful feedback, and that required by stakeholders (students, teachers, and administrators) to exploit such feedback, for future benefit remain seriously undermined by a range of issues.

Students:

- find teacher feedback difficult to read and understand;
- cannot quickly access past feedback to benefit subsequent work (no sustained feedback benefit).

Teachers:

- complain that marking takes too long;
- claim that students do not always read the feedback;
- cannot remember students' strengths and weaknesses;
- have no system for recording feedback and student information.

Administrators:

- acknowledge a lack of consistency in feedback;

- do not know what tasks are being allocated, and what feedback is being given;
- cannot access tasks and feedback to resolve disputes.

The overall purpose of this research is to explore my design and partial development of a computer-assisted assessment system, called the Quality Assessment System (QAS), and the implications of its use, to support feedback and address the above issues.

More specifically, I aim to investigate the extent to which participants believe the prototype QAS:

- could speed up the marking process for word-processed and handwritten homework tasks;
- could foster progressive, two-way feedback through the process of withholding completion feedback (see Glossary) until resubmission had taken place;
- could improve consistency of feedback;
- could improve clarity of feedback;
- could promote reflection by students and teachers on past feedback for future work, and permit administrators to review student and teacher feedback.

This investigation was carried out in an environment in which information and communications technology (ICT) can now play a crucial role in providing opportunities to develop innovative feedback methods that were impracticable just ten years ago. Human (as opposed to computer-generated) feedback can be managed through ICT and could be complemented by a range of functions to provide, record, analyse and display feedback in any number of ways. The huge potential of ICT can be harnessed to provide 24-hour accessibility to tasks, feedback and tools to accommodate peer collaboration. With an appropriate ICT-based feedback system, learning autonomy could be increased by engaging students more in the analysis and improvement of their own work. The system could also provide a cumulative resource of completed tasks and feedback to: a) assist students in writing current and subsequent tasks, and b) enable teachers to review feedback in order to ensure it remains relevant, appropriate and useful.

Chapter 2: Research Context and Contribution

2.1 Impetus for the Project

The impetus for this project comes from observations made during my career in language-teaching and computer-programming. I have seen how, over the past 30 years, education has been influenced by the evolution of ICT. Some of my observations relate to student task completion (e.g. use of Internet-based news articles, online libraries and dictionaries), others relate to lesson preparation, using for example Microsoft PowerPoint. Further observations relate to how higher education (HE) management use ICT to carry out administrative tasks relating to staff, students and the courses (e.g. teacher recruitment and allocation to courses, student database, and e-mail communications and collaboration). And, finally, I have seen how ICT companies have been increasing their presence in the public education sector with learning management systems (LMS), such as BlackBoard, general office software such as Microsoft Office, social media networks and blogging, computer-based language laboratories, data projectors, and specific learning and teaching software. Most recently, however, I have observed the evolution of ICT in education focusing on computer-assisted assessment, and tools and resources for putting education online, as discussed in further detail in Chapter 3. Yet, I am aware of little education software being designed with a view to integrating actual feedback methods practised.

As a teacher of ESOL, I became highly conscious of the manual methods practised for providing repetitive feedback on students' written work. The lack of software to help me in this task constituted a challenge. I wanted the computer to reduce my burden of record-keeping and paper-shuffling, and to allow me to focus on providing carefully-considered feedback. I wanted the program to help students avoid repeating errors and to promote engagement with the feedback. All too often, feedback was not responded to as hoped; it was sometimes misunderstood, and appeared only rarely to be a contributing factor to students' change in performance. Furthermore, I observed there was little motivation for students to submit work on time, if at all, and teachers received irregularly-completed homework tasks in formats of all varieties - submitted on everything from scrappy bits of wrinkled paper torn out of an exercise book to proudly-presented, word-processed work protected in plastic sleeves. When issues arose regarding fairness and consistency of feedback, resolution often depended on the

memory of the students and teachers, and/or the involvement of the course administrator. A single issue could drag over a period of weeks. When it came to evaluating students' general performance for assessing advancement to a higher academic level, decisions were customarily made by end-of-term exams and discussion between the students' respective teachers and the administrator, based on recollections of students' homework tasks.

Put concisely: there was no system for administering tasks and feedback. Feedback was time-consuming. Teachers were not motivated to provide feedback, and students lacked engagement to use the feedback provided. Administrators had no means of accessing student tasks and teacher feedback, and could not resolve issues efficiently.

It was this awareness of the problems with feedback and my own frustration at being entangled in them that drove me to seek a solution, while it was my personal experience that provided the knowledge base (Peirce 1957) to understand the problems.

With the above observations and experience as a powerful incentive and source of knowledge, I set about designing an ICT-based feedback system, called the QAS, to enhance existing methods of feedback and resolve one by one the issues described above.

Thus, the contribution to research that this project makes is in the design and analysis of an innovative ICT-based method that allows teachers to:

- 1) fine-tune feedback comments to convey the subtleties of English grammar, in a way that is not currently possible;
- 2) collaborate on the feedback to provide, and on the feedback already provided;

and which allows students to:

obtain detailed feedback comments that are customised to their level of English so as to help them understand the feedback, learn from their mistakes and build on their strengths.

2.2 Selected Research Domain

I designed the QAS to administer feedback on the written work of students studying English for Speakers of Other Languages (ESOL) at tertiary level in New Zealand. The field of ESOL was selected because it provides an ideal education environment where detailed feedback is both usual and required.

This feedback may range from the identification of spelling mistakes, requiring the insertion of just one or two characters, to an evaluation of the general structure of the text, requiring a whole paragraph of remarks.

The name of the program was chosen to reflect:

- a) the provision of ICT functions to support the feedback process ("Quality") to indicate the high standard of teacher feedback that the program wishes to facilitate and promote;
- b) the appraisal ("Assessment") of homework tasks assigned by teachers to students;
- c) the collection of integrated tools ("System") to administer the feedback process made possible by the innovation, encompassing: access to, processing, distribution and storage of, the tasks and feedback relating to the students, teachers, administrators involved in ESOL courses.

The QAS is at the prototype design stage and is intended for use by teachers of ESOL courses. It is designed to be installed on a faculty's networked computers, with the QAS database located on the faculty's server. It is designed as an add-on for Microsoft Word 2003 using the Windows XP operating system. The design of the QAS is based on that of an earlier version called the Correction Code Toolbar (CCT), which I developed to functioning prototype stage in 2003¹ (see Section 5.7).

The rationale for designing the QAS as an add-in for Microsoft Word is that this was the design of the proven concept of the Correction Code Toolbar, and because Microsoft Word has become the de facto word-processor for students and teachers at tertiary level. This design choice is significant for users, as they are already acquainted with the functions of Word, and therefore of the QAS. It is also significant for software installation personnel, as the add-in would form part of an already well-established

¹ The CCT was presented at an Auckland polytechnic, and led to the award of a contract to install and trial the software. However, due to the downturn in the ESOL market, I took voluntary redundancy before the trial began, and moved to Nelson. The CCT was hard-coded into my laptop and was not made available to the public. It can no longer be demonstrated. However, Figure 57 presents a feedback summary following presentation of the CCT, and Table 2 lists those functions that worked at the time of the presentation. It was my experience with the CCT, and the feedback collected, that led to the subsequent development of the QAS. An analysis of the working functions of the QAS follows Table 2.

program and would be unlikely to trigger incompatibility issues with existing software.

The QAS is designed to provide students of English with formative feedback on their homework tasks. The feedback is in the form of correction codes and comments (feedback items). The feedback items and the tasks are stored in the QAS database and can be accessed by students to permit reflection on past work and to aid in the completion of new work. Teachers can also access the QAS database to reflect on the feedback given, customise the feedback items for subsequent work, identify the language areas in which individual students excel or require assistance, receive and distribute homework tasks, and to generate and view reports displaying summaries and comparisons of feedback. Finally, administrators can access the QAS database to review tasks and feedback in order to help with course administration.

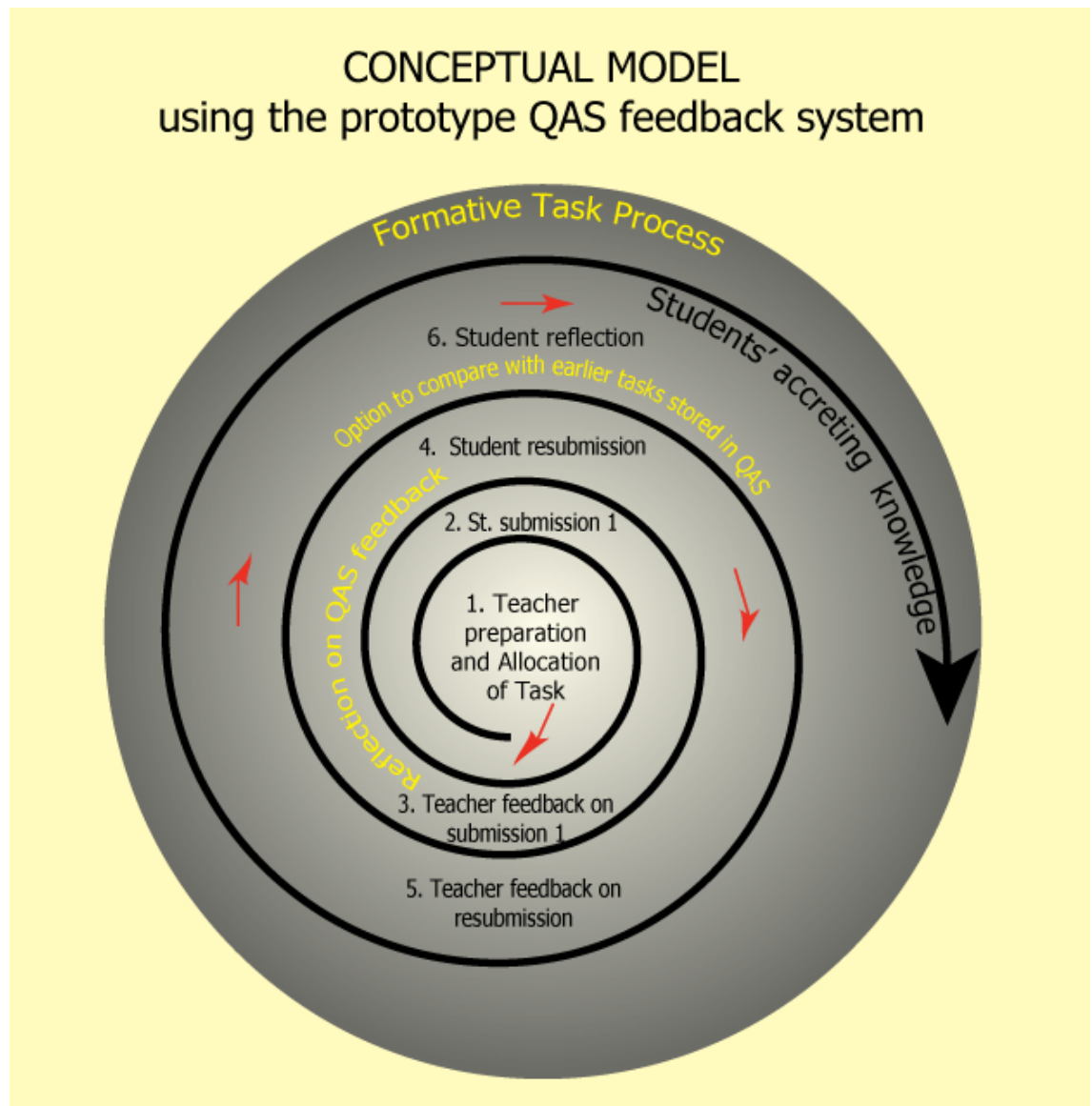
The most salient features of the prototype QAS are that, as a Microsoft Word add-in, it exploits features that are already familiar to most students and teachers who use computers, while adding features to facilitate the fast provision of feedback, and the collection of this feedback for subsequent access by students, teachers and administrators (stakeholders). Its key features are: a) the drop-down QAS menu displaying functions that include a list of selectable correction codes and feedback comments, and b) the QAS template, designated the QAS-Grid, that permits the marking of *handwritten* tasks. Detailed and customisable reports can be generated by the software, and these allow stakeholders to review tasks allocated, feedback given, and a range of other information (see Chapter 6).

To ascertain the degree to which the QAS was considered by participants to address issues with feedback, data were collected through observations and interviews, and by use of a "Wizard of Oz" experiment (see Section 7.7.1) to convey and emulate the functionality of the prototype QAS software. I selected participants from three groups, as specified above, to facilitate a balanced, cross-sectional interpretation of data from all parties that would be affected by implementation of the QAS. My analysis of the fieldwork data scrutinises the methods currently used by the participants for allocating, completing, and marking tasks, as well as the administrative functions that require subsequent use of the feedback. I then compare the resulting data with the data collected during the experiment and subsequent interviews, and summarise my conclusions in Section 7.12.

2.3 Conceptual Model

The conceptual model in Figure 1 shows the dynamic process of the different stages in the feedback process and relates to students and teachers working at all levels of ESOL. It portrays feedback as a progressive process that can be optimised by means of greater interaction, facilitated by task resubmission intended to engage students more in the feedback process and foster the accretion of knowledge for use in subsequent tasks.

Figure 1: Conceptual model of feedback administered by the QAS



This model shows the formative task process as a spiral path that, in order for feedback to function to full advantage, must go through a number of

specific, pedagogical stages, all subject to the principal factors that interact with, and influence, the process: external factors (non-pedagogical), and Quality Assurance. (I acknowledge the increasing importance of quality assurance in education, but limited research in this area for two reasons. Primarily, the research site carried out *internal* assessment of its standards (see Section 9.6.1), and secondarily, the topic is of such magnitude that a cursory investigation would not have done justice to its significance, and a comprehensive investigation would have detracted from the focus of this project).

The model identifies six stages in the feedback process. None of these stages seen individually is dependent on use of the QAS software. However, research participants showed that a technological tool with the functionality of the QAS is a valuable, flexible and appropriate asset for encompassing these six stages efficiently and advantageously.

Stage 1 represents the teachers' planning and allocation of homework tasks. The instructions for the students are inserted into the QAS using the Task Allocation Form to facilitate access by the students and teachers with appropriate user permissions.

Stage 2 represents the submission of the task by students to the teachers. As explained in the chapter "The Quality Assessment System (QAS)", the tasks can be completed by hand, or by word-processor, and delivered electronically, or on paper.

Stage 3 represents the teachers' feedback on the tasks, and comprises insertion of correction codes and comments. No summative comments or grades are given at this point, as the model adheres to the concept of resubmission of tasks and fosters reflection by students on the formative feedback before submitting their work a second time.

Stage 4 represents the resubmission of student tasks after students have reflected on teacher feedback. Once the students have completed more than one task, the QAS database can be accessed by the students to compare current homework tasks with earlier tasks, and to review earlier feedback with a view to constructing new knowledge in subsequent tasks.

Stage 5 represents teachers' feedback on students' resubmissions. With the QAS having been designed as an add-in for Microsoft Word, teachers can review students' first and second submissions side by side for identifying changes in the students' work. Following completion of the formative

feedback on Submission 2, teachers may wish to provide a summative grade using one of the several grading scales provided by the QAS. The work is then returned to students electronically (e-mail). All feedback is stored in the QAS.

Stage 6 represents a phase of reflection by students on their work and the feedback. Reflection may involve peer-to-peer discussion, online chats, private perusal, or other methods. With all tasks and feedback stored in the QAS and available online, students have the option of accessing their work from any Internet-connected computer and choosing a time appropriate for them to reflect on their work and to use this to assist them with their subsequent tasks. This final stage in the conceptual model thus also represents the first stage (for students) of the next task. In this way, the spiral continues and, I maintain, knowledge accretes.

2.4 The Nature and Role of Feedback

Research participants stated that the most common form of feedback related to formative tasks allocated two or three times per week. These tasks were called "homework". Such tasks were customarily based on, or taken directly from, exercises in published ESOL course texts, and aimed to test a variety of reading and writing skills to enhance and evaluate comprehension and the grasp of grammatical points introduced earlier in the respective course book unit. Additionally, tasks were created by the teachers themselves, especially when such tasks involved use of the Internet, research, or compositions². Feedback was provided by the teachers creating the tasks in the form of written corrections and comments. The submission and feedback process was most frequently completed using pen and paper. Yet, such feedback practice is subject to a number of factors that essentially undermine the intended aims of the feedback:

"However, teachers are often under extreme pressures of time and student numbers, and frequently fail adequately to describe the constructs of the target language, or to understand sources of interference from the students' L1 [Language 1 – mother tongue]. Various studies have criticized written teacher feedback as hasty, generic,

² A 'composition' in the area of ESOL is a short piece of creative writing from 100 to 500 words on a topic usually chosen by the teacher.

inconsistent, unclear, and discouraging to students (e.g., Cohen & Cavalcanti, 1990; Straub, 1997). ...

Unsatisfactory feedback is compounded by ... widespread pressure to write error-free examination copy. Such factors can lead learners to adopt short-term avoidance strategies at the expense of acquiring broad lexico-grammatical and communicative competence in the target language (Milton, 2001)" (Milton 2006, p3.).

The literature makes it clear that the importance of feedback for student learning cannot be overstated (Gipps 2003), yet ample evidence is put forward by authors of assessment literature (Sadler 1989; Boud 2000; Nicol and Macfarlane-Dick 2006) that feedback is not achieving its goals. It is evident from personal observations and contemporary research literature on feedback that there is a significant gap between what is practised and what is preached.

It is in the light of this contrast of assessment literature and education practice that I present the current research – not to investigate the topic of feedback *per se*, but to investigate how students and teachers perceive feedback, and how such perceptions change following participation in a research experiment to emulate the use of the QAS.

The QAS provides the structure and functions to systemise the feedback process, and fosters the engagement of students in the feedback relating to the first draft of their work (Submission 1) in order to revise and resubmit their tasks (Submission 2). It is only when students have resubmitted their work that they receive completion feedback. Without reflecting on feedback and resubmitting their tasks, students can be held back from exploiting their own abilities and the teaching of the practitioners:

"In higher education, most students have little opportunity to use directly the feedback they receive to close the performance gap especially in the case of planned assignments. Invariably they move on to the next assessment task soon after feedback is received. While not all work can be re-submitted, many writers argue that re-submissions should play a more prominent role in learning" (Boud 2000) cited in Nicol and MacFarlane-Dick (2006), p.13).

While the concept of resubmission is not new, the provision and administration of feedback through a computer-assisted assessment system (CAAS) with the functions highlighted above is. As emphasised by Boud, the response to feedback is essential, yet is a significantly undervalued element of formative assessment:

“The only way to tell if learning results from feedback is for students to make some kind of response to complete the feedback loop (Sadler, 1989). This is one of the most often forgotten aspects of formative assessment. Unless students are able to use the feedback to produce improved work, through for example, re-doing the same assignment, neither they nor those giving the feedback will know that it has been effective” (Boud 2000, p.6).

The current research builds on Boud’s work by investigating the *appraisal of resubmitted work* within an ICT framework that systemises the feedback process.

To understand and interpret accurately the participants’ actual feedback process and how participants thought the QAS would affect this process, it was important to establish a baseline by eliciting from participants the feedback practices they believed they adhered to (as expressed during interviews), and to compare this with what I identified through observations was actually practised. This approach of deconstructing feedback practice (Dixon 2005) helped identify the aforementioned differences and informed my questions on important characteristics of feedback practice as elicited from the participants. By using the understanding of the feedback process put forward by the participants themselves (rather than that perceived, or assumed, by the researcher), I also sought to minimise preconception and bias. The differences identified were not seen as feedback deficiencies (Boud 2000; Nicol and Macfarlane-Dick 2006), but rather as an opportunity to seek further insight, as discussed in Section 9.5.4. The fieldwork was consequently designed to determine the extent to which research participants considered the QAS a useful tool for systemising the formative task process and for providing feedback effectively and efficiently. What were the benefits and drawbacks? How would implementation affect current working methods in terms of workload, speed of use, administration and support? Did the participants identify opportunities to revise or improve the design of the software? The research design selected is moulded to the

conceptual model I propose with a view to investigating these issues and those specified earlier in this introduction.

2.5 Structure of this Thesis

In the following chapter, I present a review of feedback literature, identifying the core concepts used in the research, analysing the evolutionary character of the relevant literature, discussing the recurring themes, describing the characteristics of feedback in general, and those of CAAS and systemised feedback in particular. I present a detailed evaluation of QAS alternatives, then continue with a review of other ICT systems that relate to, or can be of significance to, the feedback process. I examine non-pedagogical factors that may affect the giving and receiving of feedback, then discuss student resubmission of tasks. In summary, I draw together the threads of the review and emphasise the central issues recurring throughout the relevant literature.

In Chapter 5, Implementation, I focus on the issues that the QAS is designed to address and how the design and prototype implementation address them. More specifically, I present the user requirements that would allow the QAS to accomplish its goals. I then go on to describe the status of implementation, focusing on the current status of the QAS. This is followed by a presentation of what was done and how it was achieved, providing a rationale for the design steps and describing the building of the program. The chapter concludes with a walk-through of how the QAS might be used by a teacher in a typical situation of providing and reviewing feedback, and how students may view and respond to the feedback, and generate a report to compare feedback on two different tasks.

In Chapter 7, I explain and evaluate the methods used to ascertain the appropriateness of the QAS for its intended purpose. I explain the theoretical basis on which the fieldwork is founded, then continue with a detailed presentation of the fieldwork methods used to collect data in two scenarios: current feedback practice, and feedback with the QAS. I then describe the context in which the fieldwork was carried out, and the methods used to select the participants. The next section examines the observation and interview methods in detail, describing the types of questions used. I then present a step-by-step account of how the fieldwork was actually performed, encompassing interviews, observations and experiment.

The experiment was carried out using a research technique known as the "Wizard of Oz", innovated and first used by J F Kelley (1984) and defined as follows:

"The Wizard of Oz technique enables unimplemented technology to be evaluated by using a human to simulate the response of a system. This technique can be used to test device concepts and techniques and suggested functionality before it is implemented" (UsabilityNet 2006)³.

This was precisely the environment in which the research experiment was carried out. By using a Wizard of Oz technique, I was able to investigate my research goals without fully implementing the QAS software, and to focus on analysing human behaviour rather than computer technology.

My account of the fieldwork is supported by copies of questions asked, and by a number of images of documents used in the interviews. The chapter continues with an explanation of how I categorised and coded the field data, and how data validation was performed, and concludes with a presentation of potential influences affecting data collection, followed by a summary analysis expressing the success of the methods and referring to the evidence supporting this success.

In Chapters 8 to 10, Fieldwork Analysis, I present the responses of participants to the fieldwork questions, and analyse these responses to ascertain the extent to which the participants believe the QAS addresses the feedback issues identified in Section 1.1. I begin by defining terms used in the chapter that are specific to the topic or to the research site, then refer to the external factors and my biases that may influence the fieldwork. I describe the ICT environment in which the fieldwork was performed, then continue with an analysis of the fieldwork data from the two scenarios: a) current feedback practice with resubmission, and b) feedback using the QAS with resubmission. The former analyses the stages in the feedback process currently practised at the research site, while the latter analyses comparable stages but obtained through participants'

³I have used a recent and generic source to define the technique in order to show how it is currently interpreted. The technique has evolved since 1984 when Kelley first defined it as: "an experimental simulation which I call the OZ paradigm, in which experimental participants are given the impression that they are interacting with a program that understands English as well as another human would."

simulated use of the QAS. I then present a selection of QAS reports displaying and categorising feedback, and summarise participants' perceptions of these. There are a number of factors that may affect acceptance of the QAS, and these are analysed in the following section. I end the chapter with a summary of the revision requirements and development opportunities that I was made aware of during the fieldwork, followed by conclusions drawn from participant feedback. The project concludes with a presentation and analysis of the research results.

Chapter 3: Literature Review

3.1 Opening Remarks

There is a wealth of education research literature relating to feedback on assessment (tasks), feedback on teaching, student motivation, teaching methods, and, increasingly, student engagement in learning. However, feedback managed through a computer-assisted assessment system (CAAS) (see Section 3.5) is a relatively new domain. In this chapter, I present a summary of the environment in which the Quality Assessment System (QAS) was implemented by reviewing the general education literature concerning feedback. This will provide insight into the:

- a) principal characteristics of feedback and the role it plays in assessing student work;
- b) difficulties that teachers have in following consistently the methods of best practice;
- c) challenges students face in taking advantage of the feedback provided.

I also examine the literature relating to ICT in the feedback process and identify the role that a CAAS might play in closing the gap between knowledge and implementation of feedback best practice.

3.2 Interpretation of Core Concepts

As research into the individual components that form the structure of this project has progressed over the past 20 years, nomenclature and concepts have changed. It is therefore important to clarify any ambiguity in the concepts I have adopted, or quoted from the literature, before presenting the body of my review. The term "assessment", for example, is used to mean both task and appraisal of tasks; the term feedback is used to mean both non-task-related comment (often used in respect of surveys to ascertain respondents' attitudes and perceptions) and the comments originated by a teacher in respect of the appraisal of a student's work. Below, then, is the interpretation of concepts as I have used them in this review, intended to facilitate comparison, as well as analysis and construction of relationships with the concepts used by other researchers.

3.3 Two-way Feedback

Feedback is here intended to mean a teacher's written appraisal of a student's written work that is submitted to the teacher as a homework task. While its function is succinctly stated by Ramaprasad (1983) (see Chapter 1), my interpretation confines the term to written communication in order to maintain the manageability of the project. I am aware that some researchers consider audio-visual feedback significant, but this is outside the scope of my current research.

The concept of two-way feedback is used to represent the correspondence, or dialogue (Nicol and Macfarlane-Dick 2006. p 299), between student and teacher during the appraisal process. The concept is used rarely in the literature, though the above authors, as well as Askham (1997), and Dixon (2005), are notable proponents of the concept. Sadler also considers two-way feedback important, though he refers to the interaction as "feedback loops":

"Feedback is a key element in formative assessment, and is usually defined in terms of information about how successfully something has been or is being done. Few physical, intellectual or social skills can be acquired satisfactorily simply through being told about them. Most require practice in a supportive environment which incorporates feedback loops." (Sadler 1989)

Where my research extends current literature is in investigating the perceptions of students, teachers and administrators (stakeholders) in relation to two-way feedback within the framework of the QAS. I define two-way feedback as the correspondence, or dialogue (op. cit.), between student and teacher, comprising:

- teacher instructions given to students
- student consideration of the instructions and completion of the task
- teacher feedback on the first submission
- student reflection of the feedback and completion of the second submission
- teacher feedback on the second submission.

I present a review of the literature regarding this component of my project in Section 3.6.

3.4 Assessment

Contemporary literature uses the word “assessment” to mean “appraisal”, “task”, and end-of-term (or semester) examinations. Researchers must come to agreement on the definition and use of this, one of education’s most vital, concepts. The lack of clarity creates ambiguity in the literature and adds unnecessary complications to the work of practitioners. In this project, I have tried to limit possible confusion by using the terms “task”, “appraisal”, and examination, rather than “assessment”. Where confusion may arise in citations, I add my interpretation for consistency in square brackets. I define a student’s assignments that have to be submitted for appraisal as “tasks”.

The one exception to my above clarification is the use of the word “assessment” to mean both “task” and “appraisal”; hence the name of the software at the core of this research – the Quality *Assessment* System.

The concept of formative assessment [task and appraisal] is commonly used to encompass written tasks that are specifically intended to generate feedback on performance to improve and accelerate learning (Sadler 1998). In this project, the most comprehensive interpretation of formative assessment encompassing many of the key issues being investigated can be summarised as follows:

"Assessment that is formative occurs during a course, and provides feedback to students to help them improve their performance. The feedback need not necessarily be derived from only the tutor, but can be from students' peers or external agents such as clinical tutors or placement supervisors. It is important that the feedback should be given in relation to the criteria against which the work is being assessed. Involving students in peer assessment aids students in understanding and using the assessment criteria (Bradford, 2003). Indeed, 'Giving feedback on another student's work, or being required to determine and defend one's own, not only increases a student's sense of responsibility and control over the subject matter, it often reveals the extent of one's misunderstandings more vividly than any other method' (Ramsden, 1992: 195–6)." (InfoNet 2008), p. 4.

I build on this by examining feedback within an integrated feedback system facilitated by the QAS.

3.5 Computer-assisted Assessment Systems (CAAS)

With regard to the crucial technological component of this research, computer-assisted assessment systems (CAAS), the literature on the subject appears divided as to the precise definition of the concept. It seems, therefore, that the lack of a substantial body of literature on the topic is a contributing factor to the lack of uniformity regarding the interpretation of concepts used to discuss it.

"Computer-assisted" is to be interpreted here as a concept describing the added value of using technology to render more efficient parts of a process which formally took several people considerable time to perform manually. It is not, therefore, a concept to indicate the implementation of a computer program which uses artificial intelligence to replace the human marker, adhering to a pattern of template questions and template answers. This is an essential difference which is not made clear in the literature, and which has scarcely been researched.

"Computer-assisted assessment" is commonly understood to mean the use of computers to present students with questions that can be marked and/or evaluated digitally, i.e. without human intervention. Where the term "system" is added to the concept, it is invariably used as a synonym for "computer program". It is important, therefore, to emphasise how different my interpretation of the concept of CAAS is, in order to justify my statements describing the lack of literature on the topic.

"Assessment *system*" is not, as mentioned above, an alternative word for computer program, but, here, a concept defining a complex arrangement of interrelated activities facilitated and administrated by a computer. Activities of the system include, inter alia, the recording into a database of quantitative and qualitative feedback provided by teachers to students following submission and resubmission of a task, automated reporting for students, teachers and faculty, recording of student feedback to teachers, facilitating the highlighting of students' strengths and weaknesses, perceived and actual performance improvements, and student perceptions of task, task instructions and goals. Such a system requires computers with substantial processing power to handle quickly, reliably and securely large quantities of data over a network, and it is therefore only in the past 10 to 15 years that it has become feasible and its feasibility has become

commonly accepted. This is undoubtedly one of the main reasons why so little research has been carried out on the topic.

3.6 Resubmission of Tasks

Formative tasks traditionally involve the steps of student completion of the task, and teacher evaluation and feedback to the student. However, Hyland and Hyland indicate there are still considerable opportunities for further study in the field of appraisal of students' resubmitted tasks and the learning that such appraisal might engender:

"The few studies that have look beyond the immediate corrections in a subsequent draft, however, have noted improvements in students' language accuracy (Polio et al. 1998; F. Hyland 2003; Chandler 2003)," (Hyland and Hyland 2006), p.85.

Askew and Lodge describe feedback as a two-way process if it is the teacher who controls the nature of the feedback, while if feedback is constructed by both teachers and students, they define it as dialogue (2000).

These constructivist and co-constructivist models of feedback as defined by Dixon represent an innovative and valuable interpretation of feedback which, Dixon asserts, has been little discussed in the literature. My analysis of two-way feedback administered by the QAS adds a new and practical perspective to Dixon's work.

The literature points out that new technology may facilitate greater dialogue between teachers and students (e.g. resubmitted tasks requiring additional feedback from teachers as facilitated by the QAS) and between students and fellow students (as is facilitated by online forums, e-mail and chat), but that the technology introduced risks being teacher-focused and oriented excessively towards improving productivity rather than academic quality:

"many of the developments adopt a teacher-focused rather than student-focused perspective in the process of translating teaching practices into new forms. A study by Alexander and McKenzie (1998) showed much of development and evaluation[of new technologies] focused on improving students' test scores or on improving the productivity of teaching and learning.... they found little

emphasis on demonstrating an improvement [in] the quality of students' experience using the new technologies, despite the claims often made that new technologies enhance the quality of learning." (Boud and Prosser 2002)

It is a given that dialogue between students and teachers relating to the draft submission and final submission of a task requires an increase in engagement in the learning process beyond that which is required when a task need not be resubmitted. The literature expresses general agreement that an increase in engagement by students in the learning process is a fundamental precondition for an improvement in performance.

One advocate of providing feedback on resubmitted formative tasks is David Boud:

"The only way to tell if learning results from feedback is for students to make some kind of response to complete the feedback loop (Sadler, 1989). This is one of the most often forgotten aspects of formative assessment. Unless students are able to use the feedback to produce improved work, through for example, re-doing the same assignment, neither they nor those giving the feedback will know that it has been effective" (2000, p.6).

This idea of feedback "loops" constitutes one of the principal areas of investigation within this research – requiring resubmission of tasks following the engagement of students in responding to teacher feedback.

"In higher education, most students have little opportunity to use directly the feedback they receive to close the performance gap especially in the case of planned assignments. Invariably they move on to the next assessment task soon after feedback is received. While not all work can be re-submitted, many writers argue that re-submissions should play a more prominent role in learning" (Boud, (2000), cited in Nicol and MacFarlane-Dick (2006), p.13)

One of the aims of feedback for teachers is to gauge student progress, but the literature appears to focus on issues other than the processes necessary to provide teachers and faculty with the tools to remember, or record, such

progress. Nicol and MacFarlane-Dick emphasise that teachers must have good information about students' progress if they are to identify learning difficulties of individual students and help them close the performance gap.

While Nicol and MacFarlane-Dick, Sadler and Askham promote the idea of resubmitting tasks following teacher appraisal of the first draft, their research appears not to examine certain implications of this idea. These are: a) the increase in teacher workload resulting from providing feedback on additional submissions, b) the administration of tasks submitted and resubmitted at different times (asynchronous submission), and c) the need to provide teachers with the time, the training and the ongoing support necessary to use the new feedback methods adopted.

The above four authors see resubmission as a means to improve and accelerate learning, and to empower students as self-regulated learners. While not related to feedback mediated by computer, Askham's research appears to align itself most closely with the current research, introducing the concept of "progressive two-way feedback" (1997). Askham states that

"this enables students to measure their own performance and the understanding and application of complex technical material. This integral feedback also provides a tutor with detailed information about student progress, perceptions and feelings." (op. cit. p.299)

However, Askham does not pursue his ideas in relation to the resubmission of tasks, nor in relation to how ICTs may facilitate this. Furthermore, Askham does not provide details as to how his interpretation of two-way feedback assists teachers and students in identifying individual strengths and weaknesses, or changes in performance. He supports the common view that the method of assessment influences the way students learn, and he points out that, notwithstanding the comprehensive literature on learning methods, a student's method of learning will rarely fit into the categorisation encapsulated in the literature. I consider this view to be highly significant, as it can be related to the rationale behind the concept of task resubmission put forward in this project.

In a study by Ferris, the term resubmission is called redrafts and Ferris suggests:

"corrective feedback is effective in helping students to eliminate errors in redrafts of their writing." (Ferris 1995) cited in (Ellis 2008), p. 105.

Ferris goes on to say that students appear to prefer corrective feedback on their first drafts, and that encouraging feedback is the most motivational.

Diana Laurillard champions the concept of *dialogic* feedback:

"One way of increasing the effectiveness of external feedback and the likelihood that the information provided is understood by students is to conceptualise feedback more as dialogue rather than as information transmission. Feedback as dialogue means that the student not only receives initial feedback information but also has the opportunity to engage the teacher in discussion about that feedback. Some researchers maintain that teacher-student dialogue is essential if feedback is to be effective in higher education" (2002, n.p.).

Dialogic feedback is indeed a form of two-way feedback. However, prolonged, individualised dialogic feedback would seem restricted by time constraints on teachers and burgeoning student enrolments. At present, dialogic feedback may need to be limited to feedback on a mutually agreed number of submissions. This would safeguard fairness and consistency, yet would ensure students felt their revisions were being appropriately considered. In Chapter 9, I analyse participant perceptions of the QAS' function to administer the resubmission process.

3.7 Evolutionary Character of Relevant Literature

3.7.1 ICT in the Education Process

I present here a review of the most relevant literature in the field of ICT in education to be able to locate the systemisation of feedback through the QAS within this field.

To acquire a summary idea of the literature on ICT in education, I eschewed, initially, the qualities of university databases in favour of the more generic and publicly available Google Scholar search engine. My intention was to acquire approximate, quantitative data to illustrate certain facts that are central to this project and crucial to the understanding of ICT evolution in education in a way that the more refined, subscriber databases such as ERIC, EBSCO and ProQuest might make less manifest.

The quantitative data I sought related to two terms of overarching significance which reflected the overall ICT environment with which the QAS would need to be compatible if implemented:

- ICT infrastructure “higher education”, and
- ICT “technological framework” “higher education”

Before considering the general implications of the results and reviewing the literature that discusses the topics, it is important to clarify the distinction between a) “ICT infrastructure”, and b) “technological framework”. In this project, ICT infrastructure is defined as the mutually-dependent collection of all the networked and non-networked hardware and software, ICT policy, security, access and ownership rights, that an institution deems befits its ICT requirements to manage student, staff, clerical and management tasks within the institution. A technological framework is defined as a collection of elements of some or all of the above components necessary to manage a *specific task*.

There may be any number of technological frameworks working discretely to meet any number of tasks, but all technological frameworks must engage with the respective institution’s unique ICT infrastructure, as a small cog might engage and rotate on the inside of a much larger cog.

Investigating the implications of using a given computer program, such as the Quality Assessment System (QAS), thus involves either a) specifying assumptions about the technological framework and infrastructure in which it might be used, or b) describing the technological framework and infrastructure. This review makes reference to the literature relating also to this issue.

The results displayed by Google Scholar® on the above terms reveals, as can be seen from Figure 2, that there has been, between 2000 and 2009, a dramatic increase in research literature pertaining to infrastructure, but only a trivial increase in research pertaining to technological frameworks. Broadening my search, I tried the query: “ICT frameworks” “higher education”, but this revealed only 30 hits for the whole period 1970 to 2009.

Figure 2: Increase in research into ICT in higher educations

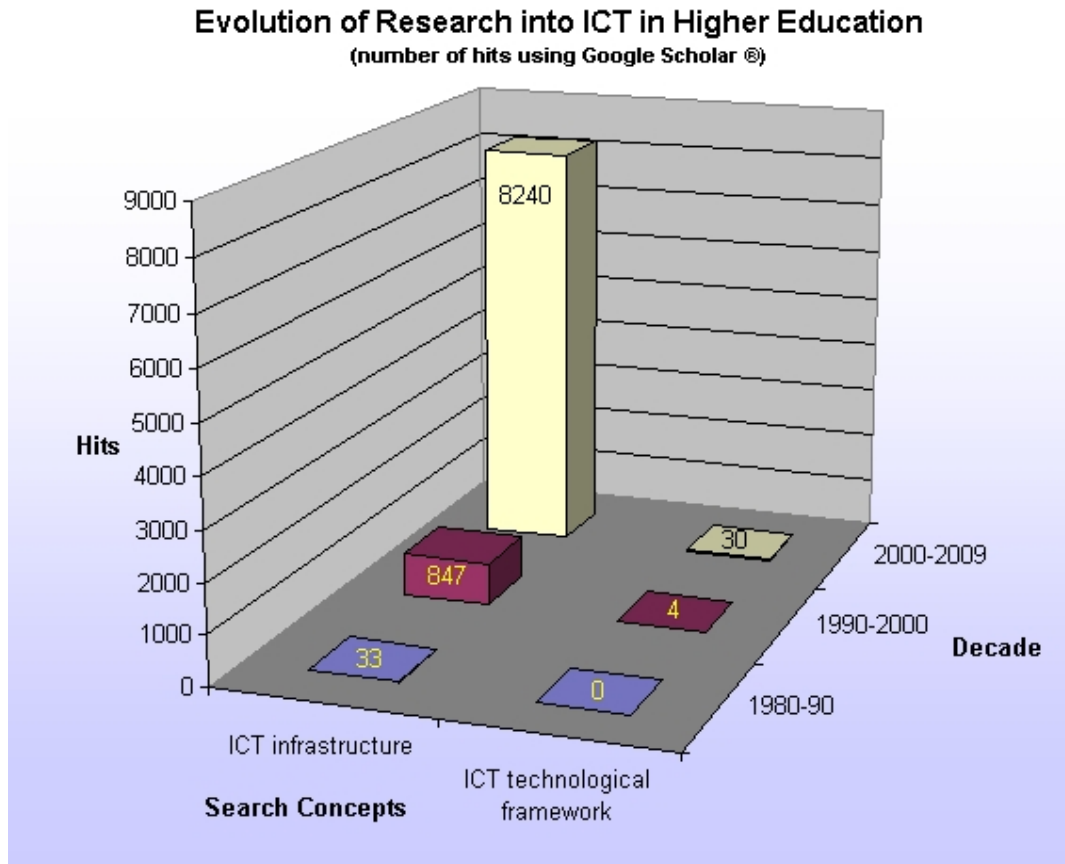


Figure 2 makes it immediately apparent that ICT infrastructure in education has only become a topic of significance for educationalists since 2000. The implications of this are manifold:

- ICT policy in higher education was not generally considered holistically until this decade;
- elements of ICT, such as e-education, encompassed by institutional policy were not considered sufficiently important before 2000 for researchers to consider investigating ICT infrastructure as a topic
- the hardware and/or software might not have met the appropriate requirements, expectations, or financial budget, of higher education institutions, so research was promoted in other areas;
- some or all of the relevant parties (teachers, faculty, institution, other educationalists, researchers) may not have had the competence in ICT to be able to research the area prior to 2000;
- some or all of the relevant parties had the competence, but the institution lacked the commercial drive prior to 2000 to motivate research into the topic (it is only in recent years in some countries

that research has become a sought-after asset for HE, as it sometimes affects government funding);

- ICT evolution has been, and continues to be, so fast (including the facilitating of access to research using ICT) that it is only recently that publication online has become the norm, and accessibility has been greatly broadened and simplified.

Of greatest significance to this project, however, is the fact that the lack of any substantial volume of literature on ICT technological frameworks in education prior to 2000 goes a long way towards explaining the dearth of literature on the technical focus of my research: systemised feedback managed by a computer-assisted assessment system (CAAS). It is significant because CAAS can only be effectively introduced if it is integrated within a technological framework compatible with an institution's ICT infrastructure; the technological requirements and impact as they pertain to the various elements of the education process must be stated as assumed (as already mentioned in this section, above), or specified. Without an understanding of the critical facets of the technological framework (such as those that may determine feasibility), there can be no comprehensive research into CAAS.

Despite the fact that ICT has been permeating the education sector at an increasing rate for at least 30 years, the literature appears fragmented in identifying and defining technological requirements. At present, there appears to be a tendency for literature to focus on popularly-implemented functions which constitute easy-to-define units and which may be perceived as self-contained (e.g. online forums, chat) and on learning management systems (LMS), and on assessments mediated and marked by computers.

Even statements of essential importance regarding the definition of ICT in education appear not to be common in the appurtenant research literature. There is no consensus as to what constitutes ICT in education. While I acknowledge it is a nebulous concept, I maintain a definition should be provided to function as an essential guide to the parameters of relevant research.

To aid consideration of this review of the literature and my project in general, therefore, I put forward the following definition:

"In its simplest form, ICT in education can be defined as an integrated, finite set of hardware and software facilitating the creation, use,

distribution, storage and maintenance of learning, teaching and administrative information and tools, allowing interaction between all involved parties, and intended to render more efficient and more effective the education process.”

ICT in education is not the policy guiding or governing its use, nor is it the human resources that use it, or the knowledge and content it creates or requires. These relate to ICT policy, capacity and content, and are applicable to any application of ICT, not only to education.

This review looks at the literature relating to ICT in education, as defined above, and the literature relating to ICT policy, capacity and content, as they pertain to the core topic of my thesis: feedback systemised through a CAAS.

Commensurate with the lack of definition of ICT in education and paucity of literature on technological frameworks, the literature that does exist frequently concludes with quite illuminating statements on the current status of ICT in education:

“It is not yet clear how much computer-based programs can contribute to the improvement of instruction in American schools. Although many researchers have carried out controlled evaluations of technology effects during the last three decades, the evaluation literature still seems patchy. ... The literature is too uneven for sweeping conclusions about the effectiveness of instructional technology.” (Kulik 2003), p.60

“A great deal of research has been carried out over the past two decades related to the effectiveness of computer-assisted teaching and learning. This large body of work, however, has not produced unequivocal findings, especially in the area of CALL [computer-assisted language learning].” (Felix 2005)

In the light of the above citations and presentation of Google Scholar findings, it is clear that the lack of a generally-accepted definition of ICT in education, the only-recently investigated area of ICT infrastructure, and the still-lacking examination of technological frameworks, have been making, and continue to make, research into the role of ICT in education a domain of evolving opportunity.

3.7.2 Infrastructure and Technological Frameworks in Education

A key proponent of ICT infrastructure is Richard N Katz. In the introduction to his article, "The ICT Infrastructure – A Driver of Change", he states:

"the information and communications technology (ICT) infrastructure is likely to influence and even shape the nature of higher education institutions and the practices of faculty and administrators." (2002, p.51).

In the above article, Katz summarises changes to ICT infrastructure, and discusses both computer hardware and a number of key issues relating to ICT policy, capacity and content. His article provides a succinct and compelling statement on ICT in education:

"The information-based organization is a metaphor for an ICT infrastructure that has been optimized for ergonomic integration, ubiquitous and secure access, personalization, and self-service use by an educated and empowered institutional community. ... Conceptually, the technological framework that supports this vision proposes a Web-based system (portal) that tailors accessible information and services to the needs, interests, and authorities of these individual users." (2002, p.56).

This statement uses concepts that, just ten years previously, would have been hard to find anywhere in the literature. Such concepts highlight the speed of evolution of ICT in education and the difficulty that researchers have in keeping up.

The final citation I should like to make from the above author's article relates to assessment, and hints at the significance of CAAS. Katz states that:

"Grade reporting ... will be expected to operate automatically, to be completely integrated and personalized to users, and to be available 24 hour a day, 7 days a week, 365 days a year." (2002, p.58).

The prototype QAS program used in the fieldwork experiment provides a method of storing grades and feedback personalised to users. With appropriate integration into the infrastructure, this information will be

available 24 hours a day. This is evidence that the predictions of Katz, above, have been attained in some way already. Investment in Learning Management Systems (LMS) such as Moodle ® (open source) and Blackboard ® (commercial), as well as in collaborative software projects such as asTTle (Assessment Tools for Teaching and Learning) and e-asTTle (2009), developed for the Ministry of Education by the University of Auckland, and the Formative Assessment Tool (University of Waikato and Nelson Marlborough Institute of Technology, 2009) are further evidence of the direction of ICT development in education and of the accuracy of Katz's statements.

3.7.3 The Knowledge Gap

The importance of education research is a given, but where the direction of research and the direction, or evolution, of education methods diverge due to market forces and the speed of technological evolution, it leaves a significant gap. This can only be compensated for when the focus of research is realigned over the course of some years.

In respect of education methods involving ICT (and, more specifically, methods practised in respect of feedback), my reading indicates there is a tendency for research not to be able to keep up with technological evolution, and that, despite the pervasiveness of ICT in education, the two are evolving as adjacent, but chronologically unsynchronised, trends. This is of particular significance for my research into CAAS. It is commonly accepted that ICT is evolving at an exponential rate. Theoretical knowledge, however, is accumulated as interested parties choose to pursue it. Nonetheless, there is a trend towards promoting research that can be applied, and it is possible, therefore, that education researchers will be examining an increasing number of ICT-related issues in education in future, and will thus begin to close the gap.

In the meantime, this gap provides a valuable opportunity for a timely examination of the research topics I have described in the introduction to my thesis - more specifically, the implications of introducing a CAAS for administering the feedback process.

3.8 Recurring Themes in the Literature

3.8.1 Computer-assisted Feedback Fostered by the Massification of Higher Education

The literature abounds with references to the rapid increase in university enrolments and, since the 1980s, has frequently been termed massification (Griffin 2007). However, the perceived rapid increase in access to higher education is not a new concept, though this access may have increased for slightly different reasons and at slightly different rates in most westernised countries. A poignant observation by Dale made as far back as in 1905 is equally valid today:

"30 years ago universities of England were universities of the few; today they are the universities of the many; tomorrow, I trust they will be the universities of all."
(Dale 1905) cited in (Leathwood 2006, p17.)

The growth in university student numbers in New Zealand, which was rapid in the 1980s and '90s, and has continued, albeit more modestly, after 2000 (11% between 2001 and 2005), put pressure on teachers and administrators to find ways of working more efficiently:

"This perhaps was the overriding feature of the university climate in the 1990s: the rapid rise in student numbers, coupled with continuing cuts in funding." (Barrowman, 1999, p.360).

This requirement for greater efficiency was also relevant to the formative assessment process:

"As class sizes have increased there have been some economies of scale in teaching ... but economies of scale are difficult to achieve for assessment: most assessment costs go up in direct proportion to the number of students." (Gibbs and Simpson, 2003, p.7).

The introduction of computer-assisted assessment (CAA) methods resulted from a combination of research and commercial enterprise:

"The issue of high marking loads and time savings also arose frequently, and while not the main drivers for CAA for most users, these were key motivating factors for

several, who mentioned rising student numbers as the main reason for adopting CAA.” (McKenna, 2001, p.3).

However, CAA has been seen as primarily a computerised method of providing summative assessment tasks; it has only been in the last few years that CAA has begun to generate greater interest as a system for both formative and summative assessment.

The evolution of computer-assisted instruction (CAI) and the perceived appeal of CAA were two of the factors that, together with the advent of the Internet and fast telecommunications (broadband), led to the development of online learning. Online learning, or e-learning, started to make its mark in the 1990s, and within ten years became one of the principal focuses of education research and policy discussion in Europe:

“eLearning became a star in the policy discourse of the years 2000 and 2001” (European ODL Liaison Committee, 2004, para.2).

Yet, the creation of online courses sometimes attracted a higher number of students than teachers would normally have in a face-to-face teaching environments:

“they attempted (30 institutions) to keep the same student enrolment numbers and reduce costs while maintaining quality... by transferring a number of tasks to technology.” (Vaughan 2007, p.89).

Teaching and teachers found themselves having to reflect on, and become, more efficient, and it was in this environment that the QAS was conceived.

3.8.2 ICT-assisted Education: E-learning, Blended Learning and Distance Learning

The concept of blended learning, sometimes referred to as the ‘hybrid model’ (Vaughan 2007), is mentioned here as the QAS is a suitable tool for managing tasks, appraisals and student/teacher interaction in situations of class-based instruction as well as technology-based instruction. Yet, despite the fact that the concept of blended learning is not new, and that research into the use of ICT in education has been evolving for decades, there appears to be no research literature on the implications for blended learning of implementing a CAAS. Vaughan points out in his research into 30 institutions that a number of tasks were transferred to technology, but he

does not refer to CAAS, or to any systemisation of the task management process.

This indicates the value of new research into the implications of using a CAAS, as investigated in this project, and as reinforced in an observation made by Vaughan on the adoption of e-learning:

"A recent survey of e-learning activity found that 80% of all higher education institutions and 93% of doctoral institutions offer hybrid or blended learning courses (Arabasz, Boggs, & Baker, 2003, p. 2)." Cited in (Vaughan 2007, p.82).

The scale of adoption indicated above reveals rapid and comprehensive adoption of ICT-related education functions that harmonise well with the aims and functionality of a CAAS.

3.8.3 Peer- and Self-assessment

With respect to collaborative activity, the most recent literature concentrates on the benefits of peer-assessment, though self-assessment is an increasingly frequent recurring topic within the literature that deals with peer-assessment. Sadler (1989) maintains that:

"students must not rely on the evaluative judgements of the teacher because such an approach leads to dependency in learning", and advocates "for students to develop skills in evaluating the quality of their own work, especially during the process of production" (cited in Dixon, 2005, p.62).

As will be seen from the presentation of the QAS, and from the Fieldwork Analysis chapter, the feedback system administered by the QAS fosters self-assessment through the process of resubmission and feedback reports. However, it is acknowledged that the feedback may not necessarily be understood by students of English at lower academic levels. Such an issue may relate to students other than the ESOL students participating in the current research. With the huge influx of students from Asian countries to New Zealand higher education institutions (73.1% of all overseas students in tertiary education as at 31st of July 2000⁴) over the last 10-15 years, it has become essential to reflect on the fact that many of these students may

⁴ Source: New Zealand Ministry of Education

not have the ability in English to understand and digest the feedback provided by teachers in traditional written form. Nicol and MacFarlane-Dick (2006) support this in their research, though no reference is made to the nationality of the students in question:

“In the self-regulation model, for external feedback to be effective it must be understood and internalised by the student before it can be used to make productive improvements. Yet in the research literature (Chanock, 2000; Hyland, 2000) there is a great deal of evidence that students do not understand the feedback given by tutors” cited in (Nicol and Macfarlane-Dick 2006, p.11),

The QAS does not currently include peer assessment functions, though the trend towards this type of assessment indicates such a function may be a beneficial design revision. This is discussed further in Chapter 12.

Gibbs and Simpson concur with the value of self-assessment, but add to this view by focussing on the standards expected of the students:

“real value may lie in students internalising the standards expected so that they can supervise themselves and improve the quality of their own assignments prior to submitting them” (2003, p.17).

This is not an entirely new concept, however. Sadler mooted the concepts of manifest and latent criteria twenty years previously (Sadler, 1983), with latent criteria corresponding to the internalisation of standards. Where the literature differs is in the move towards appraisal processes that:

“can help students take control of their own learning – i.e. become self-regulated learners” (Nicol and Macfarlane-Dick 2006, p.2).

Self- and peer-assessment may promote student engagement in their learning, help ensure understanding of the goals of the task, and, if the tasks are resubmitted, aid teachers in determining students’ individual strengths and weaknesses, and performance improvements. The circle of feedback is completed when the teachers evaluate the students’ self- and/or peer-assessed tasks on resubmission. Such a cycle of appraisal and feedback is likely to increase the motivation of students since it increases their involvement in the learning process, and the students' response to the

teachers' feedback is acknowledged in the form of the appraisal of the resubmitted task.

The elements of self-assessment and resubmission mentioned in the above paragraph are concepts coherent with the research of Pintrich (1995), that the most effective learners are those who are more self-regulated. It follows, therefore, that by providing teachers and students with the tools to help students increase their self-regulation, learning can be improved.

This research extends the literature on the above issue by examining how such peer-/self-assessment can be managed and enhanced with the aid of the QAS, and the implications of doing so.

3.8.4 Student Focus on Grades

The literature indicates a percentage of students is interested in looking only at the grade given for an assessment task. Teacher feedback in the form of well-considered, time-consuming and individualised comments is frequently given only cursory attention, if any at all, and subsequent tasks indicate students have all too frequently failed to digest and respond to teacher feedback. This is supported by Jackson:

“a common theme in the literature Jackson (1995) found that third year students were particularly likely only to look at the grade rather than at feedback on essays.”
(cited in (Gibbs, Simpson et al. 2003, p.20)).

However, if the resubmission of formative tasks is encouraged as the recommended method for students to receive appraisal of their self-resourced revisions, and if this method is supported by creating an environment which fosters consideration and discussion of teachers' feedback, the learning process is likely to change, and student engagement, self-regulation and the desire to achieve better performance may improve.

3.8.5 Clear Teaching Goals and Learning Outcomes

The literature frequently refers to clear teaching goals and clear learning outcomes. It has been found that such clarity enhances student learning (Gibbs and Simpson, 2003). Yet, there is less literature on whether the students understand such goals, and very little on the methods that could be used to communicate them. Fieldwork analysis shows how the QAS' system for conveying task instructions and providing clarity of feedback is perceived by stakeholders.

The work of Nicol and MacFarlane-Dick (ibid, 2006) provides further insight into the issue of clear learning aims, and the authors provide a list of methods they consider could represent an improvement in the communication of learning goals:

“Other strategies that have proved effective in clarifying criteria, standards and goals include: (i) providing better definitions of requirements using carefully constructed criteria sheets and performance level definitions; (ii) increasing discussion and reflection about criteria and standards in class (e.g. before an assignment); (iii) involving students in assessment exercises where they mark or comment on other students’ work in relation to defined criteria and standards; (iv) workshops where students in collaboration with the teacher devise or negotiate their own assessment criteria for a piece of work. These strategies exemplify increasing levels of self-regulation”

While these methods may not have been intended to cover homework tasks for non-native speakers, they are relevant if the tasks are considered in the same light as class tasks but without the presence of a teacher. I believe these methods have considerable merit, also for homework tasks, and that an ICT system to mediate these methods would render them a feasible approach. Without an ICT system, however, the time constraints teachers are subject to may make the compilation of criteria sheets and model answers difficult or impractical to create, especially with large classes the teachers see every day.

An alternative viewpoint to the use of model answers is that they may foster reliance by students on the resource: students may come to believe that only the model answer is correct, thus reducing reflection and critical thinking. Furthermore, if students know a model answer is available, such knowledge may reduce the motivation to attend classes, engage in dialogue with peers and teachers, and optimise submissions.

The literature also generally accepts that unambiguous communication of learning goals is essential if feedback is to be relevant and helpful. If the learning goals are not clear, the effort invested in student-to-teacher feedback (as well as teacher-to-student feedback) is partly wasted and falling motivation may result:

"Higgins et al (2001) discuss the failures of communication that take place in feedback. ... The student who would have undertaken a more critical analysis if she had understood how to, was left frustrated by the lack of critical analysis of key issues by the tutor" (cited in Gibbs and Simpson, 2003, p.20).

It is noteworthy that the internationalisation of education and the tertiary sector's commercial drive to attract overseas students (especially from Asian markets) means that significant numbers of non-native speakers of English are coming to New Zealand to follow short-term language courses to improve their English. Yet, despite the fact that feedback has been clearly identified as

"[the] most powerful single influence on student achievement" ((Gibbs, Simpson et al. 2003, p.7),

there appears to be little literature relating to the communication of feedback and learning outcomes when it is (for the above students particularly) the language itself which constitutes the obstacle, not the quality of the feedback, nor the fact that students may or may not read it. The fieldwork chapter analyses participant perceptions of this issue.

In the light of the paucity of literature on methods of improving the communication of learning outcomes to ESOL students, and the small, though increasing, body of literature on methods of improving feedback, it is fair to assume that the introduction of a CAAS to manage task allocation and two-way feedback will provide a valuable new tool for enhancing student understanding of tasks and teacher feedback.

As observed by Dixon:

"To date, while studies on teachers' feedback practice have depicted current practice and highlighted aspects of best practice, far less attention has been paid to how improvements in feedback practices can be made." (ibid. 2005, p.49).

Dixon proposes deconstruction of feedback practices as a method for teachers to analyse their feedback methods, breaking down and examining feedback using the concepts of descriptive and evaluative feedback. Despite this valuable literature, little research has been done on the implications of introducing a CAAS to *systemise* the feedback process. It is possible, that

the QAS provides, through its storage of feedback comments, a useful tool to address the issue raised by Dixon – to allow teachers to reflect on their feedback. This research investigates the above issues with a view to establishing how all stakeholders (students, administrators and teachers) perceive CAAS-mediated feedback, and, more precisely, the extent to which such a method enhances feedback response time, consistency and quality, appropriate for the students for whom the feedback is given.

The expanding role of ICT in education, and, more specifically, the widespread adoption of computerised submission and assessment of tasks, lend urgency to research in this field.

3.8.6 Motivation

It is commonly accepted in the literature, that once students grasp why they are studying, the most important issue for them is motivation.

“...maintaining motivation was the most important and influential issue for new students for their first assignment” (Gibbs and Simpson, 2002, cited in Gibbs and Simpson, 2003, p.17).

Nicol and MacFarlane-Dick (2006) place even greater significance on the role of motivation, stating that feedback regulates and is regulated by motivational beliefs. The authors state that external feedback can influence students’ self-esteem as well as what and how they learn, and, citing Garcia (1995), argue that beliefs can also influence the effect of feedback.

3.9 More Recent Themes in the Literature on Feedback

3.9.1 Commercialisation of Education and Market-driven Research

Research seems to be playing second fiddle to technological evolution. Educational technologies and student-centred education are evolving so quickly that researchers have little time to discuss one method, before another becomes current, *de rigueur*, and is described as though it were a fashion.

“it is ... troubling to reflect that the speed of technological change affects our ability to do research about the new technologies and their effects” (Trow 2000, p.2).

Due to the growth of online education, education has become, in general, far more accessible, regardless of nationality and geographical location. In fact, it has become accessible to everyone on the planet as long as they have access to an Internet-connected computer. The literature discusses education in terms of how it should be taught in the “knowledge society”, and whether it is “economically sustainable”. According to Smith:

“Traditional approaches to educational delivery founded on classroom-based teaching cannot meet the escalating demand for higher education in the knowledge society... Conventional classroom-based approaches to higher education are increasingly becoming economically unsustainable. The major challenge confronting university leaders is how to boost academic productivity – how to change the fundamental structure of teaching and learning through the integration of ICTs.” (2006, p167)

This last statement is particularly relevant to the topic of this project. It reinforces not only the currency of the topic, but that the research will constitute a timely contribution to the latest pedagogical and policy-oriented discussions of the new, knowledge-based, education environment.

Further evidence of this trend can be seen in the literature of the last five years. Research relating to ICT in education has shifted focus from learning management systems (Blackboard®, Moodle®) and other web-based systems (e.g. ClassForum, WebCT), customised for a specific institution, and from rudimentary institution-centred, web-based course provision (loosely termed “e-learning”). Now, the focus is more on student-centred learning methods and the requirement for “learning innovation”, ensuring that the now well-entrenched concept of lifelong learning (Boud and Falchikov 2005) is realised in the form of applied research and more practical education. This shift has been most clearly debated and defined in the European Union.

“... a major problem that emerged in the last year of discussions on eLearning and ICT for learning: the knowledge gap on learning innovation. This problem is deriving [sic] from (1) a lack of priority for a comprehensive learning innovation within research programmes and (2) the lack of accumulation and

utilisation of current practice and the few available research results” (2006, p.1),

and

“Universities have probably never been subject to such rapid changes as at present as they adapt to the creation of knowledge-based economies operating globally. They are now expected to contribute to society in many ways:

- lifelong learning (especially continuing professional development)
- applied research, both technological and social” (Edwards, 2006, p.44).

The above two quotations are indicative of the latest body of literature indicating that education is at the threshold of, or is in fact already undergoing, a major change. This shift is leading to a corresponding change in the focus of research, and especially towards more applied research. ICT evolution now plays a significant role in the shaping of education policy; research will undoubtedly follow.

Furthermore, if CAAS renders more efficient the feedback process, this constitutes an increase in productivity - one of the key issues in the latest literature. An institution can then exploit this increased productivity in any way it deems fit, e.g. utilising the time saved by teachers using the CAAS to perform other duties (professional development, research), publicising productivity gains for marketing purposes, and/or allocating more appraisal tasks to the teachers.

Most significant, however, and perhaps most relevant to this particular section of the review, is that the literature indicates forward-thinking institutions intent on exploiting new technologies in order to compete in the global market for education must consider closely the opportunity of providing education online, either in the form of blended learning or as distance learning. The appraisal of formative tasks in such an environment would have to be done with the aid of computers; a CAAS, such as the QAS being researched in this project, would be one of the tools appropriate for such a task.

3.9.2 The Role of Computer-assisted Assessment Systems (CAAS)

The literature devotes great attention to the quality of feedback, but less attention is given to the essential process of teachers handling the feedback

they give. Even if feedback to students is faultless, teachers cannot remember the feedback provided for each student over a whole term or semester. Students have no efficient means of benefiting from earlier feedback; papers are discarded, misplaced, not completed. Administrators have no practical means of collaborating with teachers on work allocated to, and completed by, students. Feedback becomes a one-off "Band-Aid" to fix something finished and put aside. For feedback to be consistent, fair, forward-looking, and attuned to the needs of students as students progress, it is important to maintain a detailed record of the feedback provided. There appears to be a void in the literature on this issue. Feedback is viewed as either a one-off process, or as a staccato process which is then pieced together for analysis.

Teachers and students may currently be able to examine and re-examine a task and the appurtenant feedback, but there is little literature on CAAS facilitating analysis of feedback intended to help students construct new knowledge for subsequent tasks. Askham does present the concept of *progressive* feedback, however, and, while this is not considered in the context of a CAAS, it is recognition that teachers need to see and monitor changes in the performance of students as something continuous:

"feedback generated progressively makes it much easier to respond to individual and collective problems and students are better placed to identify these" (Askham 1997).

With the aid of a CAAS, such as the QAS, that records feedback progressively for each student and class, reports on performance for any period of time can be extracted instantaneously. With the opportunity to display customisable reports detailing feedback, motivated students would have the resources to reflect more critically on their work, and share and discuss feedback with peers and academic advisors. Increasing critical reflection on work is a commonly accepted aim of current education policy.

"... the reflection /critical evaluation approach actually provides the very best students with greater opportunities to demonstrate even higher levels of technical understanding as well as encouraging the engagement with some of the more philosophical and contextual aspects of the subject material" (Askham 1997).

Critical evaluation is an essential and substantial stage in the process of transforming students from what Askham terms surface learners to deep learners (ibid).

3.9.3 Student and Teacher Cultural Differences

One of the most dramatic changes in the make-up of education in Australasia over the past 20 years has been the influx of students from Asia (see Section 3.8.1). It is therefore vital for educationalists to acquire a solid understanding of differences in learning behaviour, as it cannot be assumed that the feedback methods considered most effective in one cultural group are considered equally as effective, appropriate, or even culturally acceptable, in another. Use of the QAS to mediate the feedback process may promote different reactions according to the culture of the respective students (and also of the respective teachers). Responses from Asian participants in the fieldwork revealed that the students placed great value on the feedback received by the teachers in New Zealand. The comments on their first and second submissions made them feel appreciated, and this was motivational (see Chapter 9).

Without a solid understanding of cultural differences, teacher expectations of student responses to feedback are likely to remain unfulfilled.

Correspondingly, if students come from a cultural background where the integration of ICT in the education process (especially in relation to task submission) is not widespread, or geared to dialogical interaction between students and/or teachers, the introduction of a CAAS may require different procedures for it to gain acceptance. In his summary of a possible way forward to address the stereotype perceptions of Western educationalists with regard to Asian learning methods, Ramburuth emphasises the need to understand and acknowledge at management level the similarities and differences in education methods before taking any action, then pursues a top-down approach for tackling the issue in the classroom:

"At the institutional level, there needs to be support and resources for developing innovative strategies for diversity management, including cross cultural training programs for staff and academic acculturation programs for students. At the classroom level, there needs to be adjustments to the curriculum, the adoption of more inclusive approaches to teaching and learning, and the modification of teaching styles to accommodate students' diverse learning styles." (Ramburuth 2000), n.p.

The relevance of this for the current project is that feedback methods should take into consideration the different learning styles of students from different cultures. Yet little or no research appears to have been carried out in this field. This project throws light on the reactions of Asian and non-Asian students to QAS feedback, and provides a tentative hint of those issues that cultural differences identify as areas of potential valuable research.

3.9.4 Student and Teacher Gender Differences

Another area of scant research relates to how gender difference in higher education may have a correlation to the adoption of education technology. A notable exception to the absence of literature in this field is the study by Zhou and Xu. Their findings indicate a significant difference in attitudes towards the adoption of technology:

"Very few studies, however, explore the gender differences in the use of technology in higher education. A survey was administered to all full-time faculty and sessional instructors. Results suggest that females were more likely to use student-centred pedagogical approaches in teaching than males. Females had lower confidence and less experience in the use of computers in teaching. They tended to learn how to use technology from others, whereas males were more likely to learn from their own experience" (Zhou and Xu 2007), p.140.

The literature focuses more on the gender differences in computer-assisted education between students rather than between teachers. Yet, it is essential that any application of ICT in education (such as the QAS) be equally accepted by both genders and by teachers and students. There is clearly a significant opportunity for further research into this evolving area of pedagogical ICT tools as perceived by male and female students and teachers.

3.10 Characteristics of Feedback

The most prevalent descriptive statement of feedback permeating the literature is its quintessential role in the education process:

"feedback is central to effective formative assessment"
(Looney 2008), p.144.

Less common, however, is the distinction in the research between feedback administered by computers (see Section 0), and feedback provided primarily

manually. This distinction is significant as the benefits of some functions are available only with the aid of computers.

"One of the most promising features of ICT in adult learning is its potential to provide learners with immediate and constructive feedback" (Looney 2008, p.146).

Yet, there are a number of problems with feedback, as mentioned in Chapter 0, and while these differ in number and scope, Higgins, Hartley *et al* define three significant problems as:

1. poor quality
2. inconsistency
3. vague or difficult language that made it difficult to understand – that is if they could even read the handwriting (2002)

Higgins, Hartley *et al* stated that, despite these problems, students were motivated intrinsically and sought feedback which would help them to engage with their subject in a 'deep' way (2002).

Other characteristics of feedback analysed in the literature include: appropriateness, timeliness, fairness and objectivity. With regard to appropriateness, many researchers have concluded that feedback should concentrate on content rather than on measurement, or marks:

"the giving of marks has a negative effect, as students ignore feedback comments when marks or grades are given." (Clarke et al. 2004, cited in JISC InfoNet, (nd), p.21).

Low marks have also been seen to reduce the motivation of students, as they are sometimes perceived as a sign of inability or inferiority.

In contrast to the allocation of marks and highlighting of mistakes, or poor performance, Dixon stated in her presentation of a feedback typology that descriptive feedback which focused on students' cognitive achievements was useful for constructing the way forward (Dixon 2005).

Much research concludes that learning aims must be clear. Yet, little literature exists on how to make it clear, nor on how to verify that 'making it clear' is interpreted the same and correct way by both students and teachers, or even by one teacher and another. There is little literature on theories discussed or applied in relation to what happens to a class,

method, material, when a teacher has to be replaced by another. Can learning aims be transferred? Are the focuses and priorities transferred from the first teacher's feedback to the second? By placing the mechanics of feedback into an objective tool such as the QAS, feedback would become more consistent because comments and corrections, evaluations and descriptions, are channelled through the same conduits as with a former teacher.

There seems to be no general consensus in the literature on how to express feedback, nor on the number of feedback comments that students, teachers and faculty would deem appropriate.

"The literature on external feedback is undeveloped in terms of how teachers should frame feedback comments, what kind of discourse should be used, how many comments are appropriate and in what context they should be made. Much more research is required in this area." (Nicol and MacFarlane-Dick (2006), p10).

It is unclear, therefore, whether feedback which may be considered ideal but which is presented poorly is deemed by the students to be as constructive, or empowering, as somewhat deficient feedback presented in a way more in harmony with students' expectations. To use a common concept in the literature, feedback must be of an appropriate quality. Brown and Glover define quality feedback as feedback that provides students with clear assessment criteria that is not only timely, but encourages further learning (Brown & Glover, 2006). I discuss the definition of quality feedback in Section 3.10.

There is a clear link between the quality of the feedback provided by the teacher, and the ability or inability of students to use this feedback to their own satisfaction. If the quality of the feedback is not of the standard, or degree, of comprehensibility that the students require, they may seek the appraisal of the feedback and the task from their peers. There is little literature on this relationship between the quality of feedback and peer-to-peer feedback.

In terms of increasing motivation, the literature makes it clear there is a case for excluding the allocation of a mark (see this section, above), and focusing comment-based feedback on performance achieved. Such an approach may be fostered by the type of two-way feedback investigated as

part of this examination into the implementation of the QAS, and envisaged by Askham:

“...incorporation into the assessment process of progressive two-way feedback ... enables students to measure their own performance and their understanding and application of complex technical material. This integral feedback also provides the tutor with detailed information about student progress, perceptions and feelings. This in turn enables teaching sessions to focus more effectively on those aspects of the unit content which require greatest attention, thus providing a more efficient utilisation of increasingly limited resources, in particular the reduction in personal and class contact time...” (Askham, 1997, p. 299).

Askham’s statement is a concise and astute observation integrating a number of recurring themes into the research area of two-way feedback. However, due to the different ways students learn, and the different strategies that “deep learners”, “surface learners” and “strategic learners” adopt (Askham, 1997), I believe there is a significant opportunity for further research in the area of appraising student feedback to teacher feedback.

Such feedback should be of a measurable quality. The requirement to ensure the quality of feedback is reinforced when the variations in teaching styles, and perhaps abilities (of teachers as well as students), are considered, and how these affect the consistency of feedback:

“The volume or thoroughness of feedback varies enormously between courses – I suspect far more than the variation in quantity or quality of teaching” (Gibbs and Simpson, 2003, p.14).

The OECD published in 2008 a report relating to education in New Zealand, focusing on language, literacy and numeracy skills. The report manifests clear parallels with the research of Dixon and others championing feedback and shows the way forward as well as encouraging dialogue through, for example, Individual Learning Plans. It also indicated that the New Zealand Ministry of Education is beginning to grapple with the nettle of quality assurance in education provision, and Foundation Learning Quality Assurance Requirements (FLQA) have been drawn up with a view to

improving the quality and effectiveness of provision (Benseman and Sutton 2008).

Throughout the literature on feedback, whether this be in the form of a mark or grade, a descriptive or an evaluative appraisal, the concepts of consistency and objectivity stand out like flashing beacons in the night. Sometimes termed validity of judgments (Sadler 1989), the topics are by their nature difficult to encompass within a delineating framework, as the appraisal of written documents will always be a judgment, and the same task appraised by different teachers will often be awarded different judgments.

In considering the characteristics of feedback consistency and objectivity, I believe the literature sometimes fails to differentiate the two:

“Furthermore, variations in the nature of submissions may make objectivity in marking more difficult to achieve”
(Askham 1997), p.308.

It is unclear from Askham’s statement how objectivity is compromised by the nature of submissions (portfolio, test, essay), and I question whether the author might have meant consistency. To ensure clarity in this project, I interpret the concepts as follows.

Objectivity is here defined as the degree to which the teacher ensures that professional integrity prevails over emotional judgments that could result from student submissions containing material that, while answering a question fairly, may incite negative reactions and thus negative feedback from the teacher.

Consistency, on the other hand, is here defined as the equivalence of intent of feedback provided by a teacher, or teachers, in response to a recurring, identified error, whether made by one student or many students.

In order to analyse the characteristics of feedback, especially those of objectivity and consistency, it sometimes appears as though researchers are fractionalising the topic of marking and analysing the fractions as though they wish to establish that teachers should strive towards a level of marking attainable only by computers. Indeed, a substantial body of literature exists on the benefits of computer-assisted marking (i.e. without human intervention) - though most often for template-based questions and answers.

Bull and McKenna (2004) (cited in JISC InfoNet, 2007) list a number of reasons why academics may find computer-assisted marking (more commonly known as computer-aided assessment (CAA)) beneficial. These include, inter alia, an increase in objectivity and consistency, and an increase in administrative efficiency. However, further research into the subject of CAA is beyond the scope of this project. Here, I focus on systemised feedback in which human interaction is essential.

In support of research into self-regulation (active control by students of some aspects of their own learning), Nichol and Macfarlane-Dick (2005; 2004) identified from the research literature seven principles of good feedback practice

"Good feedback practice is broadly defined here as anything that might strengthen the students' capacity to self-regulate their own performance. A synthesis of the research literature led to the following seven principles:

1. helps clarify what good performance is (goals, criteria, expected standards);
2. facilitates the development of self-assessment (reflection) in learning;
3. delivers high quality information to students about their learning;
4. encourages teacher and peer dialogue around learning;
5. encourages positive motivational beliefs and self-esteem;
6. provides opportunities to close the gap between current and desired performance;
7. provides information to teachers that can be used to help shape the teaching." (Nicol and Macfarlane-Dick 2006, p.7).

These principles constitute a concise and useful summary of ideal feedback and form a solid basis on which to discuss feedback administered with the QAS (Chapters 7 - 10).

Two types of feedback described in more recent literature are direct and indirect feedback. Should teachers, for example, assume they know what students intend to write when a mistake is made, and insert the correct

form, or is it pedagogically more effective simply to indicate the type of error and request that students resubmit the task following reflection? The findings presented indicate ambivalence - some students react more favourably to one type of feedback than another, self-correction may improve for some students with indirect feedback, while lesser-motivated students may find it too time-consuming, or demoralising. The QAS allows teacher judgment on this, and comments allow for end-of-term evaluation to complement feedback marks.

The lack of consensus on the best form of written feedback may, perhaps, be considered to constitute consensus on the requirement for a flexible system -- both in terms of its type and its administration.

Emphasising that this research relates to the systemisation of feedback, the questions posed by Rowntree appear strikingly relevant:

"What student qualities and achievements are actively valued and rewarded by the system? How are its purposes and intentions realised? To what extent are the hopes and ideals, aims and objectives professed by the system ever truly perceived, valued and striven for by those who make their way within it?" (Rowntree 1987) cited in (InfoNet 2008), p.2.

The literature reveals a punctilious study of the above, and many other, detailed characteristics of feedback. It appears that as research into this vital pedagogical area progressed, the focus moved from evaluation of the concept to the processes involved in providing it, on to the perceptions of students receiving it, and finally on to an analysis of its constituent parts functioning as a guideline, or wish list, for optimising it. With the advent of CAA, used initially for the automated appraisal of summative tasks, research into feedback has assumed further significance and the literature now examines this as computer-mediated feedback for both summative and formative tasks.

Where the literature is sparse, however, is in covering the analysis of feedback tools that, integrated into a system, can *aid* human markers, rather than *replace* them, as discussed under Computer-assisted Assessment Systems (CAAS), below. There is also very little literature on the influence of faculty strategies and requirements on the feedback process and time constraints may work against the feasibility of providing ideal feedback as summarised by Nicol and Macfarlane-Dick, et al.(2006).

With the rapid evolution of ICT, the education environment in which research is carried out changes rapidly and it is therefore difficult to consider even the most well-founded statements on principles and strategies as conclusive. This investigation examines the implications of introducing a CAAS for courses in which students are allocated daily or weekly tasks of short duration, and where the nature and aims of each task may differ considerably. Such an educational environment exemplifies the difficulty of generalising feedback principles, as, in this case, any discussion between students and teachers of criteria and standards would be somewhat impracticable due, again, to time constraints.

Despite the increase in research into the use of ICT for feedback, and, to a lesser extent, the idea of resubmissions, research tends to stop short of a full investigation into the use of CAAS. As formative appraisal of tasks involves subjectivity, tasks requiring non-numerical answers demand that teachers form and express an opinion on students' answers. A suitably-designed CAAS, such as the QAS, could be used to manage teacher and student feedback. In this project, I seek to extend the literature by providing an analysis of stakeholder perceptions to QAS-mediated feedback, highlighting those functions the stakeholders find most useful, functions perceived as detracting from good feedback, and design revisions and opportunities prompted by stakeholders for consideration in subsequent QAS versions.

3.11 Feedback Administered by Computer

While Section 0 discusses the literature relating to feedback that is not necessarily administered with the aid of computers, this section looks specifically at the literature that discusses feedback systemised and conveyed by computer, and makes reference for comparative purposes to the ICT at the heart of the CAAS being investigated in this project (the QAS).

The introduction of an ICT tool within an appropriately-designed technological framework would facilitate the systemisation of data that the implementation of asynchronous, resubmitted feedback would generate. The fast-evolving body of literature on the subject (corresponding to the fast evolution of ICT) provides a timely opportunity for further research into this vital function of education.

Effective use of such systemised data is enhanced through the use of networked computers. Hyland and Hyland identified the benefits of

connectivity of networked computers for language teaching as facilitating both synchronous and asynchronous writing, and stated that this functionality might empower students (2006).

One notable proponent of systemised feedback is John Milton, who states that the ICT feedback tool he has investigated can be customised,

"so that students can be supported in taking an autonomous, discovery-based approach to their own learning, and so that their instructors can give systematic, comprehensive and resource-rich comments as part of their feedback", (2004, p.1).

It is significant that Milton expresses the *systematic* characteristic of comments facilitated. Rarely is this word used in the literature, arguably because of its non-pedagogical connotations, or perhaps of its more technological connotations, but it does lend support to the choice of the keyword "system" in the title of this project, and of the essential concept of systemisation that is threaded through this investigation.

Bearing in mind that the QAS software used for this research was designed initially for students and teachers of English for Speakers of Other Languages (ESOL), the work of Rod Ellis⁵ also stands out for its relevance and significance.

"... identifying the options in a systematic way is essential for both determining whether written corrective feedback is effective and, if it is, what kind of corrective feedback is most effective." (Ellis 2008)

The above citations illustrate the dual interpretation of the word system. It has a technological function when used in discussions on ICT in education, and it has a pedagogical function when used in discussions on feedback elsewhere. These definitions overlap and while this may lead to ambiguity, it also underlines the significance of the concept.

The literature now generally acknowledges that feedback needs to be more than the transmission of one-way data from teachers to students listing strengths and weaknesses. Yet, as one of the components of the task

⁵ Ellis is Professor in the Department of Applied Language Studies and Linguistics, University of Auckland, where he teaches postgraduate courses on second language acquisition and task-based teaching

process, the provision of such data, as the first stage of the two-way process, has a valuable place, as is supported by Sadler:

“students use it [feedback] to monitor the strengths and weaknesses of their performances, so that aspects associated with success or high quality can be recognized and reinforced, and unsatisfactory aspects modified or improved” (Sadler 1989, p.121).

This citation comes from Sadler’s journal article which, significantly, is entitled “... design of instructional *systems*”, yet few researchers have picked up on this holistic concept of system, despite Sadler’s research dating back to 1989.

Sadler also questions whether “students can be expected to make systematic progress when teachers appear to operate probabilistically.” (1989, p.15). He explains the phenomenon of probabilisticality as follows:

“It can be demonstrated that when a teacher, on two or more separate occasions, makes running evaluative comments together with an overall assessment of quality on a piece of student work, the overall judgments may be identical but the running comments may differ from occasion to occasion. The comments may be made at different places in the writing, or if at the same point, may differ in content. It also can be demonstrated that several assessors may agree on an overall judgment, but for different reasons. This phenomenon has implications for formative assessment” (ibid. p.15).

This clearly highlights the opportunity to research the systemisation of feedback to reduce probabilisticality, thus enhancing consistency and quality of feedback (see Section 3.10).

The concept of feedback systemisation through the QAS is at the heart of this project and the research findings add critical value to the body of literature on feedback in general, and to the work of Sadler, Ellis and Milton more specifically, by considering the role of ICT in education in a way that was not feasible in the 1980s.

A review of the literature on ICT feedback tools reveals limited recognition of the potential of systemised feedback mediated by computer and an early focus on automated marking primarily of summative assessments. This early

focus has, in more recent years, been matched in scale and, perhaps, surpassed in significance, by a focus on computerised methods of providing feedback to meet the pressures of economic factors.

“They attempted (30 institutions) to keep the same student enrolment numbers and reduce costs while maintaining quality... by transferring a number of tasks to technology” (Vaughan 2007).

This issue has been of concern to higher education establishments since the massification of education (see Section 3.8.1) in the 1970s. Indeed, it seems well established that the driving force for the development of CAA is the reduction of time spent by teachers on non-teaching tasks. In attempting a review of the literature on CAAS, it is difficult to refine searches sufficiently to exclude literature on CAA (necessary to avoid titles relating to computer-generated feedback, as opposed to QAS feedback created and added by teachers). Of the 128 titles found by the generic Google Scholar ® search engine when seeking literature on computer-assisted, or computer-aided, assessment, only one title appeared not to relate to the automation of the marking process, and the content of this title was not relevant to the current study. In searching within ERIC, EBSCO, ProQuest 5000, and ISI Web of Knowledge, there was a corresponding lack of pertinent results.

One of the implications of this is that research is being driven, perhaps too quickly, in the direction of technological development, which, in turn, is being pursued in the interest of commercial gain, rather than in the pursuit of academic excellence.

It is of significant value that education research investigates issues that become important as a result of technological development, but it is arguable whether such research should be at the detriment of research into existing issues that could enhance education quality.

There appears to be a risk involved in researching ICT in education in that the academics researching the topic, who may not be ICT experts, could be attracted to researching complete, comprehensive ICT solutions (such as LMS), thus remaining oblivious to, or at least omitting to research, the capacity of specialised, or customised, ICT add-ins, and to the feasibility of creating them. This appears to be the scenario dominating the literature pertaining to ICT in education, and, crucially for this research, pertaining to CAAS. Additionally, it could be asked: Why create something entirely new,

when an existing tool can be supplemented to provide the previously lacking functionality to solve the users' requirements? Commercially, it may be of financial benefit for an ICT company to do this. However, for education establishments, it may well be more appropriate to exploit existing knowledge and safeguard user acceptance by making small changes to a system, and using add-ins rather than entire new applications. I term such an approach a "hybrid solution".

The QAS may be termed a hybrid solution, as it consists of an add-in program functioning with the Microsoft Word host. Hybrid solutions capitalise on the experience and knowledge of the users (human input) and combine this with the time-saving and reporting features of a computer (computer input).

By enhancing this hybrid solution with human and computer input tools to facilitate asynchronous submission of tasks and two-way feedback, and structuring it within an appropriate technological framework, the whole function becomes a system, as discussed earlier in this section.

In contrast, research has focused heavily on computer-aided assessment (CAA), even though the literature makes it clear that the automated marking performed by CAA requires fundamental changes in the design and implementation of summative tests and appraisal processes:

"it would be difficult if not impossible ... to automate or develop a computer-based system for feedback or formative assessment, or for generating remedial moves and appropriate corrective procedures. Any attempt to mechanize such educational activities and creative efforts is unlikely to be successful because of the large number of variables involved," (Sadler 1989, p.139).

In contrast to this negative perception of CAA, Sadler gives a more positive opinion of a partial-ICT solution:

"a different method of judging quality would be to use a computer program to analyse certain textual properties such as the frequency of commas, and the proportion of prepositions, conjunctions and uncommon words." (Sadler 1989, p.125).

This statement was made over 20 years ago, but there are close parallels with the literature of today. Sadler indicated how a CAAS, or CAA, shared

common functionality to provide an analysis of quantitative strengths and weaknesses, while Ellis examined feedback using the concept of *metalinguistic corrective feedback* and differentiating between *focused* or *unfocused* feedback (Ellis 2008).

Ellis defines metalinguistic corrective feedback as feedback which provides learners with explicit comment about the errors they have made. He points out that the most common type of such feedback takes the form of error codes placed over the location of the error in the students' text or in the margin. Ellis provides a brief summary of the work of other academics in the field (Lalande, 1982, Robb et al, 1986, Ferris, 2006, Ferris and Roberts, 2001, and Guenette, 2007), ending his eclectic analysis with a statement indicating that metalinguistic corrective feedback, as perceived by the above authors, may not be a better form of feedback than other types:

"Overall, then, there is very limited evidence to show that error codes help writers to achieve greater accuracy of the time and it would also seem that they are no more effective than other types of corrective feedback in assisting self-editing." (Ellis 2008, p.101).

Where I believe this research could be extended is in removing the fractionalised way in which it may be perceived, and examining the concepts and methods used within a more holistic framework - and especially within an appropriate computer-mediated framework.

With today's flexible approach to learning prompting a flexible approach to feedback, it is necessary to consider the implications and applications of a combination of feedback methods, as highlighted by Hyland:

"over the past 20 years, changes in writing pedagogy and insights gained from research studies have transformed feedback practices, with teacher written comments now often combined with peer feedback, writing workshops, oral conferences, or computer-delivered feedback."
(Hyland and Hyland 2006, p.83).

There appears to be no literature that analyses the benefits and drawbacks for the education process of combined feedback methods that involve metalinguistic corrective feedback. In fact, there appears to be no literature on what may be considered the first stage of such combined feedback:

"However, to date, there have been no studies comparing the relative effects of focused and unfocused corrective feedback. This is clearly a distinction in need of further study" (Ellis 2008, p.102).

Another method of providing metalinguistic corrective feedback, as discussed by Ellis (ibid. p.101), requires the insertion of metalinguistic explanations of the students' errors. Ellis points out one of the weaknesses in the second method: that it requires teachers to be sufficiently knowledgeable and skilled, and to have sufficient time, to provide the explanations that such a method requires. Given the pressures that the massification of enrolments and the well-documented move towards providing online education which would facilitate universal access to the respective course, it seems that Ellis' observation of the above weakness is well-founded.

This view is reinforced by Hyland, who reports that:

"many teachers feel they must write substantial comments on papers to provide a reader reaction to students' efforts, to help them improve as writers and to justify the grade they have been given (K. Hyland 2003)," (cited in Hyland and Hyland 2006).

I stated in the introduction to this project that there are obstacles and/or disincentives experienced by teachers limiting the provision of effective feedback. Thus, considering the high workloads of staff, there is a significant opportunity to research how institutions might ensure that methods to practise metalinguistic corrective feedback demand less time of teachers than do other forms of corrective feedback.

Central to this research is the investigation into methods of using metalinguistic corrective feedback (facilitating the insertion of both comments and codes) within the QAS. The use of the QAS facilitates the administration of feedback on resubmitted tasks and would be a system that harmonised well with Young's findings, cited in the section "Forums, Chat, E-mail and LMS", below, that technology improves student engagement.

Amongst more recent literature is a study by Chung, Shel *et al*, relating to an investigation into a formative assessment system. The authors conclude their study with a presentation of findings that underline the importance of

research into CAAS, and in particular, of the *two-way* process between teacher and student:

"Our conclusion is that the most important elements of an effective formative assessment system are a) the capability of the system to provide good information about what students know and do not know; and b) the use of that information by instructors to provide feedback to students about their performance, and to adjust instruction accordingly. As with effective tutoring (Bloom, 1984) and instructional techniques that promote interaction and engagement (Hake, 1998), the fundamental enabling capability is the *bidirectional* flow of accurate information between student and instructor." (Chung, Shel et al. 2006).

This conclusion reinforces several key elements in this project and highlights the salience of research into whether computer-mediated, systemised feedback provides an effective and efficient method of optimising the feedback process.

3.12 Summary of Literature Review

In drawing together the threads of this review, it may be useful to emphasise the central issues running through the literature relevant to this project - issues which also constitute the current focus of debate and development within higher education.

The clearest and most significant theme permeating the literature on the topics that must be interwoven in order to attempt an overview of this project is the essential role of feedback. The most significant theme absent from the literature is the importance and the evolution of computer-mediated feedback systems.

The literature appears to be struggling with the juxtaposition of behavioural factors influencing feedback on one side, and machine-assisted education tools on the other side. It is possible that research is facing a dilemma it did not have to confront prior to the advent of broadband communications via the Internet.

The promulgation of research literature has itself become a factor in the increasingly commercial need for speed, and increasing enrolments and larger classes of students demand ever quicker feedback, feasible only with

the aid of ICT tools. Timely feedback is a characteristic that both teachers and students seek and appreciate as important:

"The promise of formative assessment is if instructors have timely information on whether students are learning, then their instruction can be modulated with greater precision and accuracy, resulting in improved student learning." (Chung, Shel et al. 2006), p.4.

It is possible that, if research is being increasingly driven by market forces and ICT evolution, there is little time to pursue comprehensively research into topics involving elements which are themselves characterised by rapid evolution such as ICT-mediated feedback. This may explain, though not obviate the need for, literature on the systemisation of feedback.

Furthermore, there is some evidence in the latest literature on feedback relating to students of English (ESOL) that the topic of feedback itself, so clearly described as essential in earlier literature, is in the firing line of critics:

"But while feedback is a central aspect of L2 [language two] writing programs across the world, the research literature has not been unequivocally positive about its role in writing development, and teachers often have a sense that they are not making use of its full potential. Many questions relating to feedback remain unanswered or only partially addressed..." (Hyland and Hyland 2006), p. 83.

It would be interesting to research the full potential of feedback the above-mentioned teachers indicate they are not making use of, but that is beyond the scope of this review. It is significant, however, that when the vast majority of researchers have reached consensus on the value of feedback, or its positive role, and have moved on to how it affects student learning, lifelong learning, and its implications for e-education, that some of the most recent literature questions this and highlights the lack of consensus.

In conclusion, the literature reinforces the need for high-quality, timely, consistent, objective, and appropriate feedback. The feedback must be easy to understand, easy to relate to the task instructions and learning outcomes, and, by focusing on performance achieved rather than by mistakes made, must be motivational. Engagement in the feedback process

remains a function of engagement in the learning process, which itself is a function of the teaching process.

The literature fails, however, to discuss to any significant degree the systemisation of such feedback, whether mediated by computer or not. As Ellis states with regard to written corrective feedback (CF):

“There is an obvious need for carefully designed studies to further investigate the effects of written CF in general and of different types of CF.” (Ellis 2008), p.106.

It seems, therefore, that research into methods of providing feedback (and especially of ICT-mediated feedback) that can aid students in the process of critical thought, reflecting on their mistakes, and seeking sustainable improvement, is still in its infancy.

As Hyland and Hyland said,

"it may be... that what is effective feedback for one student in one setting is less so in another" (Hyland and Hyland 2006), p. 88.

Considering the international character of the modern classroom, universal access to e-education, and socio-cultural differences, feedback processes must evidently be highly flexible. This characteristic, while mentioned in the literature, is not commonly associated with feedback, nor adequately researched.

The prototype QAS, developed in this project, was designed to facilitate a holistic approach to managing feedback, and remains an innovative concept in its integrated and systemised approach. While similar programs exist, my review of these programs (Chapter 4) indicates they are not designed to facilitate the administration and comparison of resubmitted work, nor to administer feedback on scanned, handwritten work. Considering the desire of some students to continue writing their work by hand (as discussed in Chapter 9), and the arguments for resubmission (Sadler 1989; Boud 2000), this research provides a timely contribution into an area of education whose understanding is commonly accepted as essential to the achievement of learning outcomes.

Finally, technological evolution is so fast that there has been little time for academics who are, or become, researchers to have become sufficiently ICT-competent to build up a body of literature in this area. Equally, there has been little time for ICT experts, who become researchers, also to

become sufficiently competent in the relevant education field. This rapid evolution of ICT and equally rapid increase in use and accessibility to ICT resources, as well as universal adoption of the Internet, combine to provide ample opportunity to carry out new research to investigate the role that innovations such as the QAS may take up in enhancing academic processes – in this case, feedback:

"For ESOL students, computer use is also on the rise. In a large scale research study of computer use with Test of English as a Foreign Language (TOEFL) examinees in the late nineties, Taylor, Jamieson and Eignor (2000) concluded that there was a notable increase in the use of computers, English word processing and the Internet over a period of 1 ½ years. In particular, for students sitting TOEFL exams in the area designated in the survey as Pacific Islands, Australia and New Zealand, the increase was largest - 14.1% increase in use over a period of 20 months." (Hobbs and Haines 2010, p.3)

Chapter 4: Alternative ICT Feedback Tools

4.1 QAS Alternatives

There appear to be three major alternative pieces of software for the Windows platform that offer feedback systems with a database and customisable interface:

1. Markin
2. Mark My Words Lite
3. T.A.Toolbar

In this section, I provide a brief summary of the main functions of these programs. The information about the above programs was retrieved from the websites of the respective software designers (Creative Technology (MicroDesign) Ltd ; Milton, Wong et al. ; TAToolbar), and from publications of one of the designers of Mark My Words, J. Milton (2004).

4.2 Markin

Markin was developed by Martin Holmes and Creative Technology (MicroDesign) Ltd, and the latest version is v4.2.01. Markin is a standalone program incorporating its own word-processor and running on Windows 2000, XP, Vista, or 7, Mac or Linux. It is intended for use by teachers.

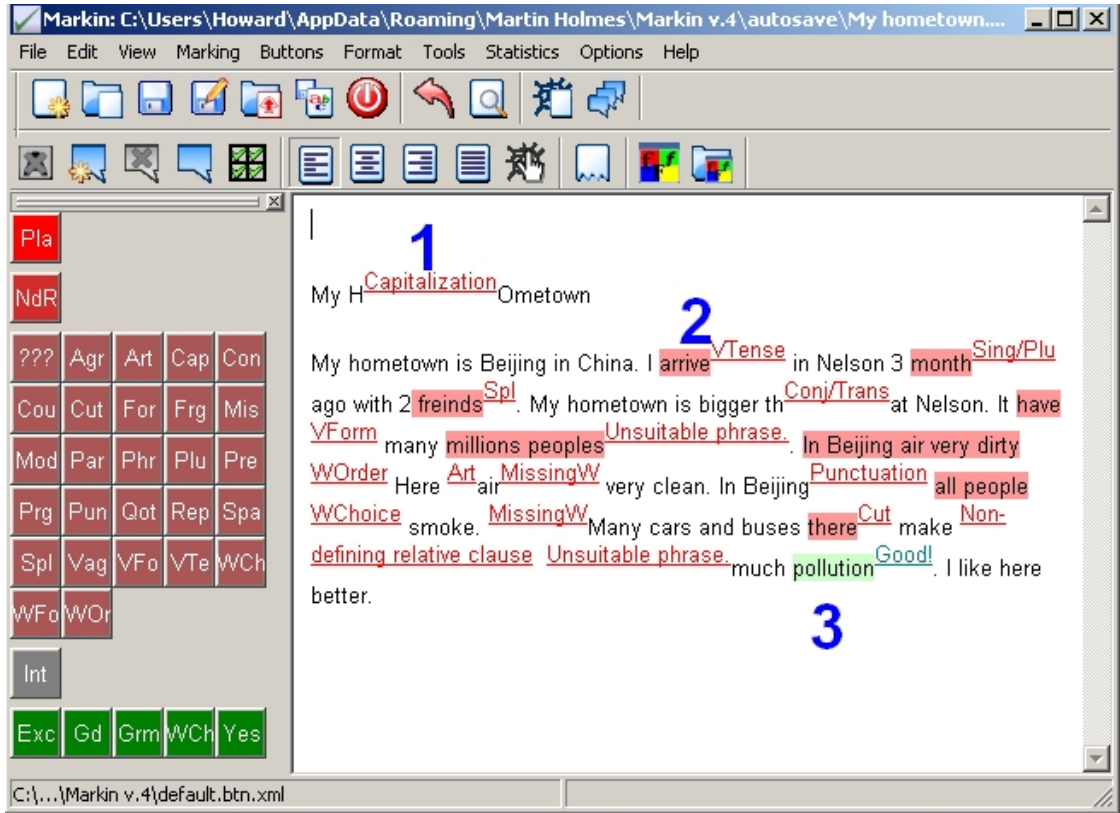
4.2.1 Appearance and Functionality

Once Markin is started, teachers can import a student's text into the main window, or open a file they have already started marking (see Figure 3), The program saves files in dual formats: a) Markin's proprietary .mrk format, and b) .htm format. The latter is used when returning work to students, who can then view the marked work in a web browser.

The program displays a customisable horizontal menu with function buttons at the top of the screen, and a dockable (movable) list of customisable correction codes as abbreviations in the left-hand margin.

To insert feedback items, teachers can either a) place the cursor on the word to be marked, then click on the appropriate correction code, or b) double-click on the word to be marked (which highlights the word), then click on the appropriate correction code. Method (a) inserts a feedback item at the point of the cursor (item 1 in Figure 3); method (b) inserts a feedback item immediately after the highlighted word (item 2). Teachers can add positive feedback items (item 3) in the same way.

Figure 3: Editing screen - work in progress



Markin is highly customisable. All colours, feedback items, menu items and display positions can be customised by the users. To add or edit feedback items, users call up the appropriate form from the drop-down menu (Figure 4) and complete the fields as required.

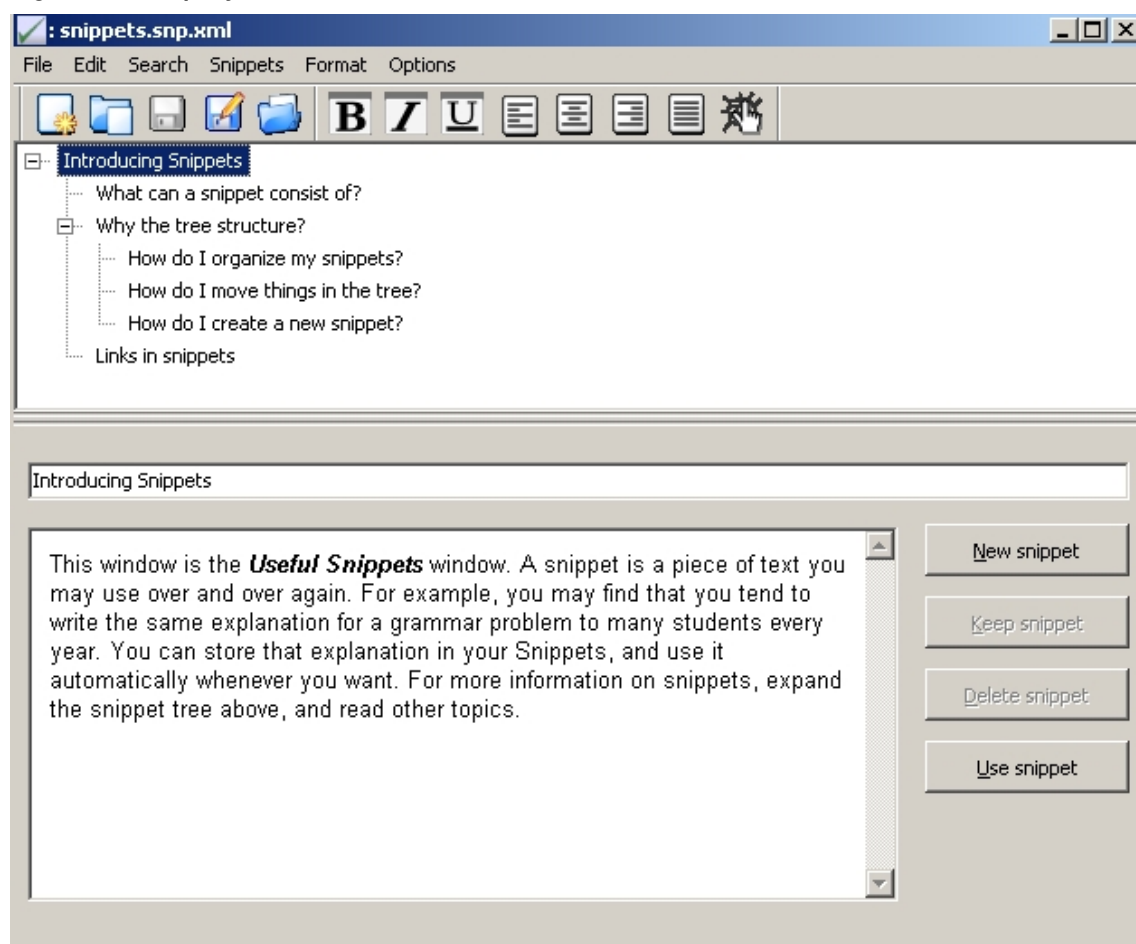
Figure 4: Add or edit feedback items

The screenshot shows a Windows-style dialog box titled "Add or edit an annotation button". The dialog has a light gray background and a blue title bar. It contains the following fields and controls:

- Button caption:** A text box containing "Pla".
- Value:** A numeric spinner box set to "-3".
- Annotation:** A text box containing "Plagiarism".
- Explanation:** A text box containing "Use of another writer's words with no reference to that writer."
- Associated URL:** A text box containing "http://dictionary.reference.com/browse/plagiarism".
- Categories:** A dropdown menu showing "Plagiarism".
- Shortcut:** A section with two radio buttons: "Alt" (selected) and "Alt + Shift". Below them is an empty text box.
- On:** A checked checkbox.
- Delete:** An unchecked checkbox.
- Add:** A button with a small square icon.
- OK:** A button with a green checkmark icon.
- Cancel:** A button with a red X icon.

To save comments that a teacher may want to re-use, Markin has a “Snippets” function (Figure 5). This stores customisable comments in the database on the teacher’s computer, and facilitates the insertion of the selected comment at the point of the cursor by clicking on the appurtenant menu items.

Figure 5: Display of customisable feedback comments



Markin has a function to provide a summary of all feedback items and a numerical analysis of these items, and this is displayed below the students' text in .htm format (Figure 6). This function can be used at any stage of the marking process.

Figure 6: Feedback summary and analysis

Normal view Statistics All annotations Marking key							
My Hometown My hometown is Beijing in China. I arrived in Nelson 3 months ago with 2 friends. My hometown is bigger than that Nelson. It has many millions peoples. In Beijing air very dirty Here the air very clean. In Beijing all people smoke. Many cars and buses there make much pollution. I like here better.							
Statistics							
Instances	Annotation	Explanation	Help link	Categories	Value	Points lost	Points gained
1	Non-defining relative clause	A link word is required to join the second part of the sentence to the first part		Linking	-2	-2	
1	S/VAgreement	Subject/verb agreement error		Grammar	-1	-1	
1	Art	Article error		Grammar	-1	-1	
1	Capitalization	Capitalization error		Punctuation	-1	-1	
1	Conj/Trans	Conjunction/Transition error		Linking	-1	-1	
1	Cut	Cut -- this text is not necessary		Sense	-1	-1	
2	MissingW	Missing word or words		Grammar	-1	-2	
2	Unsuitable phrase.	The words you have chosen exist, but they are not used in this context or order. Perhaps they do not work well together (collocation).		Collocation	-1	-2	
1	Sing/Plu	Singular/plural error		Grammar	-1	-1	
2	Punctuation	Punctuation		Punctuation	-1	-2	
1	Spl	Spelling		Spelling	-1	-1	
1	VTense	Verb tense		Grammar	-1	-1	
1	WChoice	Poor word choice		Vocabulary	-1	-1	
1	WOrder	Word order		Syntax	-1	-1	
1	Good!	Good!		Content	1		1
Totals						-18	1

The homework is returned to the students in .htm format for display in a web browser.

Students may choose to rewrite their work, but Markin appears not to have a system in place for administering the resubmission process. There is no database of stored tasks or feedback that stakeholders can access.

The program does not facilitate the marking of scanned, handwritten work, and has no function to assist in the detection of plagiarism.

4.3 Mark My Words

The second program that resembles the QAS is called "Mark My Words". This program was designed by John Milton, Aboy Wong, Michelle Ho and Vivying Cheng, for the Hong Kong University of Science and Technology's Center for Enhanced Learning and Teaching (HKUST). The designers have created a version for integration with HKUST's course and enrolment database ("Mark My Words"), and a standalone version ("Mark My Words Lite") without such integration. This review focuses on Mark My Words Lite as this is the version that is publicly available.

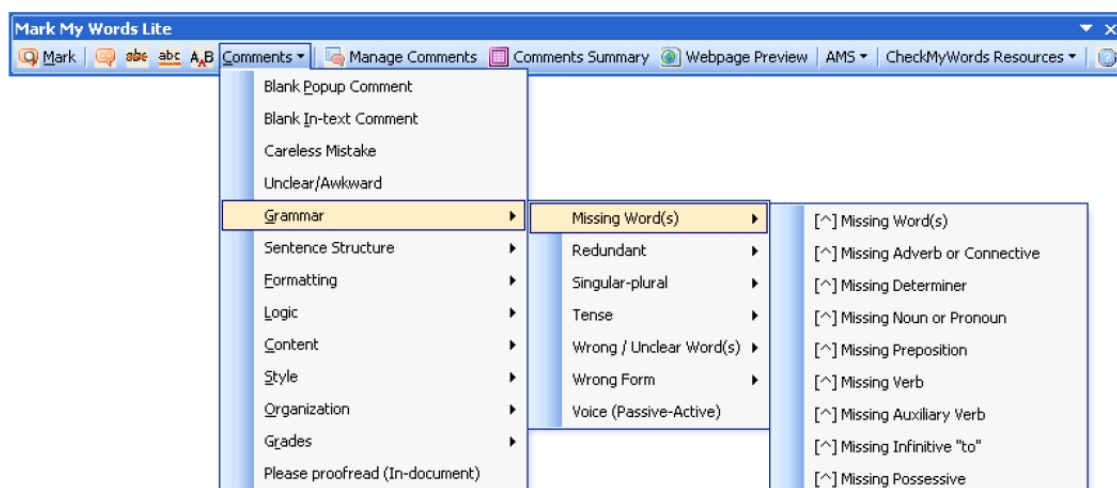
The latest version of Mark My Words Lite is v1.0.4, and this was released in February, 2009. The designers describe the program as a tool for teachers to insert resource-rich feedback (with links to online reference resources) in students' written work (Milton 2004).

4.3.1 Appearance and Functionality

Mark My Words Lite is installed on teachers' computers. A companion program called Check My Words can be installed on students' computers. The former is used by teachers to provide feedback, while the latter is used by students seeking a comprehensive set of tools to help them carry out their writing tasks. Mark My Words Lite is fully functional without the installation of Check My Words.

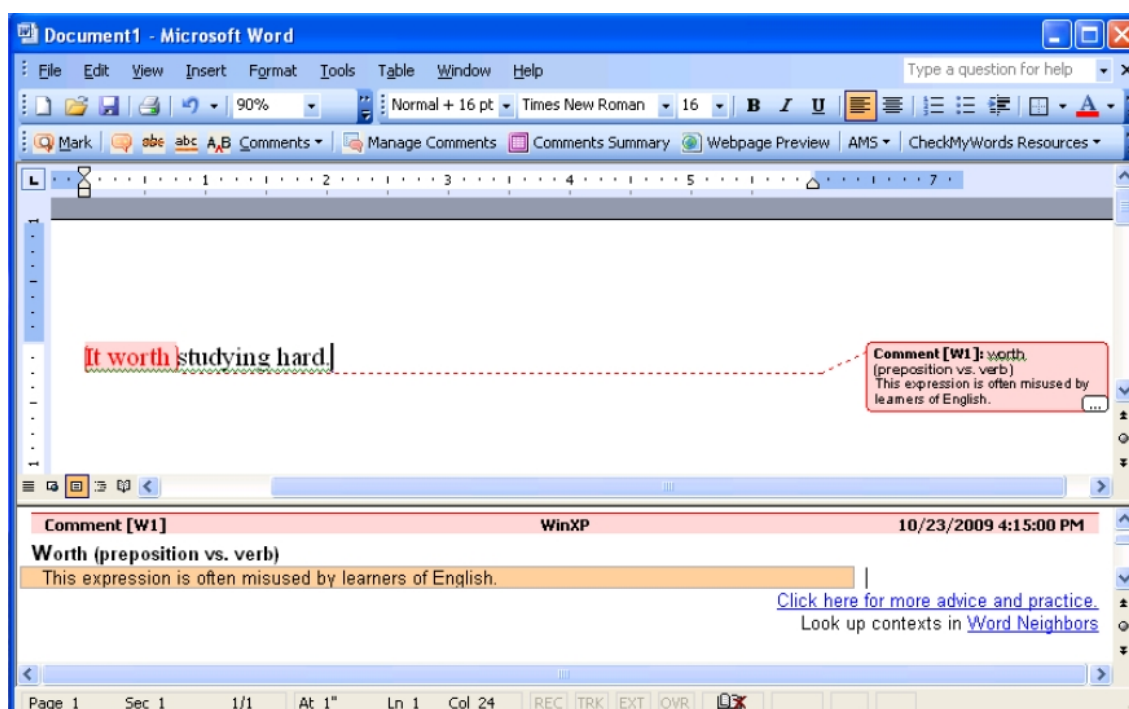
Work that is to be marked is sent to teachers as an e-mail attachment in Microsoft Word-compatible format (or import-compatible format). Mark My Words Lite provides a drop-down menu system for teachers to access the correction tools (Figure 7). The menu items are full words, are easier to read than abbreviations, and are easier to understand than icons.

Figure 7: Mark My Words drop-down menus



Default comments are added by clicking on the appropriate menu item. This operation inserts the comments, using the Microsoft comments function, in the margin and as an item in the review panel at the bottom of the document (Figure 8). The comments can contain links to further information online.

Figure 8: Mark My Words insertion of comments



The expression "Comments" is used by Mark My Words to encompass what the QAS calls "Correction Codes" and "Comments".

Once marking is complete, the documents are stored on the teacher's computer, and a copy in .htm format is e-mailed to the student.

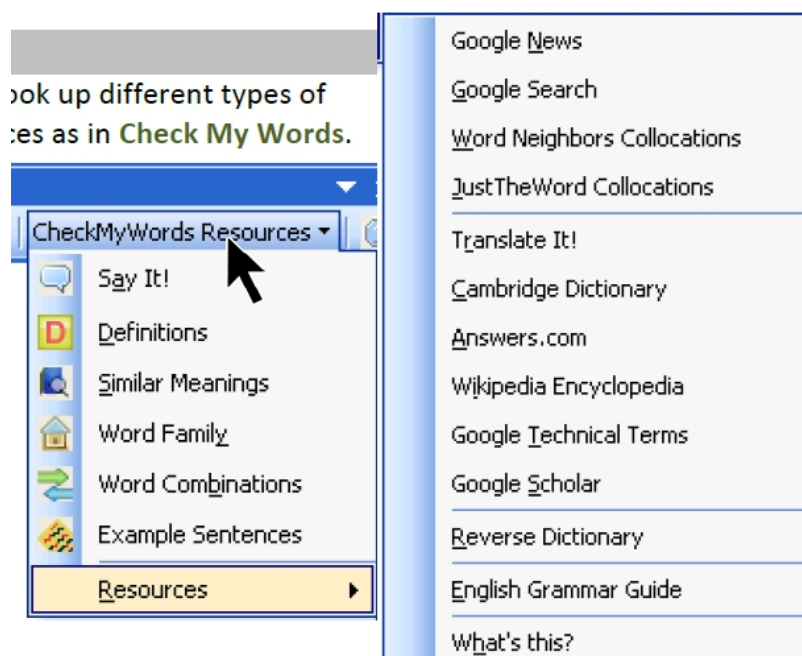
To review teachers' feedback, students call up the document in their browser. The document is then displayed with the feedback items highlighted through the use of a different colour font, and with the feedback comment identified by a reference number (Figure 9). At the end of the document is a log of all the errors made, categorised by error type. A statistical value is attached automatically to the errors and this facilitates the automatic grading of the students' work.

Figure 9: Mark My Words feedback displayed on a student's task

Merlin Speak: "Hello Professor James, we have many problem about the coming midterm, do ypu have time to expan those to us? " James Speak: "Yes, of course, I am very glad to see students asking me question[JM16]. I am wondering why^JM17 the midterm is coming, butJM18 there are no student a Peedy Speak: "It is because other classmates think this course areJM20 very simple. Even if they getJM21 problem, they won't come to ask you. They will feel embarrassJM22 attend? So we have the chance to ask you the questions about midterm together!" Merlin Speak: "Yes, I am very agree JM23 about that. It can help other classmate to get more understand JM24 about the midterm!" James Speak: "I don't think it is a good idea! BecauseJM25 I need to attend many meeting and lecture class in this weeks. So, I don't think I have enought time to arrange th Merlin Speak: "O, how about askJM26 the TA to instead of you? Ask him to arrange the special class! So we can solve our problem, and you can motivate the students to James Speak: "Let'sJM27 me think...." James Speak: "It is also a good alternative method. Let's JM28 me ask my TA ^JM29 have time or not. But I don't think he mustJM30 accept this arrangeJM31. As you kn student thatJM32 likes you to come to ask question, rather than the teacher arrangeJM33 the question time." Peedy Speak: "I see. Please try your best, professor. I don't want to fail in this course. AsJM34 I failed in three previois elective courses, so I don't want to miss this chances James Whisper: "You are a stupid student." James Speak: "OK. What's your question? You can ask me now."				
		Log		
<u>Description</u>	<u>Category</u>	<u>Instances</u>	<u>Value</u>	<u>Running Total</u>
<u>Wrong Pronoun Reference (Anaphora)</u>	Wrong Word(s)	1	-1	-1
<u>Redundant Word(s)</u>	Redundant	1	-1	-2
<u>Adverb Form</u>	Wrong Form	2	-1 -1	-4
<u>Article Form (a-an)</u>	Wrong Form	1	-1	-5
<u>Wrong Form</u>	Wrong Form	3	-1 -1 -1	-8
<u>Missing Preposition</u>	Missing Word(s)	1	-1	-9
<u>Wrong Verb</u>	Wrong Word(s)	3	-1 -1 -1	-12
<u>Missing Determiner</u>	Missing Word(s)	2	-1 -1	-14

Mark My Words Lite offers teachers a range of integrated links to online resources (Figure 10) in order to help teachers maximise the grammatical information given to students. References located by teachers can be inserted in the feedback as hyperlinks, and in this way assist students to revise their work quickly.

Figure 10: Mark My Words - integrated links to language resources



Mark My Words Lite does not keep a database of students' tasks. Marked documents are saved by teachers in MS Word .doc format on their computers, and students save their work with the teachers' feedback in .htm format, as received by e-mail.

In the Lite version, there does not appear to be a system for administering the resubmission process, nor for displaying performance change between homework tasks, classes or time periods.

Mark My Words Lite does not provide feedback on scanned, handwritten tasks.

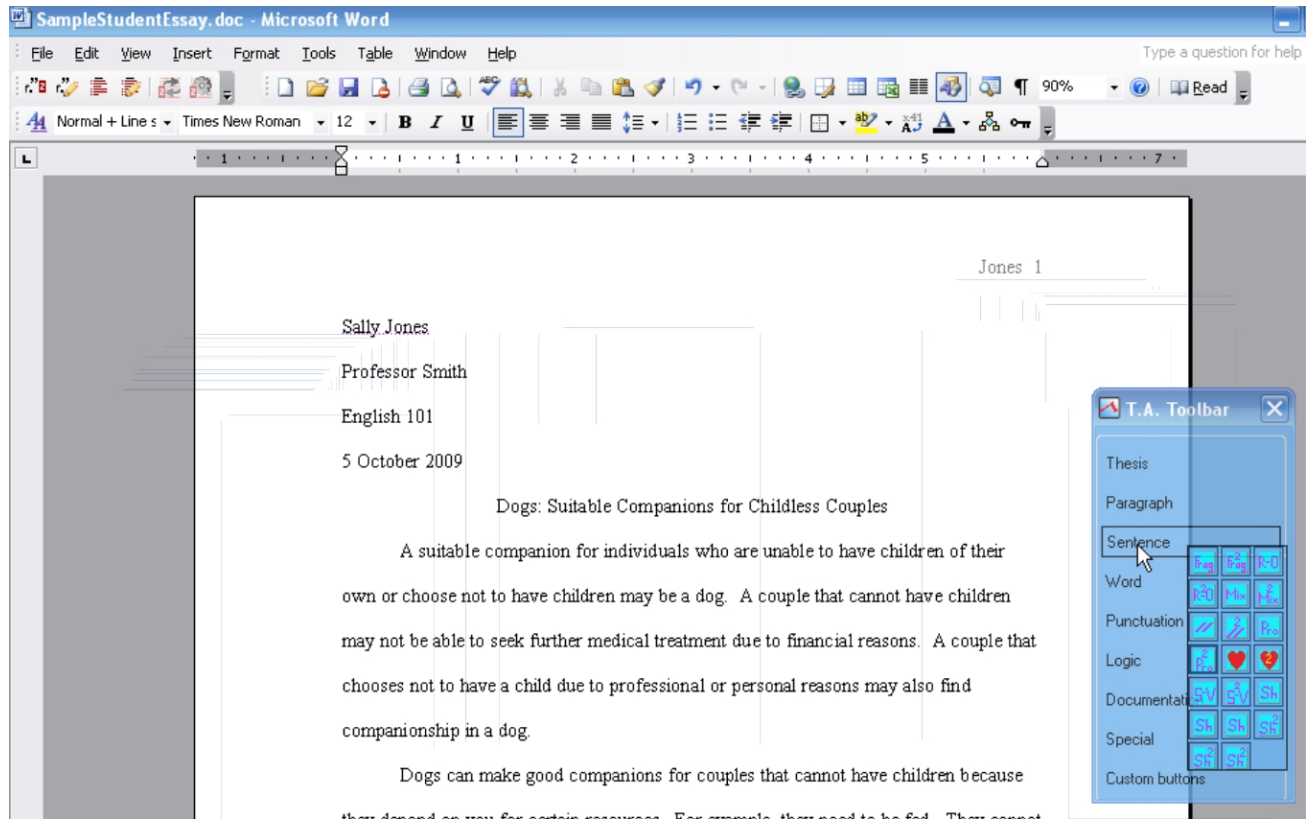
4.4 T.A.Toolbar

This program was created by T.A.Toolbar LLC and the latest version is v2.5.0 (date of release not published). It requires Microsoft .NET 2.0 and runs in Microsoft Word 2007 or 2010.

4.4.1 Appearance and Functionality

The initial teacher interface opens with a floating toolbar, listing nine menu items (Figure 11). The items open up, when the cursor is placed over them, to reveal icons that can be clicked on to insert feedback on a wide range of common writing problems.

Figure 11: T.A.Toolbar opening screen and toolbar



Each of the nine menu items reveals between 3 and 20 icons representing a variety of feedback options. To insert a feedback item, the user places the cursor over the required feedback menu item and clicks on the icon representing the recommended action the student should take (Figure 12). This inserts a default comment beside the error, and also provides a link to Internet-based grammar resources to help students revise their own work.

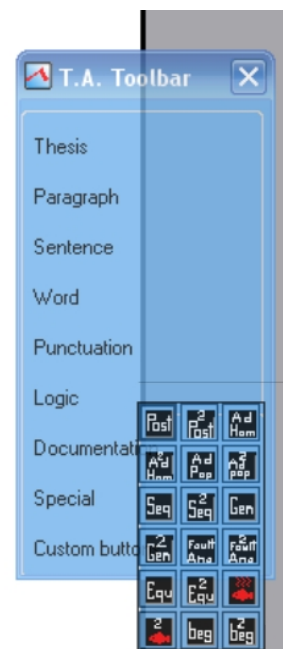
Figure 12: T.A.Toolbar inserting a feedback item

5 October 2009

Dogs: Suitable Companions for Childless Couples

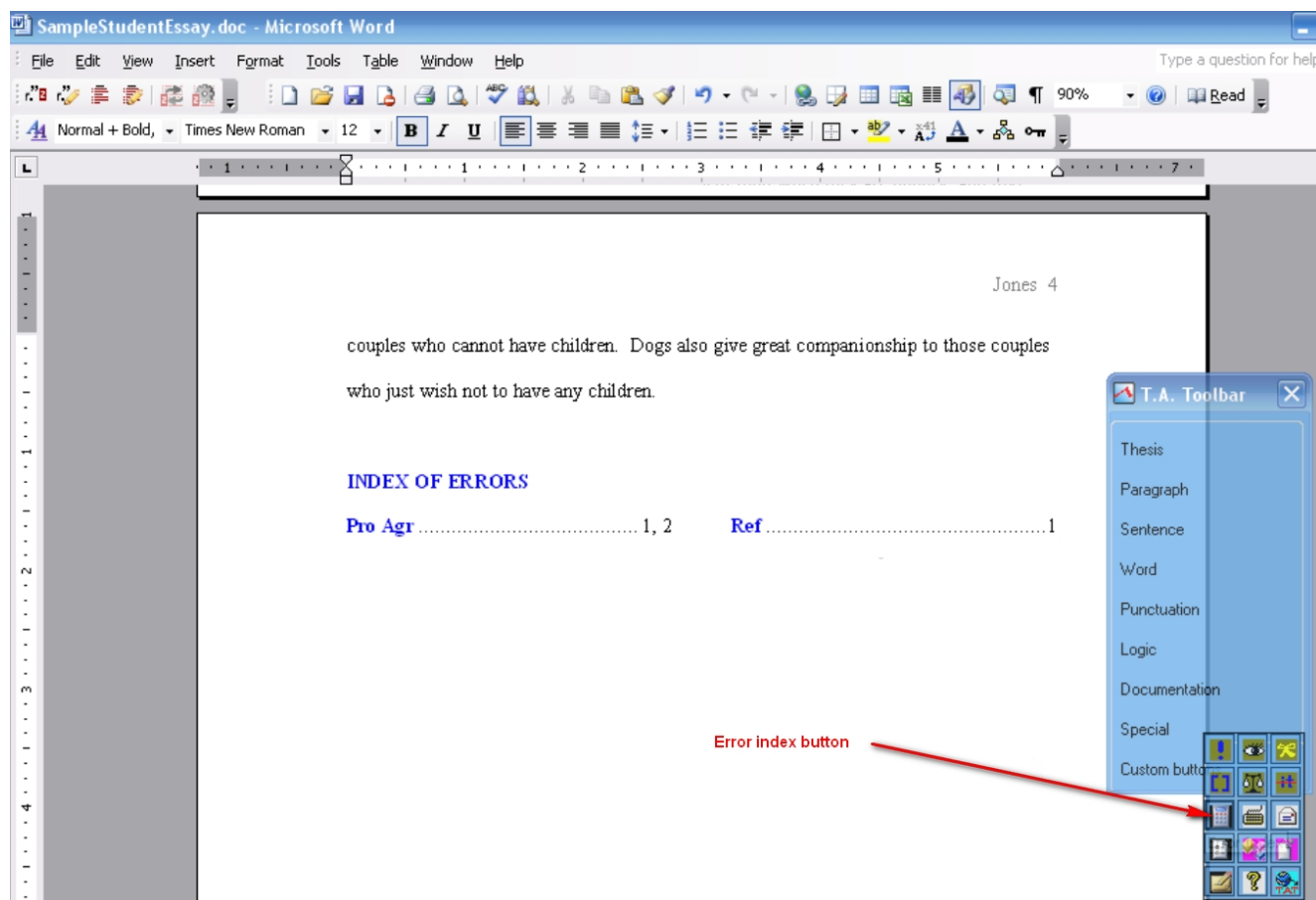
A suitable companion for individuals who are unable to have children of their own or choose not to have children may be a dog. A couple that cannot have children may not be able to seek further medical treatment due to financial reasons. A couple that chooses not to have a child due to professional or personal reasons may also find companionship in a dog.

Dogs can make good companions for couples that cannot have children because **they** [Obscure referent (Ref). To what does the highlighted word refer? It is not clear. To learn more about obscure referents, please see [the following web page.](#)] depend on you for certain resources. For example, they need to be fed. They cannot feed themselves as you have to make sure to give them food when they are hungry and give



Once marking is complete, teachers may collate all the errors identified into an index by clicking on the error index button. The index is then inserted at the end of the student's task (Figure 13).

Figure 13: Error index button

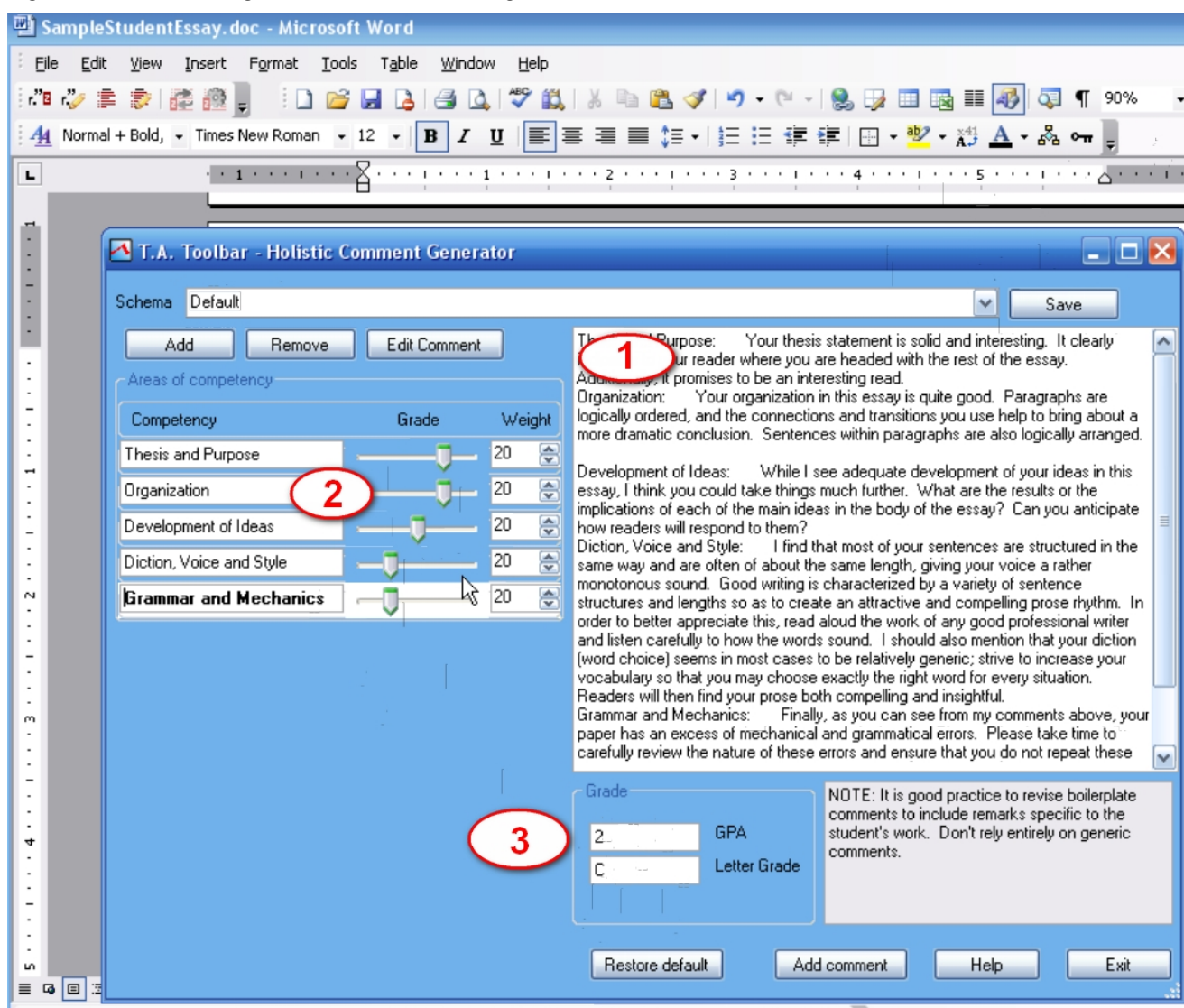


T.A.Toolbar also has a function to generate automatically a grade and summary comment for the work marked. This is called the "Holistic grader and comment generator" (Figure 14). The default comments are automatically adjusted (Item 1) to reflect the user-modifiable comments schema selected in the uppermost field of the window. Teachers then manually move the sliders (Item 2) to reflect their judgement of the students' work in respect of five categories of competency: a) thesis and purpose, b) organisation, c) development of ideas, d) dictation voice and style, and e) grammar and mechanics. By moving the sliders, the precise wording of the comments is further adjusted automatically to indicate greater or lesser praise or criticism. Fine-tuning (customisation) of the

comments can be finalised by manually editing the comments in the text window (1).

When teachers have finished editing their comments, T.A.Toolbar displays a summative grade (Item 3) that reflects the position of the sliders in the competency panel. The grade and comments are then inserted at the end of the student's work.

Figure 14: Holistic grader and comment generator



T.A.Toolbar comes with a function to detect plagiarism. Teachers suspecting plagiarism highlight the suspicious text, and click on the plagiarism icon in the Toolbar. This opens a browser window and activates a Google® search

on the text highlighted. If text is identified as plagiarised, a link to the Internet reference is added to the task at the location of the plagiarised section.

The software uses a database to record the awarded grades, and the usage statistics for tasks, students and courses. Teachers can view the collated results in Microsoft Excel.

T.A.Toolbar appears not to have a system for administering the resubmission of tasks, nor for analysing change in performance.

The program does not provide feedback on scanned, handwritten work.

Comparing all of the above four programs, it can be seen that there are considerable similarities in design, but also essential differences. To conclude this section, I specify the most evident unique characteristics of each program:

1. Markin
 - a. uses its own word-processor
 - b. saves files in its own proprietary format
 - c. can highlight (shade) feedback items
 - d. has a highly customisable interface
2. T.A.Toolbar
 - a. has a plagiarism control function
 - b. has a semi-automated grading system for summative feedback;
 - c. has a holistic comment generator and grader;
3. Mark My Words Lite
 - a. is part of a suite of programs to assist teachers with feedback, and students with task completion;
 - b. marks tasks in Microsoft Word and returns the tasks as HTML documents;
 - c. facilitates inline, pop-up and endnote rich-text comments with hyperlinks to reference material;
 - d. feedback items are displayed as hyperlinked references to full explanations at the end of the student's work
4. The QAS prototype:

- a. is designed for handwritten and word-processed tasks;
- b. is server-based, facilitating the customisation of feedback, centralised maintenance and user collaboration through use of a shared database accessible from any Internet-connected PC;
- c. administers the resubmission process;
- d. analyses and displays performance change.

Markin, T.A. Toolbar and the QAS appear suitable for ESOL⁶ students of all levels, while Mark My Words Lite has been designed “with the needs of intermediate and advanced EFL⁷ learners in mind” (Milton 2006, p.40).

4.5 Other ICTs Facilitating Feedback

4.5.1 Learning Management Systems (LMS), Forums, Chat, e-Portfolios, Blogs and Wikis

New technology designed for the education sector inevitably fosters research into the new technology. In less than 10 years, there has been an explosion in the use of online forums⁸ (both within and outside LMSs) and a significant emergence of research into them. Some research has been carried out into the use of text messaging and chat (text-based, synchronous interaction) for the provision of feedback, but little research appears to have been carried out into the systemisation of such feedback. E-portfolios, blogs and wikis all lend themselves to feedback functionality when programmed appropriately. While a detailed review of the literature on all these new technologies is beyond the scope of this project, I examine sample literature in order to provide a rudimentary overview of the extent to which these technologies are perceived as being useful for the feedback process at the core of this research. It is significant that most of the literature available has been written since 2002; this is an example of ICT

⁶ English for Speakers of Other Languages

⁷ English as a Foreign Language

⁸ Forums are text-based, interactive, asynchronous dialogues made available on Internet web sites. Access can be controlled, and content monitored. One web site can operate any number of forums, and the dialogues between the users are preserved in so-called ‘threads’ to permit browsing. Forums are now an intrinsic part of LMSs.

leading the direction of research - an observation described earlier in this review.

It is commonly expressed in the literature that student response to teacher feedback is directly related, *inter alia*, to the engagement of students in the learning process. While Askham and Dixon examine feedback by focusing on the students and/or teachers, Young looks into the role of technology in task allocation and submission, indicating that technology improves student engagement in learning:

"Eighty percent said their professors require them to use the Internet for assignments, and 62 percent said they frequently use e-mail to clarify assignments with professors. Mr. Kuh says those findings suggest that technology is improving student engagement" (2003, p.1)

Young's observation not only reveals that a CAAS might improve the achievement of learning goals (since it is commonly accepted in the literature that such achievement improves with greater engagement), but also urges research into how students and teachers perceive the required use of ICT in their work.

Detailed research by Kol and Schcolnik into the use of forums in Advanced English for Academic Purposes appears to support Young's observation:

"qualitative analysis of the transcripts reveal deep student involvement with the content and with their peers as well as an academic register interspersed with conversational interactions", (Kol and Schcolnik 2008, p.49).

Student involvement/engagement are central themes in the literature on this ICT. The theme is reinforced by Kirk and Orr, who observed that threaded discussion forums gave students an opportunity for deeper reflection and more thoughtful replies than do chat and instant messaging sessions(Kirk and Orr 2003).

Computer Mediated Communication (CMC) is the term used to describe the writing contributed to forums and other interactive online activities. The latest literature indicates a need for assessment criteria, and thus feedback, to be customised to be suitable for appraising forum contributions. Such customisation and the resulting assessment criteria could then be used for all forms of CMC. If research then continues to evolve in the way it has

over the past 10 years, it is fair to assume that research will then be carried out on feedback relating to CMC, encompassing, therefore, all the technologies listed in the first paragraph of this section. At present, it might be said that the motivating factors to participate in CMC activities are proving so successful, that the very systems currently in place to assess such contributions cannot keep up:

"However, many systems for analysing CMC messages are too tedious and time-consuming to serve as practical assessment tools (Dringus and Ellis, 2004; Ho, 2002)," (Kol and Schcolnik 2008, p.51).

If the above findings are representative of the literature on this topic, there is clearly a need for ICT development to evolve further to create more practical assessment tools and a need for research into such evolution before the quality criteria formerly associated with non-ICT-mediated feedback can be justifiably implemented for these, the latest ICT technologies involving CMC.

Learning Management Systems (LMS), however, constitute a much larger field both in terms of available research and functionality of the software. They can be described as frameworks within which educationalists create, place, or process education material, much as builders construct a house in which the owners place their personal belongings. It is important to emphasise that any examination of the significance of learning management systems is, unless qualified, an examination of a technological framework. The rapidly expanding literature on the subject appears to be in an early childhood stage, grappling with terminology and struggling with the philosophical debate of investigating commercial software (such as Blackboard), non-profit, open-source software (such as Moodle), and seeking direction and guidance in a world of ICT that changes substantially from year to year. Also called Course Management Systems, Virtual Learning Environments, Learning Content Management Systems, and e-Learning Platforms, the differences between these frameworks are considered immaterial for this research.

Anecdotal data indicates rapid adoption of learning management systems at higher education level:

"About 90% of colleges [in the USA] use some kind of LMS, according to data from Eduventures, a Boston company that does research and consulting on online

learning, and they are used in about 46 per cent of classes. Blackboard has about 60% of the market for those systems, followed by eCollege and Desire2Learn with about 20% each, according to Eduventures."⁹

These statistics are all the more striking when it is emphasised that the above citation does not take into consideration the open source learning management systems called Moodle, Sakai Project, Bodington, LAMS, and uPortal, and 71 other LMSs that the Web-edu Project states exist¹⁰.

Despite the availability of so many LMSs, research by Paulsen analysing experiences with learning management systems from institutions in 17 countries reveals dissatisfaction with the LMS tools of communication, collaboration, and feedback:

"Many interviewees were concerned about the need for better and more advanced communication and collaboration tools... some especially focused on the need for better tools for synchronous communication and immediate feedback.... ", (2003), p.144.

Considering the growth in the use of LMSs, integrated or non-integrated forums, as well as the other evolving ICT tools specified earlier in this section, there is a significant opportunity for ongoing research to gain a better understanding of feedback processes currently and/or potentially available with the latest LMSs.

⁹ CBC: <http://www.cbc.ca/technology/story/2006/08/29/tech-learning.html> 29 August, 2006.

¹⁰ http://nettskolen.nki.no/in_english/webedusite/index.html 7 April, 2009. The Web-edu project is supported by the European Leonardo da Vinci programme. The project aims to study internet based learning management systems to provide comprehensive recommendations and reference material for European education and training organizations.

Chapter 5: QAS Design and Implementation

5.1 Introduction

This chapter describes the issues that the QAS is designed to address, and explains how the QAS' design and prototype implementation address them. Reference is made to the conceptual model (Section 2.3), which is based on an interpretive perspective - the "hows and whats of social reality" (Gubrium and Holstein 2000, p.488.). I provide a brief description of the status of implementation of the QAS, then describe this implementation and the building of the program.

5.2 Issues Addressed by the QAS

This chapter builds on the issues identified in the Section 1.1, and which I have observed through experience.

Those that I have focused on and which recent literature identifies as prevailing (Gibbs and Simpson 2004; Glover and Brown 2006; Burns and Foo 2012) are:

1. the provision of detailed and useful feedback takes too much time (and is one of the major contributors to marking time);
2. students appear not to read the feedback;
3. teachers' feedback is illegible and difficult to understand;
4. teachers' feedback is of poor quality and inconsistent.

In addition to the above critical issues affecting feedback, I investigate how the provision and quality of feedback is perceived by administrators in the light of my observation that:

5. administrators have no effective means of accessing the feedback and tasks given by teachers.

The first step in this research was the investigation of those QAS functions that had been adopted from the CCT (which had reached proof-of-concept stage), in order to establish the most effective methods of quickly inserting comments and correction codes into digital and handwritten documents. During the course of (and as a result of) this preliminary investigation, I became aware of significant additional functionality that would enhance the QAS.

My research encompasses the QAS taking into consideration the design of this additional functionality, and I refer to the program as a prototype. It is this prototype that forms the basis for my investigation into whether the QAS can address the above five issues.

In respect of the first observation, teachers believe that the provision of detailed and useful feedback takes too long. This is interpreted to mean that the effort required to add corrections and detailed comments to the homework tasks of an entire class takes more time than the teachers feels is appropriate, given their other work commitments. To address this issue, I designed the QAS with (the numbers refer to the issues listed above):

- 1a) a selection system to give teachers a list of options from which to point and click on items in two rubrics (correction codes or comments) to insert default feedback items;
- 1b) a database in which all tasks and all feedback are stored, granting access to the respective owners of the information, as well as those teachers and administrators with access permissions. This will allow for reflection by students on past and present feedback to aid subsequent task completion, and will facilitate statistical analysis. It will also be a resource to assist teachers in the planning of future classwork and homework;
- 1c) a reports function facilitating the semi-automatic extraction of task and feedback information for the selected student, class, teacher, or period of time;
- 1d) a default set of rubrics in the QAS database, allowing teachers to take advantage of their teaching experience and knowledge of the students to add carefully-considered feedback items quickly.

In respect of issue 2, above, my experience informed me that students' behaviour was not noticeably modified by the provision of feedback: errors continued to recur, attitudes remained the same, there was no change in student working methods, and communication between students and teachers did not improve. The intended aims of feedback were not being achieved. In response to this, I chose to incorporate a method into the QAS to promote the resubmission of work (as recommended by Sadler(1989)), Askham (1997), Boud (2000), and discussed further in Section 3.6). To accomplish this, I modified the design to include:

- 2) an interface that provides data fields for teachers to complete when students submit and resubmit their work. This interface fosters the resubmission of tasks by students, allowing teachers to withhold completion feedback and/or grades until work is resubmitted, thus providing motivation for students to read the feedback.

Issue 3, above, represents a complaint from students and teachers, that the “other party’s” writing is often difficult to read. This may appear to be a trivial issue, but it conceals both an essential education dilemma, and a crucial design function of the QAS.

Before general accessibility to personal computers (PCs), homework tasks and feedback were generally written by hand rather than typewritten. Even today, 30 years after the advent of the first PC, it is still common practice for students of ESOL to submit handwritten work. The problem for teachers and students alike is that, unless handwritten words are written with separate characters i.e. printed, there is inevitably an intrinsic challenge to understanding quickly what a person has written. Yet software development in the education sector has not embraced this challenge. Issue 3 therefore presents a dilemma. Should an ESOL department instruct its teachers and students to work using only word-processors and, hence, pre-empt the obstacle of illegibility? Or should the faculty accept handwritten work because of the pedagogical value and cognitive skills such writing enhances (Burke 2010) and for administrative reasons? The literature is divided on the issue, as Burke has observed:

“The arguments for adaptive and assistive technologies in L2 [Language 2 (ESOL)] writing are compelling.” [Yet]
“The research is often contradicted by evidence which suggests that hand-writing is an equally essential literacy skill to develop in L2 learners” (2010, p.14).

And Levine argues that handwriting:

“involves the rapid and precise mobilization and synchronization of multiple brain functions, strategies, academic skills and thought processes” (1994).

This is of particular significance in respect of students from countries whose languages do not use the Latin alphabet, and who therefore have to

develop the complex skill of forming the characters – in addition to paying attention to sentence structure and language accuracy.

The dilemma is made more critical when considering the additional challenge faced by students when reading feedback. While word-processed feedback may be inserted into new lines and space created by the teacher, handwritten corrections and comments are generally wedged into any available space in the margins of the paper. Longer comments are written above the first line, or after the last line of the work, or, when no space is available, over the top of the students' handwritten work. Yet, despite these disadvantages compromising the usefulness of feedback, there is a strong case for arguing that students should learn to read handwritten English.

While there are advantages and disadvantages in both forms of language production, I am aware of no educational software that takes this into consideration and facilitates through ICT the marking of both handwritten and digital work.

The third essential design proposal of the QAS was therefore a system to facilitate the provision of word-processed feedback for work that students chose to submit in handwritten form. The QAS philosophy was that the design should facilitate, not oblige, change in feedback behaviour, permitting the submission of handwritten work, *and* the provision by teachers of QAS-mediated feedback. To achieve this, I designed:

- 3) a method to enable teachers to superimpose feedback on scanned, handwritten homework, ensuring the same feedback functionality as that available for use with word-processed homework.

In respect of issue 4, above, students, teachers and administrators are aware of the difficulty teachers face in providing consistent and carefully-worded feedback. All are aware that, without a system, it is impossible to remember feedback from week to week, and from student to student. While a labour-intensive method of duplicating handwritten feedback in a record book is feasible, it is impracticable due to student numbers and time constraints. To resolve these issues, I added the following functionality to the QAS:

- 4a) the use of default rubrics for correction codes and comments, as described above, to maximise the consistency of feedback provided by one teacher from task to task, as well as the

consistency of feedback provided by different teachers. The QAS database (see 1b) that stores the rubrics also provides teachers and administrators with the possibility to review and refine items added for general use by the teachers.

- 4b) a database (see 1b), allowing users to ensure consistency of feedback between students submitting the same task, and to ensure consistency of feedback quantity between students in any selected period, as an essential function of the QAS core design.

In respect of issue 5, I have noted from experience that feedback is not normally reviewed by administrators. To deal with any disputed feedback, therefore, administrators have to ask teachers to request from their students all the relevant homework completed. It is only at this point, that administrators are able to obtain an overview of the feedback as a whole, and of the quality of any given piece of homework and respective feedback specifically. Administrators would be better able to deal with issues of disputes and quality if a system were in place to record all tasks and feedback. To address this issue, I designed the QAS database function, mentioned in issues (1b) and (4b), as a networked solution.

- 5a) The database is designed to record feedback. This allows teachers to review feedback: timeliness, appropriateness, quantity, frequency, consistency. It also allows administrators to review feedback quality.
- 5b) This is to be a networked solution, allowing students, teachers and administrators with appropriate permissions to access the appurtenant feedback.

5.3 User Requirements

Initial user requirements were determined by my experiences with computing and handwritten feedback in a language-teaching environment, and are described here as functional or non-functional requirements. The QAS' feedback codes may be to praise or to prompt revision. Consequently, the term "feedback item" is used (rather than "correction code") where differentiation is not required. In relation to the early QAS version (the Correction Code Toolbar (CCT)), "Users" refers to teachers.

5.4 Functional Requirements

Table 1: Functional Requirements

Requirement	Explanation
The system should be simple to install by teachers with little or no ICT experience.	The early QAS was initially designed for standalone PCs. Installation should be feasible for individual teachers with little or no ICT experience.
The system should facilitate use of the mouse to insert feedback items.	Point-and-click functionality suited to language teachers with little or not computer experience. Training should not require more than a few minutes.
Insertion of feedback items should precede the word(s) the correction code refers to.	This default system should ensure consistency.
Feedback items relating to more than one word should allow users to select the respective block of text and reformat this with dotted underlining.	This function should enable teachers to identify errors of sentence structure, word order, or ambiguity.
The system should allow the insertion of comments, each of which should be flagged at the location of the cursor.	Comments should provide information to aid in the students' understanding of the praise or revision recommendation, and should also facilitate the provision of links to resource material.
The feedback comment should be entered in the margin, and should also be displayed at the foot of the document.	Placement of the comments in the margin should prevent impeding the reading of the task, and should be listed at the foot of the document to facilitate general evaluation of all comments and the task in a single location.
Feedback items should be displayed with 2- or 3-character abbreviations and the full feedback item "term" to the right of the respective abbreviation.	This list should be easy to scan for teachers to locate the appropriate abbreviation quickly. The term should aid differentiation of similar abbreviations.
The insertion of feedback items with the QAS should be as fast as the insertion of those inserted by hand.	Adding feedback items should be quicker with the QAS than by hand.
Feedback items identifying the requirement for revision should be inserted in red, while those	The use of colours should make clear the feedback on students' work (which is customarily written using a black font).

identifying commendable work should be inserted in blue.	
The system should provide the user with three display options for feedback items: a) feedback item only, b) feedback item and highlighting of words needing revision, c) highlighting only.	These options should meet the varying requirements of students to see their marked work with more or less teacher input.
A function should be included to allow users to turn line-numbering on and off.	Line-numbering should help students and teachers communicate on feedback items.
The QAS should allow users to modify their customised options also after initiation of the QAS.	Modification should allow users to change colour schemes and to add customised feedback items.
The system should facilitate a feedback method that emulates the method used by the teachers.	The QAS should work the way the teachers worked, not requiring any change of feedback methods.
The system's user interface should remain as similar as possible to Word's user interface.	Inserting feedback items should use the toolbar system users are already acquainted with, with the addition of only one menu item.
The system should make a back-up of the student's work on the PC of the teacher responsible for the marking, before initiating the feedback process on the original. This backup should have a name comprising two parts: a user-defined part, and a system-generated part.	This should safeguard the student's work in the event of software problems. The user-generated name should facilitate easy human identification of the document in a file manager, while the system-generated part should ensure uniqueness.
The feedback items inserted by the QAS should be clear and easy to read.	Inserted feedback should be easier to read than handwritten feedback (that suffered from poor writing, often inserted over students' writing).
The system should provide users with an option to create new feedback items and add these to the list of existing codes.	Teachers may not all wish to use the same feedback items. This function should give the system the flexibility to grant teachers the autonomy of marking that they were used to prior to the QAS.
An "undo" function should exist to allow the cancelling of any inserted feedback item.	Teachers inserting QAS codes should be able to change their minds and change the feedback item at any time during the marking process.
The system should have a log-in	Teachers should log in, using a

function.	password and username, before being able to access students' tasks and feedback.
A word-count function should exist, exhibiting basic document statistics such as those in the default Word function of the same name.	This should be actionable from the QAS menu.
A word-frequency function should exist, presenting users with a form that prompts user input to determine which words to omit from the frequency search, and which words to look for. By default, if the fields are left blank, all words except articles, prepositions and pronouns should be counted. The frequency function should provide the option to include/exclude word variants.	This should help identify the lexical competence of students and elucidate repetition, use of proper nouns, and other language functions.
The system should facilitate transmission by e-mail of the marked task.	Once teachers have finished providing QAS feedback, they should be able to transmit the work electronically to the respective students.
The system should create a read-only duplicate of the task returned to students (on students' computers).	Students should be able to revise their task on one copy, while having the read-only duplicate as an original for purposes of comparison.
The system should allow students to show/hide the feedback items.	Showing the feedback items should locate and identify the feedback, while hiding the items should increase clarity when making revisions.
The system should allow students to insert revisions.	Students should be able to insert revisions regardless of whether showing or hiding the feedback.
The system should protect the feedback items from deletion by students revising their work.	By maintaining the feedback items, teachers and students should be able to identify the location of feedback and review the revisions made at any future date.
Access to the QAS system should be password-controlled.	Access to the QAS toolbar should be controlled by a log-in process to ensure the feedback and tasks of a given student are accessible only to those with the appropriate password.
The administrative functions of	This should maximise speed of access to

the QAS should be available from a submenu within the default QAS menu.	administrative functions.
The system should have a database for storing user options, feedback items, and course details.	The database should be secured to prevent illegal access.
The system should facilitate the management of feedback comments, presenting users with a form to insert the new comment, and to categorise this comment by one main category and two sub-categories.	The categorisation of comments should allow faster identification of the comment to add when marking work.
Following log-in into the QAS, the system should display a form prompting the user to input the details necessary to call up a document the teacher has already started working on, or to input details to start working on a new document. These details should be stored in the QAS database.	Users should be able to interrupt marking work at any time, saving work and calling it up again efficiently.
The system should facilitate use of a grid to superimpose on handwritten documents submitted by students and scanned by teachers, with each cell in the grid containing a menu corresponding to the main QAS drop-down menu in the main toolbar.	This should allow teachers to mark scanned, handwritten homework using the same rubrics as those used for marking work submitted digitally.
Additional requirements relating to the latest QAS prototype	
The system should facilitate the querying of the QAS database to display the following reports and data (all reports should allow the import of student, teacher, and course data from the faculty's administration database so as to avoid duplication of effort and minimise user input of data). The abbreviations (S)tudents, (T)eachers, and (A)dministrators are used to indicate access rights to the reports.	
Administration report (T), (A).	This report should allow the completion of fields to display information categorised under i) Assignment details, ii) Student details, iii) User details, iv) Course and semester details. Assignment details should aid teachers to record task allocation details and resources. Student details should display the student enrolment record and contact details. User details should display the respective user's contact details and the courses currently taught by the user. Course and semester details should display course information categorised by the course code and listing

	tutors and students on the course. The system should write-protect all data imported from the faculty database, but allow editing of data relating to assignment details.
Assignment analysis report (T), (A).	This report should display a read-only summary of the feedback provided for a user-input student name, categorising the data by comments, correction codes, and grades. Writable fields should be available (for the student's respective teacher only) to add a task summary and confidential notes on any special circumstances.
Group progress report (T), (A).	This report should prompt users for a period of study to analyse, then display a summary of all tasks allocated within this period, and a list of all appurtenant comments, correction codes, grades, and summary notes. This form should also display the number of tasks submitted and resubmitted, calculating and displaying the percentages for each.
Student progress report (T), (A).	This report should display all the information listed in the Group Progress Report, in relation to a user-definable period of study, and categorised by student.
Student progress report (T), (A), (S).	This report should provide read-only data summarising all enrolment data held by the faculty, task comments, corrections, grades, teacher actions to promote student learning, and submission statistics, relating to a given student. Students should have access only to their own record. Teachers should have access only to the students on their own courses. Administrators should have access to all records.
Student progress report – resubmissions (T), (A), (S).	This report should display the data as specified in the Student Progress Report, and with the same access permissions, but should be supplemented with comparative data to facilitate: comparison of feedback for any two tasks for any selectable period, displaying percentage change in performance.
All reports should have a print function and an e-mail function, subject to access permissions and in accordance with the faculty's data privacy terms.	

5.5 Non-functional Requirements

5.5.1 Performance Constraints

In order to limit the design variables, the following performance restraints were drawn up:

- The QAS should function on PCs using Windows XP and Microsoft Word 2003
- The system should allow only one instance of the QAS to be active at any one time per username
- The username should be user-definable, use only alphanumeric characters, and be limited to 30 characters
- The password should be user-definable, use alphanumeric or special characters, and be limited to 6 to 12 characters
- The system should allow any number of approved users to use the system on their respective PCs, pending licensing requirements
- The installation procedure should ensure that only licensed QAS software can be installed, and only on one PC per licence.
- The QAS should allow a maximum of 50 feedback items
- The feedback comments should be inserted in a red font and with an arrow indicating the location to which they refer
- The feedback items inserted should use the same font type as that used in the originating document
- The feedback items inserted should use a red font by default, unless the font used by the originator is of a similar colour, in which case the feedback items should be inserted in a blue font
- The colours used for highlighting feedback items should be plain colours ensuring contrast with the words being highlighted
- The archive of stored tasks should be limited to 1000 tasks, or 1000 megabytes (MB), whichever is reached sooner.
- Installation should require approval by the faculty's ICT department.
- The system should be deliverable on disk, or as a file downloadable from the developer's website.

5.5.2 Development Constraints

Time and resource constraints are not considered a relevant issue in this project, as development of the QAS is not subject to any agreement. There are no formal quality standards to which the QAS must conform, but installation should be reversible in the event of incompatibilities or bugs.

5.6 Design Objectives

The following principal design objectives are in order of priority.

- 1) The system should allow teachers to insert feedback items and comments from a drop-down menu into Microsoft Word documents
- 2) The system should keep a database of all feedback and task details
- 3) Stakeholders should be able to query the QAS database to obtain reports
- 4) Enrolment data and course data should be importable from the faculty's database
- 5) The system should facilitate the customisation of correction codes and comments
- 6) The system should facilitate the printing and e-mailing of feedback reports

5.7 Experimental Implementation

The design of the QAS was driven by the feedback problems it was intended to resolve, as discussed in Section 1.1. The program had to be sufficiently flexible to work the way teachers and students worked - without imposing a change of feedback methods – but sufficiently structured to facilitate consistency and the collection of feedback for subsequent use. It had to accommodate the desire by students to write their homework by hand or on computer, and it had to be usable with little training or support.

Considering that students, teachers and administrators are usually acquainted with Microsoft Word and that this software is the *de facto* standard at education institutions, I decided to design the software as an add-in within the Microsoft Word framework. The balance of structure and flexibility was thus determined for the main by the innate functionality of Microsoft Word.

Furthermore, I reasoned that, as an add-in for Microsoft Word, the QAS would be easy to install. The host package, Microsoft Office, is installed by default on many faculty computers, so, if Microsoft Word functioned correctly, the design of the QAS meant that it too should work correctly. However, I acknowledge that my knowledge is limited to standalone PCs,

not to networks and servers, so I am unable to discuss server compatibility issues.

I designed the CCT and the QAS in the programming language Visual Basic for Applications (VBA). The personal rationale for this is that I have greater knowledge of this programming language than other languages, while the technological rationale is that VBA is the default programming language packaged with Microsoft Word, and is used to design macros - the approach I adopted to insert codes and comments. Designing the QAS in VBA is therefore a method of ensuring compatibility of the software with software already installed, while also facilitating technical discussion of the project using terminology I am acquainted with.

The QAS cannot currently be demonstrated as a complete functioning program. However, a reduced number of functions were demonstrated with the experimental CCT. As my knowledge of programming and installations relates to client-based software, I coded the CCT to work only on standalone PCs. This entailed hard-coding paths to the database and files. Consequently, illustrating use of the CCT was limited to demonstrations on a standalone PC.

The software was packaged into an automated installation routine with the aid of InnoScript open-source software, and saved to CD. It is designed to be installed on Microsoft Windows XP, running MS Word 2003. I have tested the software on my current configuration of Windows Vista and MS Word 2007, but there are compatibility issues with MS Word 2007 and the installation does not complete successfully. I chose MS Word 2003 as this was the latest version available at the time of my active involvement in the project.

When I completed the prototype CCT, the functions that could be demonstrated included:

- password-controlled log-in to access the CCT toolbar/menu
- interactive user-interface to guide users to open files from, and save files to, the correct folder location
- automated back-up routines to save students' original work and teachers' work-in-progress and finished review work.
- interactive user-interface to facilitate: a) the addition of new correction codes and b) the colour of correction codes and highlighting of the text to which these codes referred

- insertion of comments and correction codes
- storage of correction codes and customisations in a database
- extraction of feedback reports illustrating frequency of each correction code used, and calculating a summative grade based on the total number of errors
- an “undo” routine to remove the selected correction code
- a routine to display the frequency of words used by students in their work.

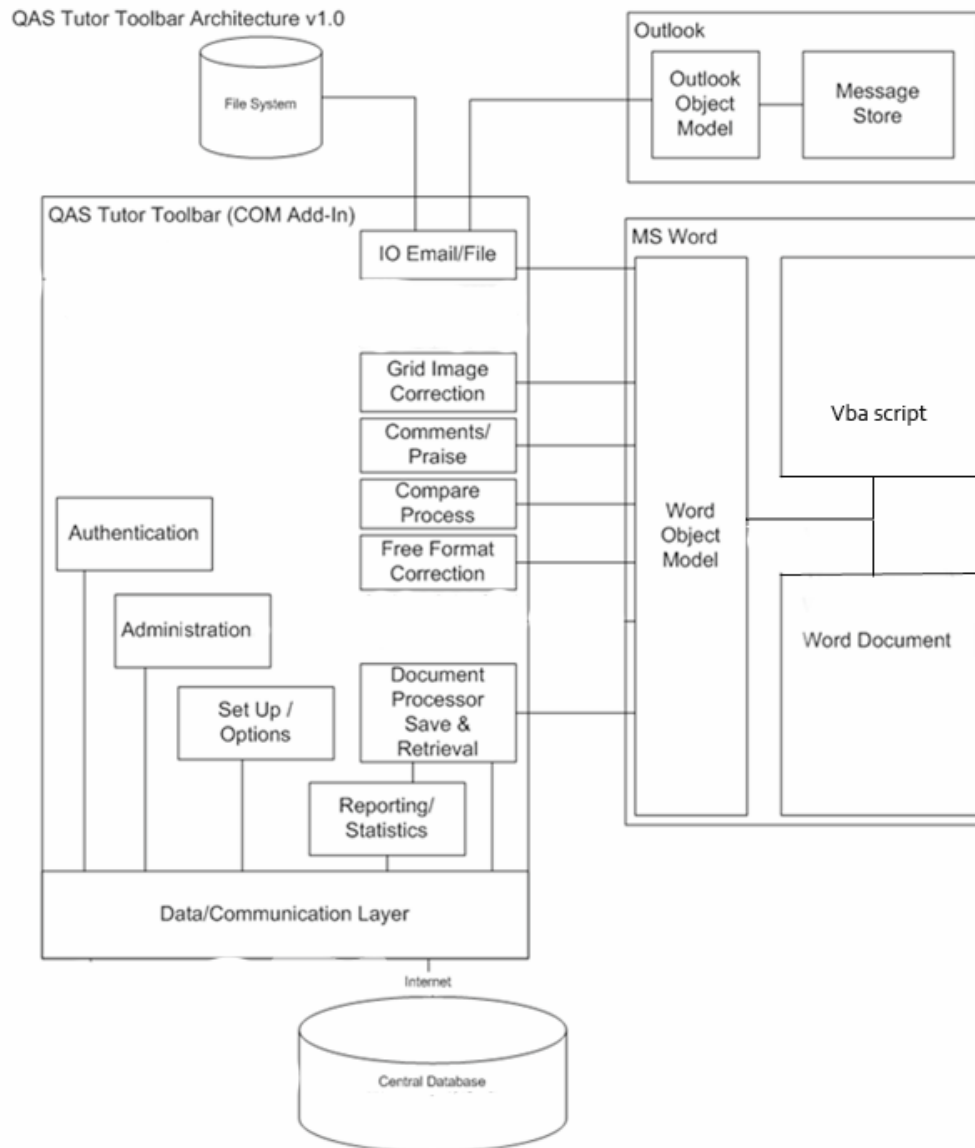
Experiments with the CCT confirmed the feasibility of the above functions.

5.8 QAS Architecture

A specification of the QAS architecture was drawn up by the developers Segar Associates, Auckland, in 2005. It built on the design of the Correction Code Toolbar that I developed without a design and development plan between 2000 and 2003.

The QAS system, as conceived in 2005, comprised several components: a central database, a Word toolbar for tutors, an MS Word toolbar for students, a back-office system and the MediaNet¹¹ licensing and update server component.

¹¹ MediaNet is the name of the company I founded and ran at that time.



The system was required to work in several environments: a standalone system, a distributed environment over a LAN, or a distributed system involving a mixture of networked (LAN) and Internet based connections. All network connections were to be made using IP based protocols.

The QAS was to be developed as a .Net application using SQL Server or MSDE databases for data storage. All network connectivity would use IP transport.

Since funding expired before the developers were able to start programming, the design was simplified with the student toolbar being shelved. A selection of voluntary developers examined the design over the

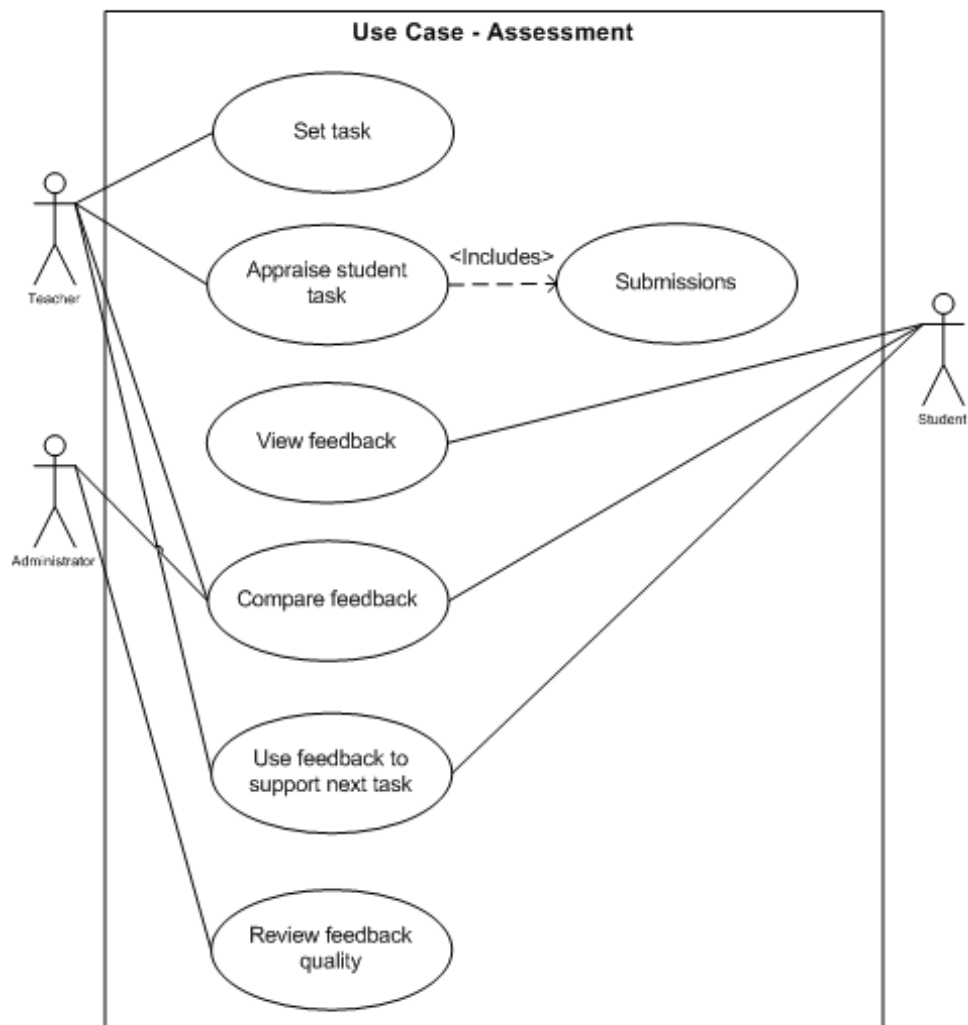
following years, but none was able to complete a working prototype. The proof of concept prototype therefore remains the version called the Correction Code Toolbar.

This thesis examines the concepts of the QAS as further developed between 2006 and 2010.

5.9 Use Cases

The scenarios for primary uses of the QAS are given to illustrate the processes and actors involved. The actors are students, teachers and administrators.

Figure 15: Use case - assessment



Use Case Description: Set Task

Primary actors: teachers.

Secondary actors: students, administrators.

Pre-conditions: the teacher, student and administrator have successfully registered and can log in to the QAS.

Main Flow

1. Teacher logs in to the QAS.
2. Teacher reviews earlier tasks and feedback.
3. Teacher calls up the Task Allocation Form.
4. Teacher inserts the instructions for the new task.
5. Administrator reviews current and earlier task instructions.

Alternate Course

- A2. Teacher has no earlier tasks and feedback to view and bases his/her task on current and/or future learning activities.
- A4. Teacher does not complete Task Allocation Form.
- A5. Use case ends

Use Case Description: Appraise Student Task

Primary actors: teachers.

Secondary actors: students, administrators.

Pre-conditions: the teacher, student and administrator have successfully registered and can log in to the QAS. A task has been set, completed and submitted.

Main Flow

1. Teacher opens e-mailed task in MS Word.
2. Teacher logs in to QAS
3. Teacher compares earlier feedback for the same student.
4. Teacher appraises the student's task using the QAS.
5. Teacher compares feedback for other students who have completed the same task.

Alternate Course

- A3. Teacher has no earlier feedback to view.
- A5. No other students have submitted the task.

Use Case Description: View Feedback

Primary actors: students.

Secondary actors: none.

Pre-conditions: the student has successfully registered and can log in to the QAS. A task has been set, completed and submitted, and the student has completed the task appraisal.

Main Flow

1. Student logs in to the QAS.
2. Student queries the database to view feedback for the task.

Alternate Course

- A1. Student does not log in to the QAS.
- A2. Student opens task e-mailed to him as an attachment, and views the feedback on the task.

Use Case Description: Compare Feedback

Primary actors: teachers and students.

Secondary actors: administrators.

Pre-conditions: actors have successfully registered and can log in to the QAS; two or more tasks have been set, completed, submitted, and appraised.

Main Flow

1. Actors call up the Student Progress Report - Resubmissions.
2. Student inserts the task numbers of the tasks he/she has completed and for which he/she wishes to compare feedback.
3. Teacher inserts the task numbers of any two tasks completed by his/her students and for which he/she wishes to compare feedback.

4. Administrator views comments and correction codes for any two tasks for any students and teachers.

Alternate Course

- A1. The actors do not log in to the QAS
- A2. The actors see the student's paper copies of completed tasks to compare feedback.

Use Case Description: Use Feedback to Support Next Task

Primary actors: teachers and students.

Secondary actors: none.

Pre-conditions: actors have successfully registered and can log in to the QAS; one or more tasks have been set, completed, submitted, and appraised.

Main Flow

1. Student calls up one of the QAS reports providing feedback on his/her earlier tasks.
2. Student inserts the task numbers of the tasks he/she has completed and for which he/she wishes to view the feedback.
3. Student completes the new task bearing in mind the feedback on the earlier task(s).
4. Teacher calls up one of the QAS reports providing feedback on all earlier tasks.
5. Teacher inserts the task numbers of the tasks for which he/she wishes to view the feedback.
6. Teacher determines the new task bearing in mind the feedback on the earlier task(s).

Alternate Course A

- A1. Student does not log in to the QAS.
- A2. Student views feedback on the paper copy of completed tasks to aid in the completion of the new task.
- A4. Teacher does not log in to the QAS.
- A5. Teacher requests to see paper copies of earlier tasks to view the feedback to aid in the creation of the new task.

Alternate Course B

- B2. Student views feedback on his/her digital copy of completed tasks to aid in the completion of the new task.
- B5. Teacher views digital copies of earlier tasks (sent as e-mail attachments) and feedback to aid in the creation of the new task.

Use Case Description: Review Feedback Quality

Primary actors: administrators

Secondary actors: students and teachers.

Pre-conditions: actors have successfully registered and can log in to the QAS.

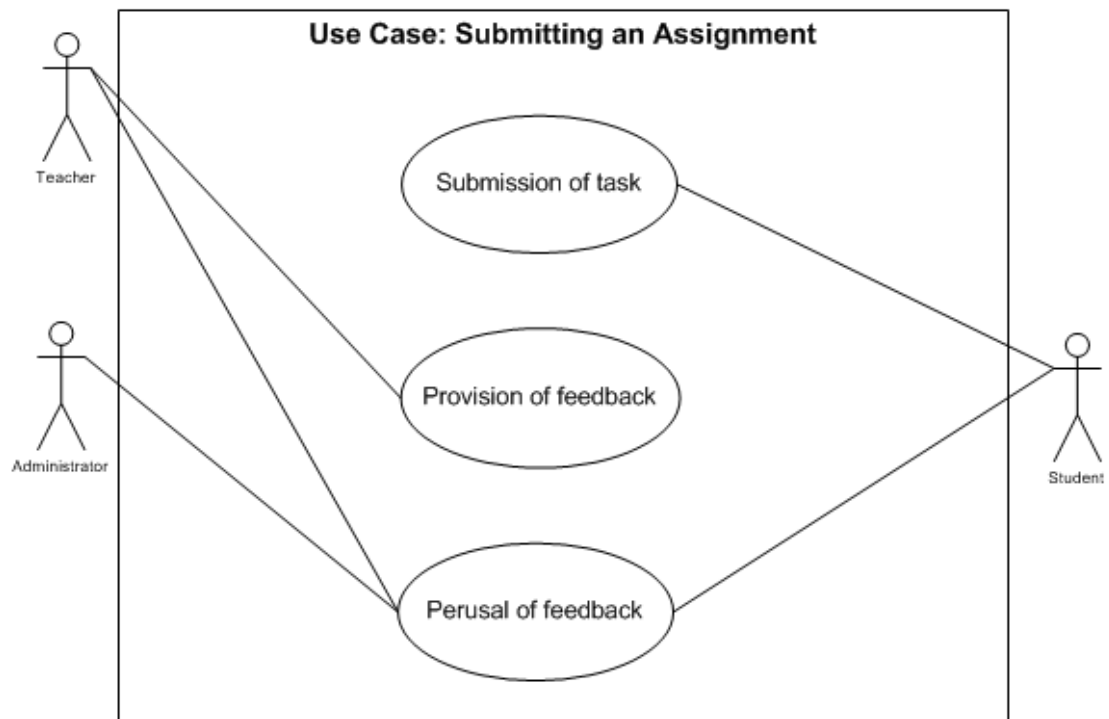
Main Flow

1. Administrator logs in to the QAS.
2. Administrator enters the Edit page to review all correction codes approved and awaiting approval.
3. Administrator enters the Edit page to review all comments approved and awaiting approval.

Alternate Course A

- A2. Administrator generates QAS report to review all feedback for those tasks, or students, or periods, he/she has selected in the report.

Figure 16: Use case - submissions



Use Case Description: Submission of Task

Primary actors: students.

Secondary actors: none.

Pre-conditions: the actors are registered users of the QAS and can successfully log in; the teacher has allocated a written task and updated the QAS database with instructions for students;

Main Flow

1. Student logs in to the QAS.
2. Student views task instructions.
3. Student completes the task and submits it as an e-mail attachment.

Alternate Course A

- A2. Student fails to read task instructions
- A3. Use case ends

Use Case Description: Provision of Feedback

Primary actors: teachers.

Secondary actors: none.

Pre-conditions: the actors are registered users of the QAS and can successfully log in; the teacher has allocated a written task and updated the QAS database with instructions for students.

Main Flow

1. Teacher logs in to the QAS.
2. Teacher views task instructions.
3. Teacher reviews earlier feedback for student whose work is to be appraised.
4. Teacher reviews earlier feedback of other students for the same task.
5. Teacher opens student's e-mailed task.
6. Teacher provides feedback on the task using the QAS.
7. Teacher e-mails the task back to the student as an attachment.

Alternate Course A

- A2. Teacher does not view task instructions
- A3. Teacher does not review earlier feedback for student whose work is to be appraised.
- A4. Teacher does not review earlier feedback of other students for the same task.

Use Case Description: Perusal of Feedback

Primary actors: teachers, students.

Secondary actors: administrators.

Pre-conditions: the actors are registered users of the QAS and can successfully log in; one or more tasks have been allocated, submitted and appraised.

Main Flow

1. Actors log in to the QAS.
2. Teacher generates report in QAS to peruse current or earlier feedback for any student, class, or period, for whom/which the teacher has access rights.

3. Student generates report in QAS to peruse current or earlier feedback for any selected task(s) that he/she has completed.
4. Administrator generates report in QAS to peruse current or earlier feedback for any student, class, or period.

Alternate Course A

- A2. Teacher does not generate QAS report and peruses feedback on digital copies of tasks.
- A3. Student does not generate QAS report and peruses feedback on digital copies of tasks.
- A4. Administrator does not generate QAS report and peruses feedback on digital copies of tasks.

Chapter 6: Building the QAS

The construction of the QAS highlighted a common dilemma of ICT development: software designers are rarely experts in the field for which the software is designed, and the practitioners in the field are rarely experts in software design. In this case, I fall into the second category. A consultant linguist by profession, my computing and programming knowledge is self-taught. The design of the early QAS prototypes therefore evolved slowly, implementing and refining functionality to provide good interactive behaviour; programming skills being acquired as needed.

This section on the building of the software proceeds from a focus on the foundation functions of the early QAS (the Correction Code Toolbar) discussed earlier in the chapter to the more advanced design of the QAS.

6.1 Foundation Functions of the QAS

In order to ensure the rubrics were not perceived as prescriptive, flexibility was introduced into the design in the form of customisability of rubrics. Thus, the structure of Microsoft Word provided a fixed format for the drop-down menus, but design flexibility safeguarded teacher autonomy in determining the content of these menus.

The QAS is intended to facilitate and maximise accessibility to feedback in order to allow reflection on past work and to aid in the completion of future work. The rationale for designing a database is thus to collect the feedback automatically once a piece of work has been marked, and to store this for access by stakeholders with appropriate access permissions.

Finally, in terms of development potential, the reports displayed by the QAS have been designed with tabbed sections, allowing for the addition of further tabs within the same screen. Furthermore, if additional functions are required, these can be added as new items to the existing QAS menu on the main toolbar. While the default rubrics can be customised by users, the design also facilitates the replacement of the ESOL language rubrics with rubrics for alternative fields. In this way, the QAS may be considered to have a modular structure that is sufficiently flexible to permit the proofreading and text-editing functions of documents and images in many other areas of commercial and professional enterprise. The QAS therefore adheres to a rigid Microsoft structure, but presents flexibility and development potential through its design.

To protect the confidentiality of the feedback provided, a password log-in function has been implemented. However, it is acknowledged that the issues of privacy and access to data may require further consideration and design revisions.

The simplicity of the design was based on the precepts of existing feedback practice. Where teachers used a pen to insert a correction code (e.g. "SP" for spelling) in the text of a student's handwritten homework, the design of the QAS had to imitate this on homework submitted by computer by allowing teachers to click on the abbreviation "SP", which inserted the correction code at the point of the cursor. In the same way, the insertion of comments had to be facilitated at the position of the cursor. Hence, the design sought to optimise the computer-human interface and to safeguard users' existing knowledge and confidence in applying correction codes and comments.

This was further enhanced by the design decision to use Microsoft Word for the provision of feedback: stakeholders are, in general, accustomed to using this program. The decision was intended to exploit users' existing ICT knowledge, allowing their focus to remain on their work, and not on the technology. More specifically, teachers were accustomed to using Microsoft Word for drawing up some of their lesson plans and material, and students were accustomed to using Microsoft Word for writing their homework tasks. By ensuring that the QAS' functions were available from drop-down menus, teachers could achieve the aims of the QAS feedback program with the same mechanical and intellectual processes as they used for completing other non-QAS tasks. Likewise, students receiving teacher feedback as a word-processed document would be sufficiently well-acquainted with the basic functionality of Microsoft Word to allow them efficiently to revise their work in the light of the feedback.

The design of the QAS also had to allow for student autonomy in determining how to submit their work. It was not the intention of the QAS to bring about a change in the method of submission. Rather, it was the intention of the QAS to accommodate the methods of submission chosen by the students. The focus was on adapting the computer program to stakeholder methods, not the converse. To this end, the QAS-Grid was designed, as described above, allowing students to submit *handwritten* work, while allowing teachers to provide *digital feedback* through a drop-

down menu system superimposed on the scanned image of the students' homework.

Like the CCT prototype, the prototype of the full Quality Assessment System (QAS) is an add-in program designed to run in Microsoft Word 2003 on the Windows platform (XP). It provides a broad range of functions to administer the process of feedback on students' written work, and to manage the feedback generated. A database on the server is used to store this feedback and the related tasks allocated. The QAS is written in Visual Basic for Applications (VBA) and Visual Basic (VB), and is intended in its current form to be used by teachers and administrators in connection with students studying ESOL (English for Speakers of Other Languages) at tertiary level.

The QAS installation procedure installs two Word templates, as well as a menu item in the default "Normal.dot" template to call up the QAS templates. Functions for teachers to insert correction codes and comments in students' work are available through a drop-down item in the main toolbar, as well as through a drop-down menu evoked with the right mouse button.

The QAS is installed on the standalone PCs of teachers and administrators with access to the respective faculty's server. Teachers use the QAS for providing feedback, customising feedback rubrics, extracting reports, and managing the task process, and administrators use the QAS for auditing feedback quality and education provision, and for resolving student-teacher issues relating to the task process. Students may continue to write their homework tasks using the method(s) selected prior to use of the QAS, and have access to the QAS database to extract reports and view archived feedback. Students receive their appraised tasks in the way agreed upon with the teachers: as a Word document sent via e-mail, or placed in a drop-box on the institution's repository, or as a paper copy. Students see teachers' inserted feedback a) as correction codes that flag items meriting praise, and items requiring revision, and b) as comments inserted in the margin and/or at the end of the students' work.

The two templates installed by the QAS are differentiated by their intended functions. While the first template, designated QAS-WP, is designed to facilitate the administration of feedback relating to students' *word-processed* homework tasks, the second template introduces an innovation, designated QAS-Grid, that facilitates the administration of feedback relating to students' *handwritten* homework submitted on paper. Use of the QAS-

Grid requires the digital scanning of the students' homework for import into the QAS-Grid template as a scanned image.

The QAS-WP template has a drop-down menu in the main toolbar from which users (teachers) can select corrections and comments. The QAS-Grid permits the teacher to insert directly feedback at desired locations on a scanned image of handwritten work. This is achieved by superimposing a grid of cells on the scanned image, with each cell containing a clickable drop-down menu with the same functions as those of the QAS menu in the QAS-WP template.

Central to the design of the software are the following four functions:

- 1) the collection and accessibility of all task feedback
- 2) the administration of task *resubmissions*
- 3) the facility to extract a variety of reports on feedback, categorised by student, teacher, group, or time period.
- 4) the import of student- and course-specific data from the faculty's administrative database

These four functions in combination were designed to provide a feedback system that language teachers (who were employed for their language-teaching ability, not for their ability in ICT) found sufficiently straightforward simple for it to maximise their feeling of control over the technology and over the feedback process. I considered it important to avoid complexity, as experience and anecdotal evidence had shown how teachers rejected technology that was not quick to grasp. The automated collection of all feedback with the appurtenant tasks (item (1) above) facilitates the querying of the feedback database, ensuring users do not have to remember the feedback provided. The design of the QAS allows for the server-based database to be accessed from any PC on which the QAS has been installed. Access to cumulative, analysable feedback data is a design characteristic was an innovative technological concept at the time of design and remains of particular educational value.

The administration of task *resubmissions* adds functionality engendered by education literature and experience: if teacher feedback is not responded to, students cannot evidence proof of having read it, nor of benefiting from it. In such cases, there is a downward spiral of motivation, as teachers may consider there is little point in giving feedback. With feedback on Submission 1 requiring a response from students, which in turn is then

appraised as Submission 2, an upward spiral of motivation is created: teachers are motivated to provide feedback because they know students have to respond to it, and students are motivated to respond to it in order to receive their final comments or grades.

Item (3), above, identifies the QAS function of semi-automated report creation. The prototype QAS design currently allows for teachers and administrators to query the QAS database in order to extract a variety of reports. One example is given in Figure 17:

Figure 17: Group progress report

Figure 17 prompts the user for the period to query, then enables the fields that allow selection of the course or tutor for which to extract the data. Feedback comments and corrections are then presented for all the tasks completed within the selected period, and grades and summaries are detailed, if the teacher added these during the marking sessions.

The proof-of-concept implementation would facilitate the querying of the database by students using a VBA routine downloadable to the "Normal.dot" default MS Word template on students' PCs. This routine would create on-the-fly user forms, populating them with the data from the server-based database.

Item (4), above, identifies the design function to import those data that are common to, and required by, the administrative database and the QAS database: student name, ID number, contact details, course/programme, and other details. The import function was designed to obviate the need for users to punch in repetitive information already available on the administrative database. This function is not available in the prototype.

Further fields in the tabbed user interface (for teachers and administrators) allow for the insertion of student- or task-related information and resource links, and provide a check-list of duties relating to task management. The forms are designed to identify clearly which fields are required and which are optional. The number of fields is limited (and required fields are very limited) in order to minimise the effort required by users to complete the forms.

The rubrics containing correction codes and comments can be customised. That is, the QAS contains forms that users can complete to add new correction codes and/or comments (Figure 18).

Figure 18: Comments management

The screenshot shows a Microsoft Word window titled "Susan Richards 260605.doc - Microsoft Word" with a "QAS Comments Management" dialog box open. The dialog box has a title bar and a menu bar with "File", "Edit", "View", "Insert", "Format", "Tools", "Table", "Window", and "Help". The main area of the dialog box is titled "MediaNet Quality Assessment System v1.0" and "QAS Comments Management". It contains a text input field for a comment, a dropdown menu for "Content", a dropdown menu for "Topic analysis", and a dropdown menu for "Sub-category 2". Below these are two radio buttons for "Character of Comment": "The comment is praise." and "The comment is constructive criticism." (which is selected). At the bottom are "OK" and "Cancel" buttons. The status bar at the bottom of the Word window shows "Page 1", "Sec 1", "1/1", "At 3.4cm", "Ln 3", "Col 39", "REC", "TRK", "EXT", "OVR", "English (Ne)", and a small icon.

Susan Richards 260605.doc - Microsoft Word

File Edit View Insert Format Tools Table Window Help

QAS Comments Management

MediaNet Quality Assessment System v1.0

QAS Comments Management

Type the comment you'd like to add to the database (up to 250 characters):

Good effort, but think more deeply about the reasons for ...

Select the category from the drop-down list:

Content

Select the sub-category 1 (optional) from the drop-down list:

Topic analysis

Select the sub-category 2 (optional) from the drop-down list:

Character of Comment

☐ The comment is praise.

☒ The comment is constructive criticism.

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Patent App. No.: NZP 538471

OK Cancel

Page 1 Sec 1 1/1 At 3.4cm Ln 3 Col 39 REC TRK EXT OVR English (Ne)

These new feedback items do not replace existing items, and can be used by the creator (only) until an administrator has reviewed the items for general use.

Additionally, the design allows for teachers to select the colour of the correction code item inserted. This takes the form of a user-defined option, available from the administration tab in the main toolbar menu, facilitating the insertion of user-defined highlighting around the word or words requiring revision, or meriting praise. The use of colour to highlight the colour of the feedback item facilitates rapid identification by students and teachers of recurring types of errors.

Simple word analysis tools are also part of the prototype design, and expand the basic Microsoft word-count tool to include word frequency functions that display the number of times all the words used in the document have been used. The design allows for users to insert those words not required for analysis, such as articles and pronouns. This function enables evaluation of lexical ability as well as simpler observation of any key words and phrases identified by the respective teacher prior to allocating the homework task as necessary for inclusion in the task.

In relation to communication functions, the QAS is designed with an e-mail function that permits users to send homework to colleagues for a second opinion, and to administrators for the resolution of any disputes. I am aware of issues of privacy and ownership of data, but, in respect of communicating feedback for peer review, the prototype QAS does not have detailed controls in place. This situation reflects actual practice in relation to pre-QAS feedback methods.

Task analysis reports available to students also have an e-mail function to permit students to collaborate and seek peer reviews on feedback received.

In summary, the QAS is designed to systemise the task and feedback process, computerising a number of tasks that were formerly done by hand, and automating further functions that were previously only rarely done due to time constraints and lack of system.

6.2 Implementation Detail

To build the program, I started by listing the correction codes (feedback items) I had used as a language consultant when teaching ESOL to business people and students in Europe. This list was later supplemented with items I observed were used at tertiary level in New Zealand. With the aim of

facilitating point-and-click functionality to insert feedback items into Word 2003 documents, a simple design framework was established. A list of feedback items was made available from a drop-down menu in the main toolbar in the QAS template loaded from a menu item in the default "normal.dot" template.

I recorded the macros by manually inserting the feedback items, and examining the resulting VBA code. I carried out online research to discover alternative means of achieving the same results. Combining research with manually-recorded coding, I produced a list of feedback items that could be programmatically inserted at the front of the text item to be revised/commended. An example of this method relates to the insertion of the "SP" (spelling) feedback item, and the resulting code is shown in Figure 19.

Figure 19: Sample VBA code

```
Sub CCT5pelling()
'Macro to insert spelling code
'15/03/2003 by H M Gaukrodger

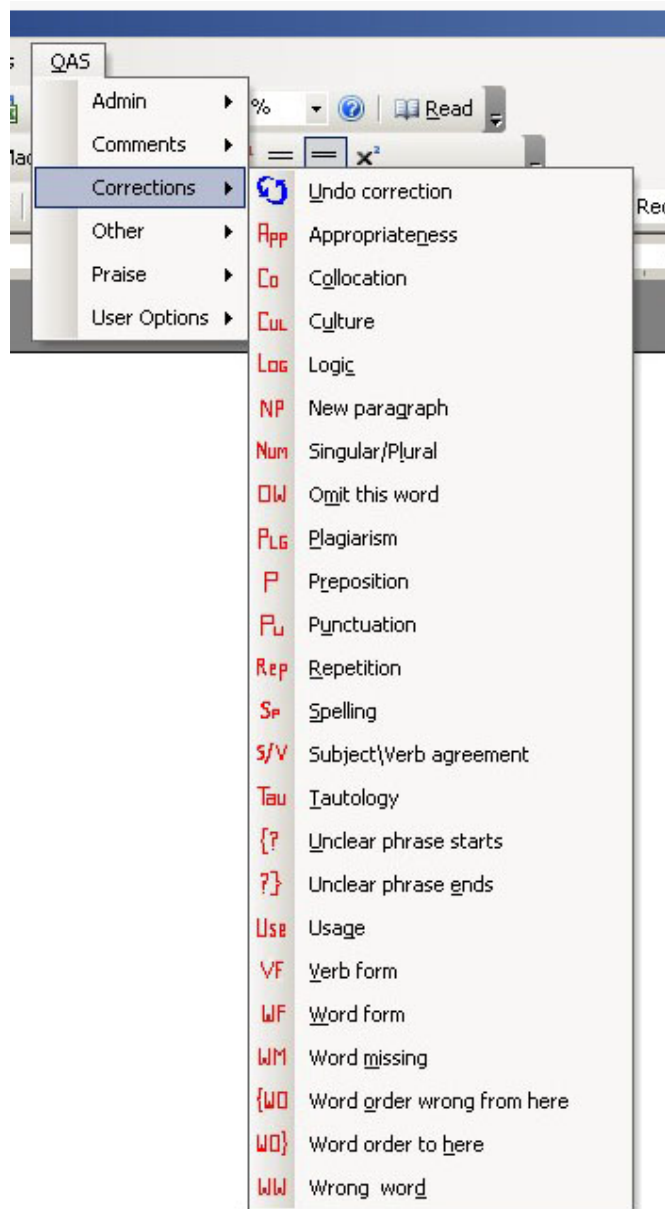
Dim CountSpell As Integer
Dim strMsg As String

Selection.Extend
Selection.Extend
strShort = Selection.Text
If strShort = "," Or strShort = " " Or strShort = "." Or strShort = ";" Then
    Selection.MoveLeft Unit:=wdWord, Count:=2
End If
Options.DefaultHighlightColorIndex = wdBrightGreen
Selection.Range.HighlightColorIndex = wdBrightGreen
Selection.MoveLeft Unit:=wdCharacter, Count:=1
Selection.TypeText Text:=" "
Selection.MoveLeft Unit:=wdCharacter, Count:=1, Extend:=wdExtend
Options.DefaultHighlightColorIndex = wdNoHighlight
Selection.Range.HighlightColorIndex = wdNoHighlight
Selection.MoveLeft Unit:=wdCharacter, Count:=1
Selection.Font.Color = wdColorRed
Selection.TypeText Text:="{Sp}"
Selection.Find.ClearFormatting
With Selection.Find
    .Text = "{Sp}"
    .Replacement.Text = ","
    .Forward = False
    .Wrap = wdFindAsk
End With
Selection.Find.Execute
With Selection.Font
    .UnderlineColor = wdColorAutomatic
    .Hidden = True
    .Color = wdColorRed
End With
Selection.MoveRight Unit:=wdCharacter, Count:=1
Selection.Delete Unit:=wdCharacter, Count:=1
Selection.MoveRight Unit:=wdWord, Count:=1

End Sub
```

This building process continued until a full menu of feedback items had been designed and the menu installed into the QAS template (Figure 20).

Figure 20: QAS drop-down menu



As noted in Section 5.2, it was clear that the QAS would be even more useful if it could facilitate the marking also of scanned, handwritten work. I therefore designed a Microsoft Word template into which a scanned single-page document could be inserted into an expanded header. The template superimposed a tight-knit grid of table-cells over the background image,

and in each cell was a drop-down menu containing the macro items to insert correction codes above the words needing revision. I named this the "QAS-Grid" (Figure 21).

Figure 21: QAS Grid - marking handwritten work



I pursued a "discovery" approach to development, researching and trialling methods to add user options and administrative functions. I added database functionality using Microsoft's ActiveX Data Objects (ADO) with an "underlying OLE DB Provider for ODBC Drivers", in the words of Microsoft. Initial code for setting up a database query is illustrated below:

Figure 22: Initial code for querying the QAS database

```
Attribute VB_Name = "QASAccessQueryProcedures"
' Listing 10.11. Retrieving an Entire Recordset
'
Sub RetrieveCategories()
    Dim fld As Field
    Dim strSELECT As String, i As Integer
    Set rs = CreateObject("ADODB.Recordset")
    With rs
        .Source = "Comments"
        .ActiveConnection = "QAS Database"
        .CursorType = adOpenKeyset
        .Open
    End With
    strSELECT = "SELECT "

    For Each fld In rs.Fields
        If fld.Type <> adBinary And fld.Type <> adLongVarBinary Then
            strSELECT = strSELECT & fld.Category & ", "
        End If
    Next fld
    strSELECT = Left(strSELECT, Len(strSELECT) - 1)
    strSELECT = strSELECT & " FROM Comments"
    With rs
        .Close
        .Source = strSELECT
        .ActiveConnection = "QAS Database"
        .CursorType = adOpenKeyset
        .Open
    End With
    Worksheets("Database Records").Activate
    ActiveDocument.Activate

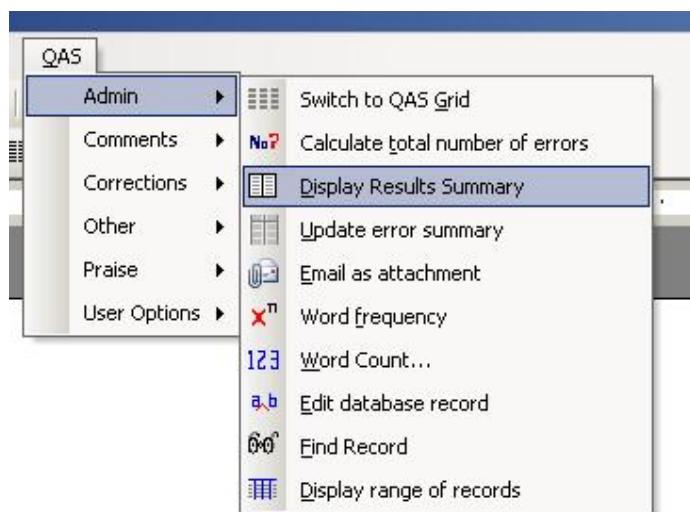
    With ActiveDocument Worksheets("Database Records").[a1]
        .Offset(1).CopyFromRecordset rs
        For i = 0 To rs.Fields.Count - 1
            .Offset(0, i) = rs.Fields(i).Name
            .Offset(0, i).Font.Bold = True
            .Offset(0, i).EntireColumn.AutoFit
        Next i
    End With
    rs.Close
    Set rs = Nothing
    Set fld = Nothing
End Sub

Sub QASRunAccessQuery1()
    Load frmQASSummary
    frmQASSummary.Show
    Unload frmQASSummary
End Sub
```

This stage of development was one of the most challenging, but also the most rewarding. It was at the limit of my technical ability, but resulted in the QAS suddenly becoming much more than a utility for one-off correction of homework tasks. With the development of a database, I was able to set up a list of queries, package these into macro routines and add them to the QAS' report-generating functions in the administration submenu of the QAS main menu. The following image (Figure 23) shows the first version of the

database-querying functions (as well as the revised QAS-Grid access button):

Figure 23: Administration drop-down menu



In due course, however, I learned that a far better design method was to list all the information I would want (as an ESOL teacher) the database to show, categorise this information into query types, then design the forms for the data that the queries would extract. This method resulted in a series of reports, the most comprehensive of which is shown in Figure 24.

Figure 24: Progress report - resubmissions and feedback comparison

Student Submissions - Comparison

Student Progress Report - Resubmissions

Date of Report: 28.07.11 For period from: 01.05.11 To: 30.06.11 Requested by: Tutor

Student Details

Student ID: 1044221 Course code: ELP 2344 Assignments allocated: 6

Student name: Nina Bukowski Course name: English FCE prep. Assignments submitted: 6

Known as: Nina Semester: 2 Year: 2011 Submission percentage: 100

View report for: Essays Tutor: Samantha Brown Assignments resubmitted: 5

Re-submission percentage: 83

Submissions

Assignment Ref.: HG/001 Assignment Ref.: HG/005 Assignment Comparison: Change in Sub1 Errors

Correction	Submission 1	Submission 2	Change %
App	2	1	50%
Co	3	1	66%
Cul	2	0	100%
Log	4	2	50%
NP	12	4	66%
Num	10	1	90%
OW	21	0	100%

Comments: Very good spelling. Well done. Look at the resources (URLs) in the task instructions to read more about essay structure - particularly paragraphs. You can use other people's work, but you need to reference it - please see the attached sheet for ways of doing this.

Correction	Submission 1	Submission 2	Change %
App	3	1	66%
Co	2	1	50%
Cul	0	0	0%
Log	1	0	100%
NP	2	0	100%
Num	4	1	75%
OW	10	0	100%

Comments: Good paragraphing. Your essay is well structured. You seem to have mastered how to reference other people's work - this is good progress. There are still many "omit word" mistakes - this means you are using too many words - perhaps because of Language 1 interference, or perhaps due to collocation errors. Do talk to me about this at our next tutorial.

Correction	Change %
App	-50%
Co	66%
Cul	100%
Log	75%
NP	83%
Num	60%
OW	52%
Plg	100%
P	51%
Pu	60%
Rep	10%
Sp	25%
S/V	7%
Tau	0%
?	60%

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E-mail Print Save & Continue Save & Exit Cancel

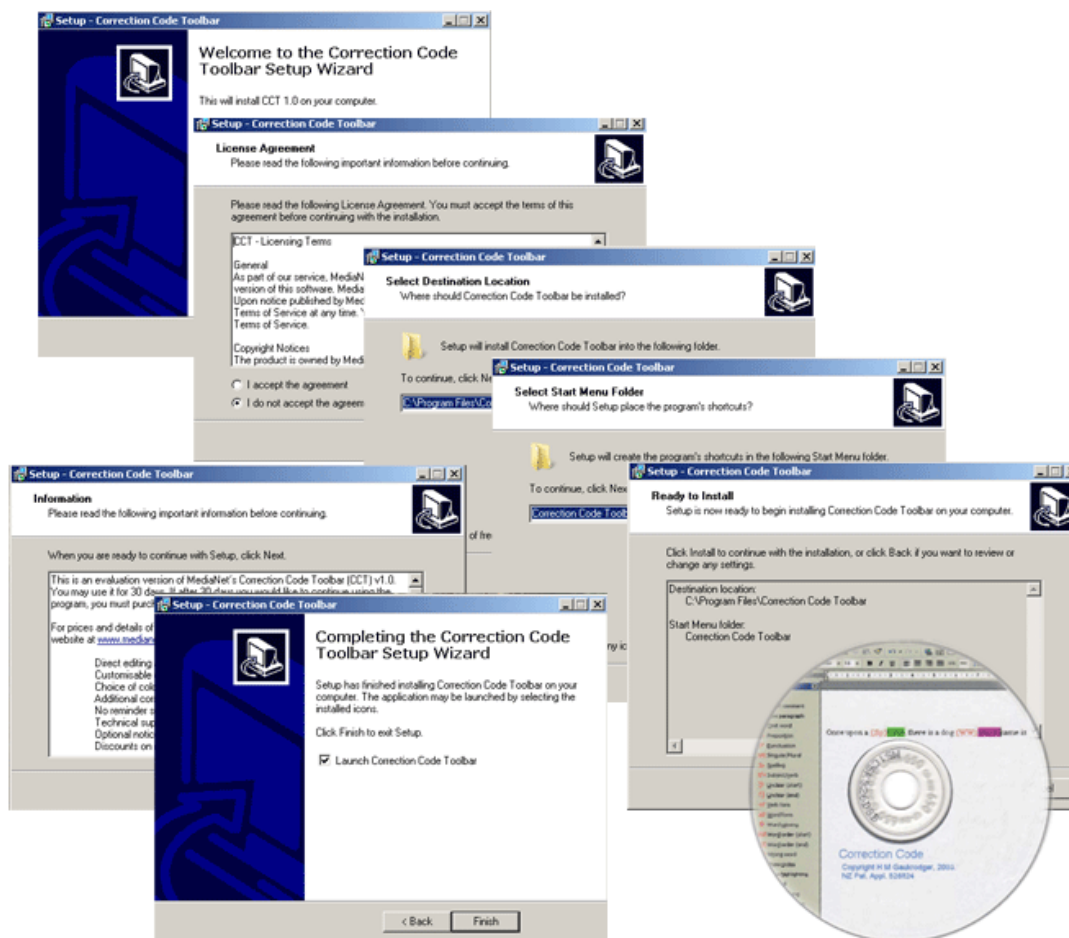
The report in Figure 24 and those in Section 6.3 evidence the extent to which I developed the design of the QAS, and identify the potential educational and administrative value of the data that could be collated. Item (1), in Figure 24 shows, for example, all the feedback correction codes and comments for task ref. HG/001 for a fictitious student whose enrolment data are listed above the statistics. The report facilitates comparison of feedback data, in this case Task HG/001 and HG/005 (Item (2)). This would provide a method of quickly identifying change in performance between Submission 1 and Submission 2 for each task. Item (3) displays the percentage change in performance between Submission 1 for the two selected tasks. This feature elucidates a function of critical relevance to this thesis, that the efficient collection, presentation and comparison of these data would be not be feasible without use of the QAS.

The above implementation has demonstrated the feasibility of functionality extending that of the CCT, and has reached a point at which evaluation is more important than the refinement of the code. To illustrate the whole

design, I present a walk-through (Section 6.3) of the installation and usage of the current system.

To assemble an installation package, I created a self-installing utility using InnoScript. This open-source software enabled me to add suitable set-up screens, licensing terms, and nag screens:

Figure 25: Installation set-up screens

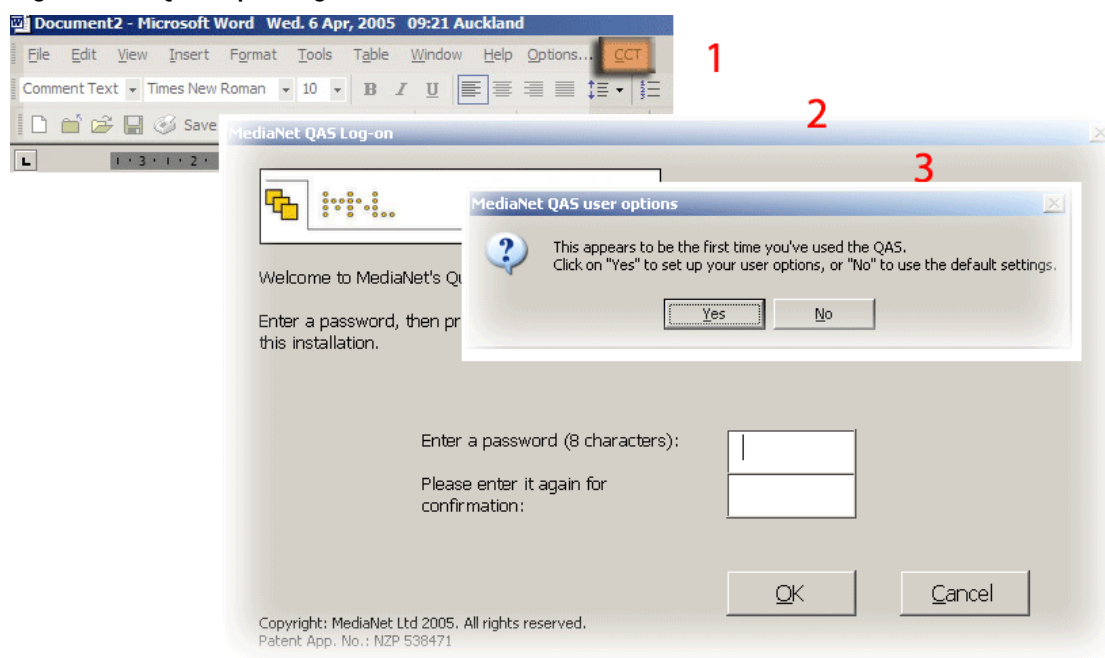


The above collage of screenshots (Figure 25) shows the sequence of images displayed by the installation program distributed on the illustrated disc, leading to the launch of the QAS (CCT) in Microsoft Word 2003.

The QAS setup program installs two templates, the QAS-WP to facilitate marking of word-processed documents, and the QAS-Grid for scanned, handwritten documents. Use of the QAS-WP assumes students have submitted their work as a Word document, while use of the QAS-Grid assumes teachers have scanned their students work and have access to the resulting images.

The installation procedure adds a QAS ("CCT" in image "1", Figure 26) menu item to the main menu of the default template, and when clicked on, it starts the QAS add-in, calling up a log-on form ("2"). Once the user has logged on, the QAS identifies whether the user has used the program before ("3"). Both new and registered users can set up personal preferences in the template and add customised feedback items. The QAS-Grid is activated with the aid of a menu item in the QAS (CCT) drop-down menu in the default template ("1").

Figure 26: QAS opening screens



Once users have logged on to the system and set up their user options, the QAS prompts users to input whether they want to:

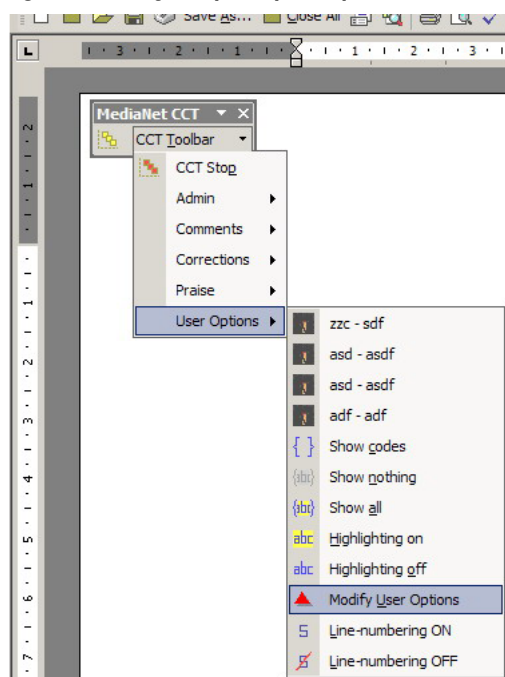
- save and close any document they might be working on, and/or
- use the current document as the basis for inserting QAS feedback
- open a new document for QAS feedback
- re-open a document they have already started marking with the QAS.

The completion of these steps concludes with the display of the appropriate document with the QAS drop-down menu available from the main menu, and (for the QAS-Grid) also from an optional floating toolbar. The resulting Word document is duplicated, with the original work of the student remaining unedited, read-only, and named automatically with a unique

number and user-defined name. The duplicate is the document teachers use when inserting QAS feedback. This is named and saved similarly to the original document. When teachers have finished providing feedback, they can immediately forward the marked work to the students by e-mail (as an attachment), using the appropriate menu item in the QAS drop-down menu.

Users are logged out of the QAS when they close all documents in which the QAS is active, or when they click on the "Stop CCT" menu item in the drop-down or floating menu (Figure 27):

Figure 27: QAS (CCT) drop-down menu with stop item and user options



6.3 QAS Walk-through

The design of the QAS is based on the assessment model conceptualised in Chapter 2. The expanding, outward spiral represents the continuing, forward-looking characteristic of the QAS. This harmonises with the intended aim of feedback: to provide information to students on completed work in such a way as to promote use of the feedback to enhance future work, and thus maximise learning. Just as knowledge accretes through the completion by students of an increasing number of homework tasks, so the "knowledge" of the QAS accretes by its accumulation of feedback on these tasks.

The harmony of this interface is further enhanced by the customisability of the QAS feedback rubrics. Where a suitable correction code or comment is

unavailable, for example, users can add an item. So, as students build up a more comprehensive understanding of the revisions required, and of the discrete items, so the QAS builds up a more comprehensive database of the tasks and feedback provided: both parties build on prior data.

The following reports have been designed, but not implemented in the latest prototype QAS. Not all the reports designed are included below, and those that are included are intended only to illustrate the potential of the QAS database and system. I acknowledge the design does not yet make clear which fields are read-only and which are editable.

6.3.1 Student Progress Report

The teacher/administrator fills in the period from/to, and the QAS extracts the data for the user-selected student (Figure 28).

Figure 28: Student progress report

Student Progress Report

Date of Report: 28.05.11 For period from: 01.05.11 To: 20.05.11

Student Details

Student ID	1044221	Course code	ELP 2344	Assignments allocated	3
Student name	Nina Bukowski	Course name	English FCE prep.	Assignments submitted	3
Known as	Nina	Semester	1	Year	2011
		Tutor	Samantha Brown	Submission percentage	100
				Assignments resubmitted	3
				Re-submission percentage	100

Attendance **Corrections and Comments** **Grades**

Correction	Occurrences	Date	Comment
App	7	05.05.11	This is a good start. Focus on verb tenses. Good vocabulary.
Co	15	08.05.11	You need to read the question more carefully. Good progress with tenses, but you still have problems with auxiliary verbs.
Cul	2		
Log	4	12.05.11	I like the introduction - tells the reader what to expect. Good topic sentences to start paragraphs. Well done.
NP	12		
Nun	10		
OW	21		
Plg	2		
p	17		

(Sort data by single-clicking on any of the column headings. Click again to reverse the sort.)

No. of error types: 15

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E-mail Print Save & Continue Save & Exit Cancel

6.3.2 Student Progress Report – Resubmissions

This report (Figure 29) displays the data relating to one selected student, comparing feedback between Submission 1 and Submission 2 of two user-selected tasks, and displaying the percentage change in the number of correction items inserted between Submission 1 of the selected tasks.

Figure 29: Student progress report and feedback comparison

Student Submissions - Comparison

Student Progress Report - Resubmissions

Date of Report: 28.07.11 For period from: 01.05.11 To: 30.06.11 Requested by: Tutor

Student Details

Student ID: 1044221 Course code: ELP 2344 Assignments allocated: 6
Student name: Nina Bukowski Course name: English FCE prep. Assignments submitted: 6
Known as: Nina Semester: 2 Year: 2011 Submission percentage: 100
View report for: Essays Tutor: Samantha Brown Assignments resubmitted: 5
Re-submission percentage: 83

Submissions

Assignment Ref.: HG/001 Assignment Ref.: HG/005 Assignment Comparison Change in Sub1 Errors

Correction	Submission 1	Submission 2	Change %
App	2	1	50%
Co	3	1	66%
Cul	2	0	100%
Log	4	2	50%
NP	12	4	66%
Num	10	1	90%
OW	21	0	100%

Comments

Very good spelling. Well done. Look at the resources (URLs) in the task instructions to read more about essay structure - particularly paragraphs. You can use other people's work, but you need to reference it - please see the attached sheet for ways of doing this.

Good paragraphing. Your essay is well structured. You seem to have mastered how to reference other people's work - this is good progress. There are still many "omit word" mistakes - this means you are using too many words - perhaps because of Language 1 interference, or perhaps due to collocation errors. Do talk to me about this at our next tutorial.

Assignment Comparison Change in Sub1 Errors

Correction	Change %
App	-50%
Co	66%
Cul	100%
Log	75%
NP	83%
Num	60%
OW	52%
Plg	100%
P	51%
Pu	60%
Rep	10%
Sp	25%
S/V	7%
Tau	0%
?	60%

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6.3.3 Group Progress Report

This report (Figure 30) displays the collated feedback of all students in the user-defined course for the user-defined period.

Figure 30: Group progress report

QAS Report: Group Progress

logo

Group Progress Report

Date of Report: For period from: To: Requested by:

Course ref: Course name: Semester: Year: Tutor:

Weeks with students: Absence (full sessions):

Tasks

Number allocated ☐ Average no. of students ☐

Number submitted ☐ Number resubmitted ☐

Submission percentage ☐ Re-submission percentage ☐

Select task(s) for analysis within selected period: Description added automatically when single task selected

Grades & Summaries | Comments | Corrections | Attendance

Task ref.	Date	Grade	Frequency	Summaries for selected task(s)

Notes

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E-mail Print Save & Continue Save & Exit Cancel Help

6.3.4 Administration Report – Course and Semester Details

This report (Figure 31) displays all the students in the user-selected course, as well as the teachers allocated to the course, and details of the course. I acknowledge that the fields entitled “Course”, “Paper”, and “Level” are ambiguous and need to be revised.

Figure 31: Administration report - course details

The screenshot shows the 'QAS Administration' window. The title bar is blue with the text 'QAS Administration'. The main window has a grey background. At the top left is a 'logo' placeholder. In the center is the word 'Administration'. On the top right is a 'Date' field showing '1st Aug 2011'. Below the title bar is a tabbed interface with four tabs: 'Assignment details', 'Student details', 'User details', and 'Course & semester details'. The 'Course & semester details' tab is active. It contains two main sections. The left section is titled 'Course & semester' and includes fields for 'Course name' (English for Business), 'Course code' (ENG101), 'Paper' (Pre-Int), 'Level' (Other), 'Semester' (3), 'Year' (2011), and 'Links'. The right section is titled 'Tutors for this course, paper or level' and includes fields for 'Course' (Samantha Doe), 'Paper', and 'Level'. Below these sections is a table titled 'Students on this course'. The table has columns: Student ID, First name, Last name, Known as, Nationality, Language, Tel (home), Tel (alt), and E-mail address. The table contains three rows of student data. At the bottom of the window are five buttons: 'New', 'Amend', 'Save & Continue', 'Save & Exit', and 'Cancel'. At the very bottom, there is a copyright notice: 'Copyright: MediatNet Ltd 2008. All rights reserved. Patent App. No.: NZP 538471'.

QAS Administration

Administration

Date: 1st Aug 2011

Assignment details | Student details | User details | **Course & semester details**

Course & semester

Course name: English for Business

Course code: ENG101

Paper: Pre-Int

Level: Other

Semester: 3 Year: 2011

Links:

Tutors for this course, paper or level

Course: Samantha Doe

Paper:

Level:

Students on this course

Student ID	First name	Last name	Known as	Nationality	Language	Tel (home)	Tel (alt)	E-mail address
1044221	Nina	Bukowski	Nina	Polish	Polish	03 123 1234		nb234@server.com
1080234	Steve	Jao	Steve	Chinese	Chinese	03 144 7890		steve34@server.com
1123423	Ngi	Nguyen	Si	Vietnamese	Vietnamese	03 123 3454		gng234@server.com

New Amend Save & Continue Save & Exit Cancel

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6.3.5 Administration Report – Student Details

This report (Figure 32) shows the data that I anticipate could be imported from the faculty database regarding student contact details, supplemented with the details that could be added by calling up the report in the QAS: “Notes”, “Strengths and weaknesses”.

Figure 32: Administration report - student details

The screenshot shows the 'QAS Administration' window with the 'Administration' tab selected. The 'Student details' sub-tab is active. The form contains the following fields and data:

- ID no.:** 1044221
- Address:** 22, New St, Nelson.
- Tel (home):** 03 123 1234
- Nationality:** Polish
- Tel (alt):** (empty)
- Language:** Polish/Russian
- E-mail:** nb234@server.com
- First name:** Nina
- Second name:** (empty)
- Last name:** Bukowski
- Known as:** Nina
- Notes:** Interests: Politics, cooking, netball.

Alternative contact / Next of kin (optional):

- Home stay Family:** (dropdown menu)
- Tel (home):** 03 234 2343
- Address:** 15, Old St, Nelson.
- Tel (alt):** (empty)
- Name:** Jo and Sue Smith
- E-mail:** jandsmith@server.com

Current enrolment status:

- Active:** (selected radio button)
- Inactive:** (radio button)
- Course ref:** ELP 2344
- Course name:** English FCE prep.
- Semester:** 3
- Year:** 2011

Papers:

- Level:** Pre-Int

Strengths & weaknesses:

- Good listening. Poor speaking.
- Overconfident; needs to slow down.

Buttons: New, Amend, Save & Continue, Save & Exit, Cancel

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6.3.6 Administration – Assignment Details

This report (Figure 33) is called up by teachers wishing to add a homework task to the database. The design of the QAS then intends for students to be able to access this information in a similar but reduced version of this report from any Internet-connected PC.

Figure 33: Administration report - assignment details

The screenshot shows a web-based form titled "QAS Administration" with a sub-header "Administration". The form is divided into several sections for entering assignment details. At the top right, there is a "Date" field set to "1st Aug 2011". Below the header, there are tabs for "Assignment details", "Student details", "User details", and "Course & semester details". The "Assignment details" tab is active. The form contains the following fields and sections:

- Assignment ref.:** A text box containing "HG/T1 Task 2".
- Instructions:** A text area containing "Write a 200-word essay on: 'Learning English in New Zealand. Use the plan prepared in class. Look at the resource material below.'"
- Type:** A dropdown menu set to "New assignment".
- Submission deadline:** A text box containing "12th August".
- Auto e-mail reminder:** Radio buttons for "Enable" (selected) and "Disable", followed by a "Grace period (days)" spinner set to "3".
- Assignment category (optional):** Two dropdown menus for "Category" and "Sub-category", both set to "Select or add".
- Key words (separate with commas or semi-colons):** An empty text box.
- Tutor check list (optional):** A list of checkboxes:
 - ☒ Assignment details provided in writing
 - ☒ Assignment details available on website
 - ☒ Hand-outs given
 - ☒ Moodle / Blackboard updated
 - ☐ Forum activated
 - ☐ Chat enabled
 - ☐ Pre-checked for plagiarism potential
 - ☒ E-mail addresses confirmed
- Resource material for students (optional):** Three text boxes:
 - URL:** "http://cnn.com; http://www.nzherald.co.nz;"
 - Library:** "Book: ISBN 23 234 1234; Newspaper: NZ Herald 15.06.11."
 - Lecture/Tutorial:** "Mon 30th July"

At the bottom of the form are buttons for "E-mail", "Print", "Save & Continue", "Save & Exit", "Cancel", and "Help".

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6.3.7 Assignment Analysis – Student and Course Details

Teachers call up this report (Figure 34) to add summary feedback to the task selected in the first tab in the display “Assignment Details” for the student selected from the drop-down menu. Confidential notes on special circumstances the teacher believes may have affected student performance can also be added here.

Figure 34: Teacher report - assignment analysis

The screenshot shows the 'QAS Analysis' window with the 'Assignment Analysis' title. The 'Date of analysis' is set to 'added automatically'. The 'Assignment details' tab is active, showing fields for Student ID, Student name, Known as, Course name, Paper, Level, Semester, Year, Tutor, and Course ref, all of which are set to 'Added automatically'. Below this, the 'Attendance' tab is active, showing 'Choose grading system' set to '1. Text (6 categories)', 'Specify Grade' set to 'e.g. Pass', and 'Response to feedback' set to 'e.g. Pass'. The 'Special circumstances' section has checkboxes for 'Recent arrival/admission', 'Family/Health issues', 'Irregular attendance', 'Other', and 'Language problems', all of which are unchecked. The 'Add your assignment summary for the student here' and 'Add confidential notes here (not shown to student)' text areas are empty. The bottom of the window contains a copyright notice and a row of buttons: 'E-mail', 'Print', 'Save & Continue', 'Save & Exit', 'Cancel', and 'Help'.

QAS Analysis

Assignment Analysis

Date of analysis: added automatically

Assignment details | Student and course details

Student ID: [dropdown]
Student name: Added automatically
Known as: Added automatically
Course name: Added automatically
Paper: Added automatically
Level: Added automatically
Semester: A a
Year: A a
Tutor: Added automatically
Course ref: Added automatically

Attendance | Comments | Corrections | Grades & Summary

Choose grading system: 1. Text (6 categories)
Specify Grade: [dropdown]
Previous grades: e.g. Pass
Response to feedback: [dropdown]
Previous grades: e.g. Pass

Add your assignment summary for the student here

Special circumstances

☐ Recent arrival/admission ☐ Family/Health issues
☐ Irregular attendance ☐ Other
☐ Language problems

Add confidential notes here (not shown to student)

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E-mail Print Save & Continue Save & Exit Cancel Help

6.3.8 Assignment Analysis – Assignment Details

This report (Figure 35) shows the group's collated comments for a task, as well as submission and resubmission deadlines.

Figure 35: Teacher report - assignment analysis

The screenshot shows the 'QAS Analysis' window. At the top, there's a 'Date of analysis' field set to '13th August 2011'. Below this, there are two tabs: 'Assignment details' and 'Student and course details'. The 'Assignment details' tab is active, showing 'Assignment ref.' as 'HG/T1 Task 2' and 'Instructions' as 'Write a 200-word essay on: "Learning English in New Zealand" Use the plan prepared in class. Look at the resource material below.' There are two radio buttons for 'First submission' and 'Re-submission', both with a 'Submission deadline' of '12th August 2011'. Below this, there are four tabs: 'Attendance', 'Comments', 'Corrections', and 'Grades & Summary'. The 'Comments' tab is active, showing a table with columns '+/-', 'Occurrences', and 'Comment'. The table has four rows of comments. Below the table, there's a note: '(Sort data by single-clicking on any of the column headings. Click again to reverse the sort.)'. At the bottom, there's a 'Special circumstances' section with checkboxes for 'Recent arrival/admission', 'Family/Health issues', 'Irregular attendance', and 'Other'. There's also a text area for 'Add confidential notes here (not shown to student)' with the text 'The students have only been in the country three weeks. They are not used to Western education methods.' At the very bottom, there's a copyright notice and several buttons: 'E-mail', 'Print', 'Save & Continue', 'Save & Exit', 'Cancel', and 'Help'.

+/-	Occurrences	Comment
+/-	2	Some valid points, but the text lacks cohesion. See essay planning notes.
+	1	A good introduction; it tells the reader clearly what to expect in the essay.
-	3	Your opinions lack support. Try to explain why you hold an opinion, then seek references to support your opinion.
-	3	The essay wanders off topic. Try to focus on arguments you draft in your plan.

6.4 Best Use of the QAS

The QAS provides functions that are useful for teachers to mark up students' work. These functions can be used in a conventional way to speed up the process of inserting corrections and comments, or in a more advanced way to support a longer, dialogic approach (Laurillard 2002; Carless, Salter et al. 2011) that supports resubmission. The QAS provides facilities without prescribing process, empowering teachers to use the software as they themselves deem appropriate. Notwithstanding this flexibility for teachers to determine their own process, there is a recommended process which would help users can make best use of the QAS, as I have presented below.

It must be emphasised that the QAS is an add-in for Microsoft Word, and the functions available for users of the QAS may be woven into the vast array of functions available through the host program. As a result, there

may be various methods of achieving some of the same results. This section looks at just one possible method of using the QAS for the benefit of all stakeholders: students, teachers and administrators.

For this scenario, I assume the teaching environment specified in Table 2:

Table 2: Best use of QAS scenario

ESOL Teaching Environment		
Number of classes	3	
Number of teachers	4	(inc. one reliever)
Number of weeks / term	10	(2 weeks for exams)
Number of terms / year	4	
Number of tasks / week	2	
Levels	Elementary, Pre-intermediate, Intermediate	
Nationality of students	Diverse	

1. A placement test identifies the level of the students and allows placement into one of the three specified levels. (While differentiation of level is not essential for use of the QAS, it does simplify the task of the teacher in choosing the register (vocabulary and grammatical jargon) to use in feedback comments).
2. Teachers plan their lessons in their customary way, but store details of the homework to allocate in the QAS (Assignment Details Report). Ideally, the details would include instructions, references to online resources and to library books (resource material), and to any earlier lessons, that contained useful information on which students could “construct” their latest homework.
3. Teachers complete the QAS check-list to ensure they enter all the optional information. They ensure the allocation date and date for submission are complete.
4. Teachers request completion of the homework in MS Word, with submission by e-mail.

5. Automated reminders are e-mailed to students who do not submit on time.
6. Submission 1 of the homework is received by the teachers. They open the homework in MS Word, and click on the QAS menu button to activate the QAS log-in screen, then gain access to the correction code and comments toolbar, user options and admin functions. The document is named and numbered automatically.
7. Teachers re-read the task instructions, then mark the homework using the default codes, comments and colours, as far as possible. Teachers add additional codes and comments when nothing suitable is available. Marking is selective, with teachers focusing more time on the issues of significance for the task, thus encouraging students to spend more time reading the issue-specific comments, rather than trying to correct everything. Teachers leave a concluding comment to guide students in how best to revise their work for Submission 2, then return the work by e-mail to the students.
8. All comments and correction codes are automatically saved by the QAS.
9. Students receive their homework for revision, reading all the comments and seeking advice from peers, support staff, homestay families, library resources and online resources. They choose the revision method that suits them best, rewriting the entire text, or editing only the items needing revision, then e-mail Submission 2 back to their teacher.
10. Teachers receive Submission 2, and continue as per Submission 1, but with the first submission being available for visual and MS Word-based comparison. They then complete the marking and leave a concluding comment at the end of the document, then e-mail the homework back to the students.
11. Any customised comments and codes added by a teacher can be viewed by the administrator, or appointed proofreader. If approved, they remain in the database. If rejected, the items are removed from the database.
12. As this process continues over the term, the QAS builds up a database of useful feedback that teachers recommend students look at on a regular basis to identify learning difficulties and strengths.

Teachers have discussion sessions in class, inviting students to air problems with homework and to promote peer-to-peer comparison of problems and their resolution.

13. Teachers use the QAS database to determine whether students are reading the feedback: a) comparing Submission 1 with Submission 2, and b) selecting any period of time to compare the performance of any given student over that period, as well as the performance of the group as a whole. In this way, teachers identify learning weaknesses and offer remedial work. They also build on the strengths of students by avoiding excessive instruction in areas the students are already confident in and engaging students in more challenging tasks.
14. When a reliever is required, they are given access to the relevant part of the QAS database to review the tasks allocated by the teacher being relieved, logging in with temporary permissions that ensure e-mailed submissions are copied to the absent teacher's account and to the reliever's account. The reliever identifies the issues raised by the students and teachers in the notes left in the database, and plans the lesson in the light of the absent teacher's instructions and the records in the QAS database. Any details stored in the QAS database by the reliever on behalf of the absent teacher are approved by that teacher on his/her return.
15. Towards the end of term, teachers confer with the administrator to discuss exam results and performance of students through the term, using the analysis reports available through the QAS, and offer opinions on whether to advance specified students to the next academic level.
16. The administrator verifies that all teachers have given students an appropriate number of tasks, and that feedback comments appear judicious and constructive. Random reviews of feedback may be carried out to verify that feedback is consistent and that submissions and resubmissions were dealt with promptly.
17. Any student complaints about unfairness of marking are handled directly by the administrator - who has access through the QAS to all the homework performed.
18. Students receive notice of their advancement based on the QAS records accessible directly by the students. Any students leaving the

faculty are given a digital record of all their work completed – useful for personal records and for giving to subsequent educators and potential employers.

19. The administrator uses the QAS reports to provide evidence of a robust, standardised feedback strategy that meets the self-assessed, quality assurance requirements.

The above scenario is a brief description of one recommended method of using the QAS. While many 'what-if' situations have been omitted, the description does elucidate the flow of activity from the planning stage to the conclusion of studies.

Chapter 7: Evaluation

7.0 Introduction

The systemisation of the feedback process using ICT, and the resulting collection and accessibility of the data collected for use by the stakeholders (students, teachers and administrators), constitute a significant and relatively new area of development in education.

I designed the prototype QAS with such systemisation in mind, and with a view to rendering more efficient the feedback process. The current research was undertaken to identify and analyse participants' reactions and responses to the potential use of the QAS. Do participants believe it could meet its design goals of:

- speeding up the marking process for word-processed and handwritten homework tasks
- fostering progressive, two-way feedback
- improving consistency of feedback
- improving clarity of feedback
- storing, and providing access to, feedback for promoting reflection by students and teachers on past feedback for future work, and for providing administrators with access to student and teacher feedback.

This chapter explains and evaluates the methods used to ascertain the appropriateness of the QAS for its intended purpose, referring to the methodology on which the research was founded.

7.1 Theoretical Background

The fieldwork design is rooted in the concepts of grounded theory and informed by the work of Krueger (2008), Morgan (op. cit.), Kitzinger (op. cit), Hughes (2004), Greenbaum (1998), Merton (1987), and Johnson and Turner (2003). The appropriateness of this theoretical basis is founded on the comparative nature of the current research, analysing, as it does, participant perceptions and behaviour in relation to feedback administered with and without use of the prototype QAS.

The collection of data from participants in their normal working environment are features of grounded theory well discussed in the literature.

"A constructivist approach to grounded theory reaffirms studying people in their natural settings." Charmaz, cited in Denzin and Lincoln, 2000, p. 510).

With the basis of the fieldwork rooted in grounded theory, I adopted qualitative methods to achieve the aims of the research (see Chapter 1), as these methods are:

"a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell 2009, p.4).

Such an approach is consistent with my selection of data collection methods – observation and in-depth interview (see Section 7.2). Furthermore, qualitative methods support the validity of using small samples:

"Indeed, in the absence of any agreed-upon definition of qualitative research, perhaps the single most obvious way of defining qualitative research is that it typically involves small samples" (Bock and Sergeant 2002, p.236).

I carried out this research with small samples for two reasons: 1) to gain greater insight (than would have been feasible with a large sample) into the behaviour, and into any changes in behaviour, of the participants in relation to feedback, and 2) because there was only a small number of potential participants that could be called upon (see Section 7.3).

7.2 Fieldwork Methods

To determine whether or not the QAS would support the design goals (given in the Introduction), I planned two research scenarios:

- Scenario 1: current feedback practice with resubmission
- Scenario 2: feedback with the QAS with resubmission

By investigating and comparing two scenarios, I aimed to determine to what extent, if any, participants believed the QAS could improve any characteristics of the feedback process.

To investigate these scenarios, I used methods of observation and face-to-face, in-depth interview of small samples for Scenario 1, while, for Scenario 2, I used an experiment and interviews. My decision to use interviews was further supported by the knowledge that student participant responses in a group situation can be compromised by the presence of peers, as identified by Greenbaum:

“When it comes to documenting behaviour, focus groups are less suitable than individual interviews: there is an understandable tendency for atypical behaviours to be unreported or under-reported in group settings” (1998, p.8.)

Face-to-face interviews also pre-empted the effect of peer pressure around any personal differences that might have arisen over time between teacher participants (e.g. when answering questions that reveal personal feelings towards the use of information and communications technology (ICT) in the education process). Peer pressure is a well-discussed issue affecting adoption of new technology, as indicated by Warburton:

“Peer pressure to emulate the successful practice of their CAA using colleagues was identified as another reason for large increases in uptake [of computer-assisted assessment]” (2006, p.89.).

One last advantage of face-to-face interviews of significance here is the opportunity they grant of synchronous observation and recording of non-verbal responses (“social cues”):

“Social cues, such as voice, intonation, body language etc. of the interviewee can give the interviewer a lot of extra information that can be added to the verbal answer of the interviewee on a question.” (Opdenakker 2006, n.p.)

In carrying out the above-mentioned interviews, I used as prompts questions I had drafted in advance (see Figure 38 and Figure 39) to provide a framework for discussion on particular topics. However, I allowed the participants to digress within certain limits (Merton and Kendall, cited in Bogdan and Biklen, 1992). In this way, I sought to maximise participants’ autonomy in narrating their experiences of feedback.

To complement interview methods, I carried out observations. These were performed for teacher participants in both scenarios (in Scenario 2 as part of the experiment), as a naturalistic situation was easy to emulate with individual teachers marking actual homework tasks in the work environment. This 1-1 situation allowed me to focus on just one participant at a time. My decision not to use observation methods for student participants was based on the unfeasibility of observing contemporaneously

the behaviour of multiple students being given their marked tasks and reviewing the feedback provided in a class situation.

To aid the process of recalling the content of the interviews and observations, I obtained participant permission to use a video camera and/or audio recorder, reassuring the participants of confidentiality. I am aware that video recording had the potential to affect participant behaviour, but the miniaturisation of such technology minimised intrusion. All participants were asked individually if they would accept being recorded, and all but one consented. This participant consented to being recorded with an audio recorder.

Use of the above research methods allowed reflection on actual feedback practice (i.e. without the QAS), and on feedback practice simulated with the aid of the prototype QAS. More specifically, observation allowed me to observe changes in feedback behaviour, and in-depth interviews elucidated how participants perceived the changes I had observed. Furthermore, the above methods encouraged participants to consider feedback in a way they had not considered before, drawing attention to areas in which a change in behaviour or method might benefit the feedback process and/or learning, and engaging them more in the research process.

Following completion of the fieldwork, I transcribed the resulting data onto my private computer, and used Microsoft Word and the CAQDAS¹² software application called "nVivo" from QSR Software to analyse them.

7.3 Context and Selection of Participants

To carry out the fieldwork, I invited participation from staff and students from the research site's English Language Programme. This Programme offers certificate courses and non-certificate, short courses in English (ESOL). The number of staff varied over the period of research. At the time of the fieldwork in 2011, the Programme had three full-time teachers, ten part-time teachers, and 82 Equivalent Full-time Students (EFTS).

I sought participants from three groups (the stakeholders):

- administrators
- teachers
- students.

¹²Computer-assisted qualitative data analysis software

The rationale for this was that the administrators were responsible for the feedback processes adopted by the teachers and/or for resolving student complaints about this feedback, the teachers interpreted the feedback requirements and moulded these to their personal designs, and the students were the recipients and users of the resulting feedback.

To obtain participants, I e-mailed the thirteen above-mentioned ESOL teachers, inviting them to attend a presentation of my research and of the proposed fieldwork I hoped they would participate in. I also drew up and sent an information sheet to the teachers, making them aware of the significance and relevance to them of the research, and informing them of the anticipated time and effort I anticipated would be required. This was followed by a reminder (sent by one of the administrators) to consider attending the presentation. Following my presentation, six teachers agreed to participate (with one dropping out) and one academic administrator agreed to participate. Two further administrators (student association representatives) agreed to participate when, due to the inductive nature of the interviews, it became evident that additional information was necessary to cover all the bases and to validate the data.

With regard to seeking student participants, teachers recommended I consider the higher-level classes, as these students would have the language competence to communicate effectively. The teachers of the higher levels therefore informed their students of my research, and allocated time for me to present my fieldwork requirements to their classes. At these presentations, I also distributed a formal research information sheet. In due course, the following students volunteered to participate:

- total number:13 (out of a maximum of 24 in the higher classes)
- level of students:7 Intermediate; 6 Pre-intermediate.

Owing to the short duration of the ESOL programme, the long duration of the research, and the only temporary residence of some of the students, not all the students were able to participate in both scenarios. I therefore used different students for each of the two scenarios (just one student – a female student from China – participated in both scenarios).

All the participants were given consent forms to sign, and were made aware of the confidentiality of the information they provided.

7.3.1 Students

Nine of the student participants were female, and four were male. Twelve of the students were younger than 30. The students came from: Bhutan (1), China (2), Japan (3), Thailand (1), New Caledonia (1), Chile (1), Korea (1), Philippines (1), Viet Nam (1), and Saudi Arabia (1). The faculty described the academic level of the students (in ESOL) as Pre-intermediate and Intermediate.

One of the most important benefits of carrying out face-to-face, in-depth interviews with students from the Asian countries specified above is that they:

"provide an excellent way of exploring complex feelings and attitudes" (Sommer and Sommer 1992, p.105.)

that might otherwise be withheld in a group environment due to cultural differences, social pressures or issues relating to language competence. Such exploration is essential for a qualitative study of students asked to respond to questions on feedback methods. By holding face-to-face meetings with students I was able to demonstrate sensitivity towards differences in culture and education methods, and thus engender a better rapport with the respective student. I believe this enhanced the quality and quantity of data provided by the students. Hughes supports this approach, emphasising the significance of different educational backgrounds:

"Differences in international students' educational backgrounds are of particular significance. Many are unaccustomed to independent learning and may be unfamiliar with western research concepts and processes." (2004, p.3.)

This sensitivity is enhanced through exposure to such environments, and thus it is of benefit that I have worked in the field for 31 years.

7.3.2 Teachers

Of the six teachers who agreed to participate, five were female, one was male. The average age of the teacher participants was 53 years. The teachers came from the UK, Australia, Singapore, Taiwan and New Zealand, and teaching experience (at secondary and tertiary level) ranged from five years to over 30 years.

The variable of age is significant because it has been identified as one of the factors affecting the acceptance of new technology and yet has been little researched. As observed by Venkatesh et al.:

“age has received very little attention in the technology acceptance research literature, yet our results indicate that it moderates all of the key relationships in the model” (Venkatesh, Morris et al. 2003, p.469.)

The variable of teaching experience is significant because it has been identified as affecting teachers’ willingness to accept change to routine, and changes in the feedback process require a change in the educational habits of teachers and students. As Watson points out,

“research indicates that teachers are both threatened by change, and conversely not impressed by change that appears to focus on what the technology can do rather than on learning” (2001, p.251.).

7.3.3 Administrators

The aim of interviewing the academic administrator was to gain insight into feedback practices from a different perspective. The two interviews that were held also provided a valuable opportunity to cross-check the data collected from students and teachers, and to throw more light on such data. The resulting data then urged more in-depth investigation requiring the interviewing of two further administrators whose roles were student association representatives.

All administrator participants were female. Two were from New Zealand, and one was from the UK. All three had many years’ experience working at the research site.

7.4 Data Collection

The observation and interview data helped establish a sound basis for analysing and understanding participant behaviour in relation to the feedback process. The data were collected in two scenarios: 1) actual feedback practice, and 2) feedback practice with an experiment to simulate use of the prototype QAS. Table 3 and Table 4 illustrate how these methods were implemented.

Table 3: Scenario 1 - Actual feedback practice

Scenario 1		
	Teachers	Students
Observations	Observations identified: 1) how teachers provided feedback on student tasks; 2) how long marking took; 3) any records the teachers kept of the feedback provided; 4) any comparative characteristics of the feedback (i.e. relating to earlier work). Duration: 60 minutes Sample: 6 teachers Location: Tutorial room at research site	No observations performed.
Interviews	Duration: 60 minutes Sample: 6 teachers, individually Location: Tutorial room at research site	Duration: 25 - 30 minutes Sample: 7 different students, individually. Location: Tutorial room at research site

Table 4: Scenario 2 - with simulated use of the QAS

Scenario 2		
	Teachers	Students
Experiment	"Wizard of Oz" simulation of software use: Duration: 30 minutes Sample: 5 teachers, individually Location: Tutorial room at research site. Marking: 2-4 actual homework tasks Task size: 150 – 500 words	Students were not involved in simulating use of the software. However, I observed students analysing the feedback on tasks marked with the prototype QAS. Interviews (see below) followed the observations.
Interviews	Duration: 30 – 50 minutes Sample: 5 (same) teachers, individually. Location: Tutorial room at research site	Duration: 30 – 60 minutes Sample: 7 different students, individually. Location: Tutorial room at research site

In Scenario 1, therefore, I carried out observations and interviews, while in Scenario 2, I carried out an experiment and interviews. Before describing the fieldwork methods unique to each of the two scenarios, I provide details

of the interview methods common to the interviews that were held in both scenarios.

7.5 Interview Methods Common to Both Scenarios

The questions I asked during the in-depth interviews were based on methods common to both scenarios. They adhered to a general guided approach, rather than a standardised or closed interview approach (Goetz and LeCompte 1984), falling loosely into three types: descriptive, structural, and contrastive.

Descriptive questions sought to identify, for example, how participants perceived the regular homework task process (without the prototype QAS) and thus:

“... generate detailed accounts of the client's
[participant's] world as it is lived out in specific everyday
activities--the context in practice.” (Banister 1995, p2.)

I elicited what participants considered to be typical scenarios of task allocation, feedback and responses, by requesting a description of experiences and examples. Participants were prompted to discuss the characteristics of feedback, degrees of satisfaction, and motivational aspects.

I asked *structural questions* to investigate some of the different kinds of feedback (e.g. criticism, praise, guidance, resource assistance, references/ing), proportions of these, and methods of providing them and responding to them. Student participants were asked about the kinds of feedback they felt they benefited most from, while teacher participants were asked which kind of feedback they believed the students benefited most from.

Contrastive questions were also used. I asked questions to verify the meanings of terms that the participants had already used, and to determine any relationships between them (Banister 1995). Teacher participants were asked for their perceptions of feedback: what was good feedback (e.g. legible, consistent) and what was bad feedback (e.g. illegible, small amount, inconsistent). I also raised issues relating to cultural differences. For example, I asked questions to ascertain how the *teacher participants* believed students from different countries perceived feedback and how the *student participants* believed the feedback they received at the research site differed from that received in their own country.

These different types of questions gave the interviews a semi-structured approach, providing participants with a starting point for their sometimes narrative, sometimes concise, responses.

Some questions were open-ended (e.g. "Can you describe how you prepare for a lesson") to encourage participants to expand on their answers, while others were closed questions (e.g. "How many hours a day do you spend on marking homework tasks?").

By seeking to use the same kind of language and tone (Opdenakker 2006) as the participants, and by expressing interest in the responses of the respective participant, I sought to empathise with, and gain the confidence of, the participants to elicit as many details as possible. Such rapport-building is reported by Hughes to be of "particular concern" in situations involving students from "countries with strongly controlling bureaucracies":

"Thus from the outset, to gain their willing and productive cooperation, the researcher needs to take special care in building participants' trust" (2004, p.4.)

The character of the research questions and the time constraints imposed by the short duration of ESOL courses at the research site promoted the use of an interview technique allowing for question types associated with either qualitative or quantitative methods within the same interview. Such an approach is known as "intramethod mixing":

"the concurrent or sequential use of a single method that includes both qualitative and quantitative components" (Johnson and Turner 2003, p.298.).

One of the strengths of this approach is that it incorporates data validation techniques associated with data triangulation. For example, I asked how long students used a computer for each day. This closed question might have revealed a quantitative value of 1 hour. Triangulation could then be carried out by asking if the students liked using computers. If the students said they liked using computers, there was reason to cross-check the information, as one hour is not very long. If the students said they did not like using computers, the answer would validate the first response.

The above theoretical background proved a well-founded and efficient approach to collecting data from a small sample within a restricted time period.

I now describe the fieldwork methods specific to each of the two scenarios.

7.6 Fieldwork - Scenario 1

7.6.1 Scenario 1 - Observations

The six teachers participating in the Scenario 1 observations were asked to mark the homework tasks of the students in their respective classes, while I observed their marking and made notes. I observed one teacher at a time. One observation was arranged to record teacher behaviour in respect of the students' first submission, and a second observation was arranged to record teacher behaviour in respect of the second submission.

Below is an image of one of the tasks marked by teacher T03. It is the first submission of student S01 and illustrates how the teacher inserted feedback codes and comments without use of the prototype QAS.

Figure 36: Scenario 1 - Observation of marking Submission 1

Researching about future plans! Draft 1

(SVO) Researching around my class and asking my friend some questions about their future plans. I have found out some interesting future plans from my classmates. I was really interested in their answer, it made me very exciting.

Totally, I have asked nine friends in my class and sixty five percent of my classmate want to be rich. I was very surprised when I have this result. On my mind, I predict to have one hundred percent of my friend want to be rich. Especially ~~did not want to be rich~~, even though I asked him twice, he told me that: "he is satisfied with everything" he already had.

One of the future plans I love the most came from who is my beautiful classmate. She craves to be wealthy, because she wants to help poor people in her country as much as she can when she to be rich.

In addition, almost of my classmate except, wants travelling around the world, they might interesting in different country in the world, so I am really astonished in my research, and I wanted to know more detail about it. I asked some more questions and my friends said that: They hope to go travelling because they want to make friend around the world.

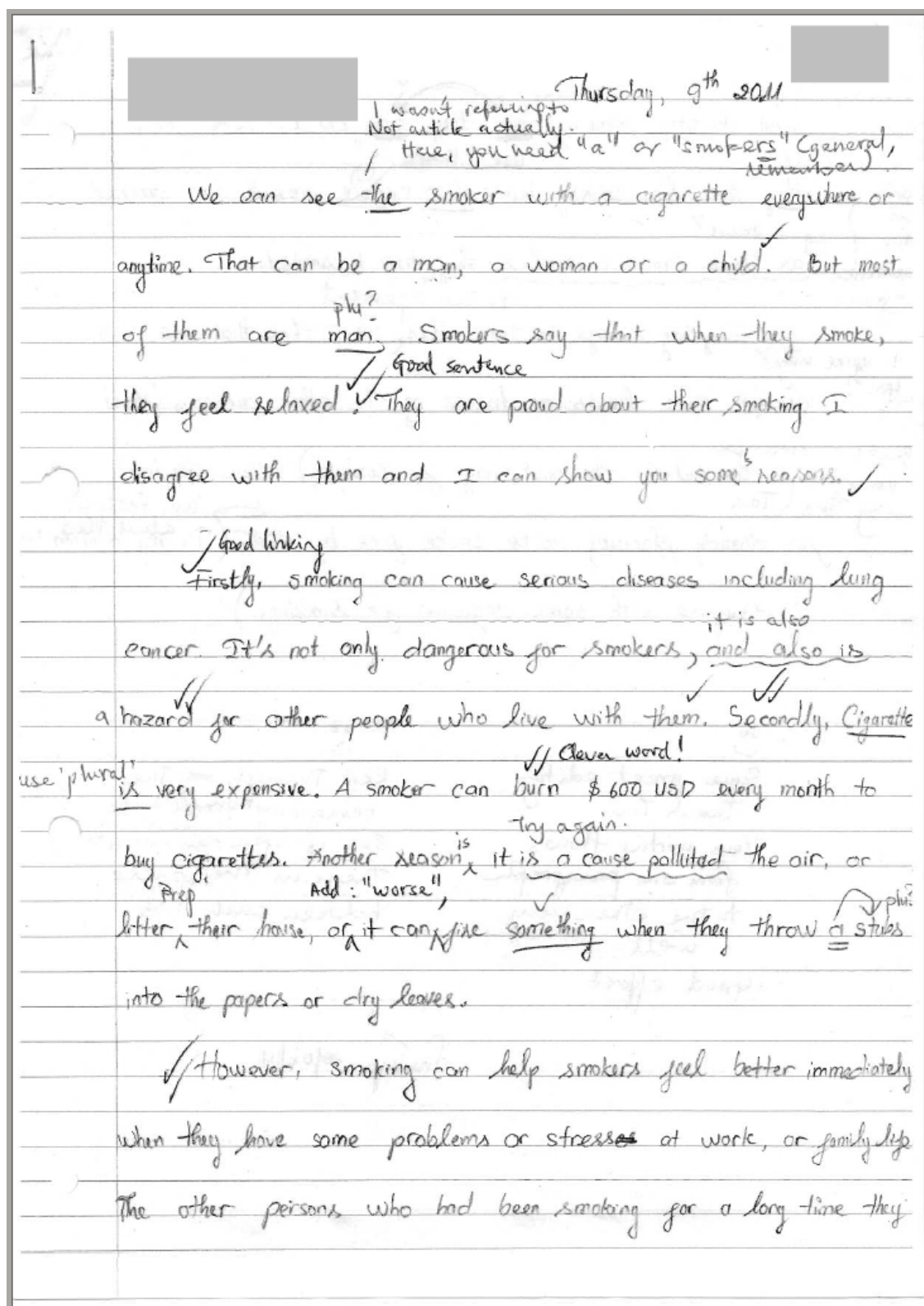
Otherwise, they might find out something interesting from different culture or they can learn something from their friends who is different country with them.

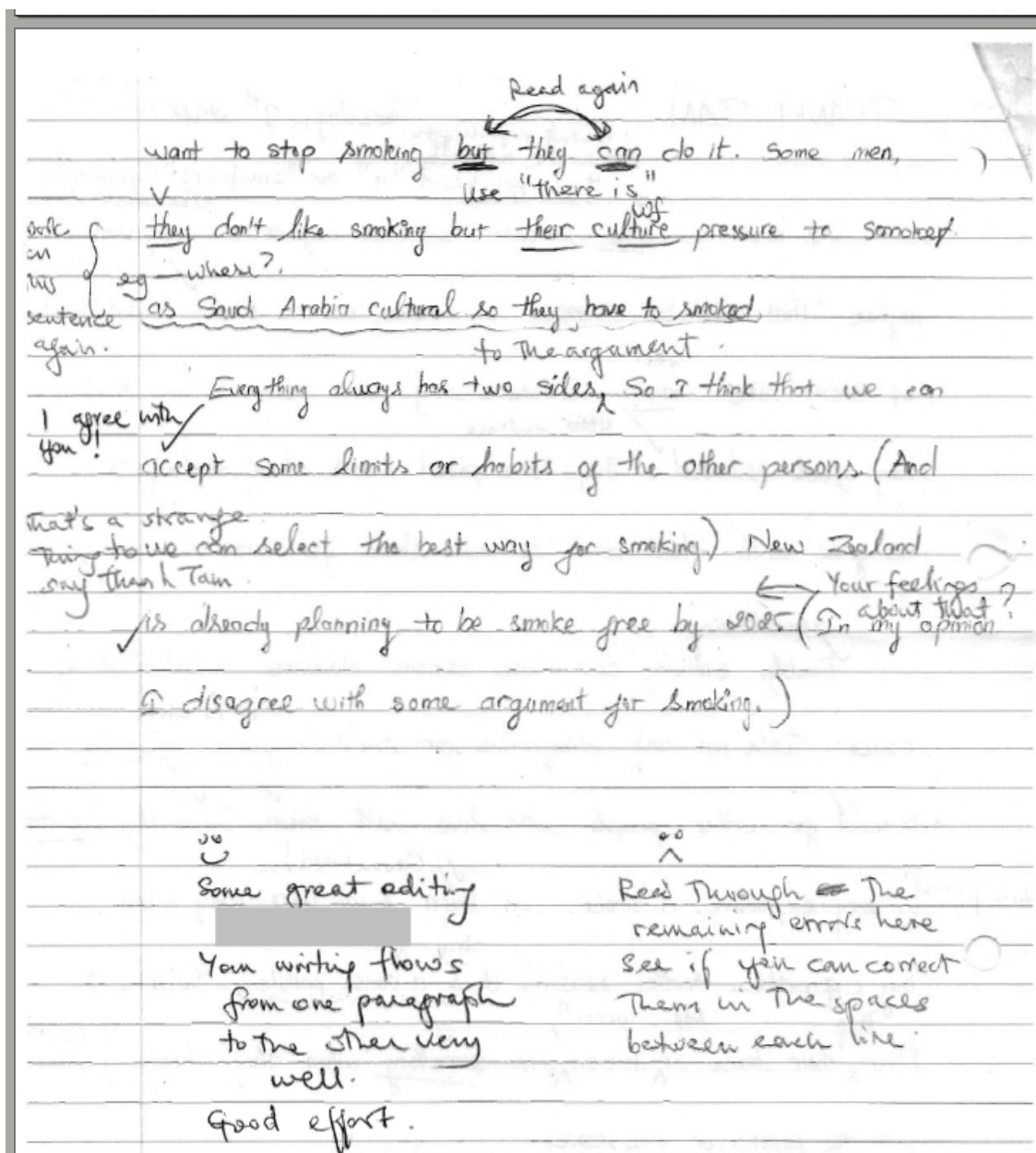
Not appropriate. On the other hand, they still have different ideal for their future, it depends on the factor effect their life in the past. For example: decided to open the flower shop and trying to work with her children and her husband. In her opinion, when her family work in the same place, she might easily to communicate with her family and she can completely take care of her children and her husband as well. Someone left such as decided to find a good job in the future.

In conclusion, my research helps me get more information from my class mate. All of them have same aim want to reach, they want to have nice future and offer something for their society. However, my friend was very comfortable when they shared information to me. I can take out some of their experience and make my plan is better.

Figure 37 illustrates how teacher T02 provided feedback on Submission 2 of a Vietnamese student in the class.

Figure 37: Scenario 1 - Observation of marking Submission 2





The teachers marked the tasks using their actual methods, writing handwritten comments and correction codes as required. I observed:

- the instruments used to insert the feedback;
- the academic methods (correction codes and resources) accessed and/or used;
- where the feedback was written on the page;
- the amount of feedback, and whether this was praise or criticism;

- the consistency of feedback between the work of students marked by the same teacher, and between work marked by different teachers;
- the time it took to mark work;
- whether teachers made notes regarding students' work in the teachers' respective planning (log) book;
- whether teachers referred to earlier tasks to help determine feedback on current tasks;
- teacher reactions and body language when marking, and whether this changed over the course of the entire marking process.

At the end of the observations, I continued the fieldwork with the interviews.

7.6.2 Scenario 1 - Interviews

All teacher and student interviews were held at the research site, in a tutorial room or classroom, to ensure a naturalistic environment. Once I had welcomed the participant, I invited them to sit opposite, or diagonally to, me and then explained how the Scenario 1 interview would take place. I then showed the participant the interview questions cards I had prepared and verified comprehension of the concepts used. In this way, I sought to maximise the quality of the responses and minimise participant anxiety.

Having confirmed that the ethical and administrative issues had been completed, I started the video and/or audio recorder and recorded the entire interview. Additionally, I took notes to complement the recordings (e.g. to facilitate the recollection of impressions, identify the body language and emotions of participants, note potential new questions, and highlight recurring statements expressed by participants).

In respect of the six teacher participants, the interviews lasted between 30 and 60 minutes. The framework of questions is given below:

Figure 38: Scenario 1 - Framework of interview questions (teachers)

Scenario 1 1. Describe how you prepare for a lesson a) consult syllabus b) refer former T's notes, reports c) plan teaching aims d) customise to students' strengths and weaknesses e) determine H	Scenario 1 2. What is student homework? a) frequency b) type c) allocation method / instructions d) scale e) S/T/F perceptions of H
Scenario 1 3. Approx. breakdown of working day a) lesson-planning b) teaching c) marking homework d) non-teaching work exc. H e) perceptions of time spent on the above	Scenario 1 4. What motivates students to do homework? a) rewards: qualification, b) external factors, parental praise, CV/Job c) pleasure of learning / personal development d) threat of extra work e) S/T/F perceptions of motivational factors
Scenario 1 5. Describe your feedback on homework a) formative / summative b) error identification and/or corrections c) customised comments based on historical data per S d) performance change comments e) S/T/F perceptions of feedback	Scenario 1 6. How does feedback change regarding: a) portfolios / journals / project work? b) reading / research / presentations? c) allocation method / instructions? d) motivation to perform work (S) and appraise it (T)? e) recording performance and learning from feedback?
Scenario 1 7. Can you explain your non-teaching work? a) meetings (pedagogical, team-building, social) b) professional development (PD) c) lesson-planning, resource-making/finding, video/audios d) marking, talking to students e) reports, performance observations / analysis	Scenario 1 8. What are computers used for? a) S/T/F current uses b) S/T/F expectations c) accessibility d) frequency, duration e) adoption strategy, support, training, S/T/F perceptions

The numbered questions relate to the general areas I sought to investigate, while the boxed questions from a) to e) represent the categories under which: (i) I anticipated being able to order the teachers' responses, and (ii) I wished to seek more in-depth responses. Due to the partly-inductive nature of the interviews and to the engagement of the participant in the particular topic, the quantity of data provided by the participants differed from category to category.

In respect of the seven student participants, the interviews lasted between 20 and 30 minutes. The framework of questions prepared for the students is given in Figure 39.

Figure 39: Scenario 1 - Framework of interview questions (students)

Scenario 1– Students 1. What are the reasons for doing this English course? a. self-improvement b. tourism with purpose c. external pressures (parents, educ. step) d. friends / social e. none / uncertain / gen. appeal of NZ	Scenario 1– Students 2. How important is self-study? a. qualitatively b. quantitatively c. purpose / benefits d. how compare NEC/NMIT with own school e. what would S like to change
Scenario 1– Students 3. Describe the study process for: a. one week (allocation of time <, >, and during LP) b. one topic / teaching segment / grammar unit c. self-study (how much, how do, where, when) d. accreting H / discrete H / revision / preparation e. interaction on H (S-S and S-T)	Scenario 1– Students 4. What is the most useful form of feedback on your work? a. classwork / homework b. verbal / written / PC c. formative / summative d. method (PC, notes, LMS) e. T-S, S-S, self-appraisal
Scenario 1– Students 5. How much do you use a computer? a. for completing new / reviewing old H / tasks b. personal / socialising c. resource / research / self-improvement re EFL d. where / when / how much / how / what e. how store / retrieve work in NZ / in home country	Scenario 1– Students 6. Which factors affect your learning performance? a. S-S social, T characteristics and competence b. school environment and resources c. health, wealth and well-being d. activities, weather e. course content, method, quantity, quantity
Scenario 1– Students 7. Which aspects of your learning environment would you change? a. class size, composition, location, management b. material, method, resources c. timetable, duration, frequency, self-study d. tests, qualifications, QA e. what do you think other students think?	Scenario 1– Students 8. In an ideal world... a. would it help to be able to remember mistakes? b. would you like to prove performance change? c. what combination of factors would be needed to have all SS use PCs for studying / H? d. perceptions of Moodle and online learning? e. how will education change in the next 50 years?

The numbering and categorisation of questions followed the same logic as that used for teacher participants. In both sets of interviews, I asked the first (numbered) questions, then selected from the five sub-questions an appropriate direction to guide the interviews. I allowed participants to dwell a little, when they chose, as I interpreted this to mean the topic was of greater significance to them than those topics they responded to briefly.

With most participants, the interviews covered at least four of the five sub-questions.

Following completion of the interviews for Scenario 1, I wrote up the notes and transcribed the interview recordings. The next stage was Scenario 2 – the experiment.

7.7 Fieldwork - Scenario 2

7.7.1 Scenario 2 - “Wizard of Oz” Experiment

Scenario 2 introduced the “Wizard of Oz” experiment (Kelley 1984), as mentioned in the Introduction. This combined the simulation of QAS use and the realia of actual feedback tasks to maximise the naturalistic context of the experiment and to promote a feeling of familiarity and confidence.

The experiment in Scenario 2 was run for teacher participants only, and identified whether or not:

1. teachers found the QAS approach easy-to-use
2. teachers could locate and insert feedback correction codes and comments more quickly with the QAS presentation
3. teachers found the default correction codes and comments a suitable basis on which to mark students' homework tasks
4. the mechanical process of moving their writing hand away from the work they were marking to emulate use of the mouse to insert feedback visibly reduced the teachers' focus on the students' work
5. teachers liked the simulated QAS and were comfortable using it
6. teachers expressed any physical or emotive signs of frustration or dislike of the simulated QAS
7. teachers found the QAS report forms easy to use and understand.

The teacher participant providing the feedback was seated at a table in the tutorial room, and I sat beside them. To emulate the provision of feedback, default sets of comments and correction codes were printed and laminated, ready for repeated movement towards and away from the teacher doing the marking (see Figure 40, Figure 41 and Figure 42, below).

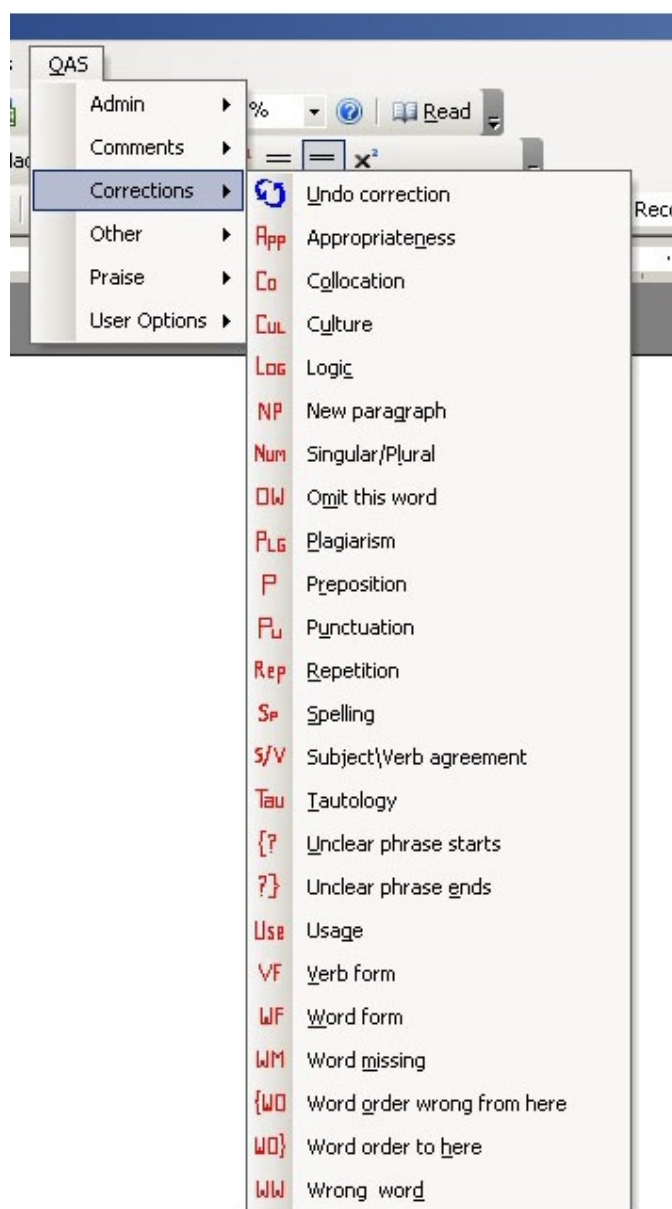
Figure 40: QAS comments used by teacher participants

Category	Criticism	Frequency
General	Please see me after the class.	
General	Please arrange a time to see me, so that we can go through this.	/
General	Please re-write this.	///
General	Please rewrite the text between the marks.	
Grammar	Please pay more attention to your spelling.	
Grammar	Please pay more attention to your word order.	
Grammar	Please pay more attention to your paragraphing / layout.	
Grammar	Please pay more attention to your vocabulary / choice of words.	
Grammar	Please pay more attention to your punctuation.	/
Grammar	Please pay more attention to your subject/verb agreements.	
Grammar	Please pay more attention to capitalisation.	
Instructions	Please read the instructions more carefully.	/
Instructions	You seem not to have read the instructions.	
Instructions	Refer to the recommended resources.	
Plagiarism	One or more parts of the text appear to be plagiarised.	
Plagiarism	Please reference the text you have copied from other sources.	
Plagiarism	I cannot mark plagiarised work, so please revise your work and resubmit.	
Portfolio	Please correct the errors marked and put this work into your portfolio.	///
Portfolio	If you'd like to add this to your portfolio, please revise your work and resubmit it.	
Process	Please submit your work on time.	
Process	Please resubmit your work as soon as possible.	
Process	Please explain why you have not done the work instructed.	
Process	Please follow my guidelines for writing (layout) your work.	
Structure	The paragraphs do not flow well.	
Structure	The links between the paragraphs need improving.	/
Structure	You need to work on cohesive devices (links) between ideas.	/
Structure	Try to avoid using memorised text.	

Figure 41: QAS comments and user-defined comments added by participants

Category	Praise	Frequency
Compliment	Good work.	///
Compliment	An excellent piece of writing.	
Compliment	Good focus.	
Compliment	Well done.	///
Compliment	Thanks for this interesting piece of writing.	
Grammar	You have worked hard to improve your grammar.	
Grammar	Big improvement on your spelling.	/
Grammar	You've reduced your word-order mistakes.	
Instructions	You've followed the instructions very well.	/
Instructions	You've done all the parts to the question. Thank you for following the instructions.	
Lay-out	Your lay-out is very clear.	/
Process	Thank you for resubmitting your work.	
Process	You're doing well with correcting and resubmitting your work.	
Referencing	I like the way you've referenced the words of another author.	
Structure	Good paragraphs. The text flows well.	//
Structure	Good cohesive devices (links between sentences and paragraphs).	//
	<i>Good to put a time word here</i>	1
	<i>It sounds very much like a postcard. Well done</i>	1
	<i>You may want to look again at your sp. & punc.</i>	1
	<i>Good word</i>	1
	<i>You often add words that are not needed.</i>	1
	<i>Good punctuation</i>	1
	<i>Try this word</i>	1
	<i>Good</i>	

Figure 42: Correction code used for experiment



When I started the timer, the participant started reviewing the work of one of their students. The moment the participant decided to add a feedback item, the participant would tap with their pen where they wished to insert the feedback item. They would then vocalise the feedback item to add, e.g. "Spelling" (a correction code item), or "Good use of link words" (a comment item). On hearing the participant vocalise the feedback item, I would slide the appropriate feedback item list towards the participant, thus emulating the movement of the drop-down menu, and the participant would tap on the required feedback item. At this point, I would record by hand on a report

form the feedback item added, and in this way reflect the functionality of the prototype QAS database (see Figure 43).

Figure 43: Record of correction codes added

PhD Experiment – record of correction codes added			
Correction Code	Frequency	Custom Codes	Frequency
Undo correction		INCOMPLETE	
Collocation		PREPOSITION	
New paragraph		ARTICLE	
Omit word		CAPITALISATION	
Punctuation		LOGIC	
Repetition			
Singular/Plural			
Spelling			
Subject/Verb			
Unclear (start)			
Unclear (end)			
Usage			
Verb form			
Word form			
Word missing			
Word order (start)			
Word order (end)			
Wrong word			

I would then remove the list, emulating the closing of the drop-down menu. If the participant wanted to *add a correction code* that was not on the list, they would click on “Options”¹³ in the QAS Correction Code drop-down

¹³The “Options” menu item in the prototype QAS calls up a user form in which users can add new

menu, vocalise the item to add, and I would add this to the “Custom Codes” column in the “Record of Correction Codes Added” (Figure 43). In the same way, if the participant wanted to *add a comment* that was not on the list, they would tap on the “Options” menu item, vocalise the comment to add, and I would add this to the bottom of the comments list. The simulated marking process continued until the participant was satisfied they had provided sufficient feedback for the whole piece of writing.

This experiment facilitated the measurement of time taken to mark homework and to provide summary comments. It allowed me to observe teacher behaviour – actions and reactions, facial expressions and emotions. It proved effective in simulating use of a new piece of software designed to accommodate existing marking methods, and in recording participants’ use of the simulated software.

I acknowledge that efficient use of new software can only be maximised over a period of time as the confidence and competence of the users increase, but this experiment proved appropriate to reflect this characteristic, as participants were unaccustomed to the process required of them to perform the experiment.

Following the experiment, I held individual, in-depth interviews with all participants to investigate perceptions of, and reactions to, use of the prototype QAS in Scenario 2.

7.7.2 Scenario 2 – Interviews

7.7.2.1 Students

The Scenario 2 interviews for student participants were performed to investigate student reactions and responses relating to questions on feedback administered by the prototype QAS compared to actual (non-QAS) feedback, and how useful they considered the feedback reports generated by the QAS. More specifically, I wanted to ascertain whether:

1. students could read teachers' QAS feedback comments more easily;
2. students could locate and read teachers' correction codes more efficiently;

codes. This functionality was not available in the simulation.

3. students valued the option to submit their work in handwritten form as well as in word-processed form (and still receive feedback administered by the QAS);
4. students found the QAS reports useful as a tool for reflection on past feedback for future task completion.

The interviews were held in a tutorial room at the research site. Seven students participated. I arranged appointments at the convenience of the students over a period of six weeks (in the nine-week term). The students were called one at a time, sitting beside me at the table in a collaborative way, as peers might do. Following the preliminary introduction and concept-checking to make sure terminology and instructions were understood, and to ensure the students felt at ease, I presented the anonymous homework tasks with three types of feedback and started the video recorder.

Sample data were assembled for use in the interviews, and comprised:

1. handwritten feedback on handwritten work (Figure 44);
2. QAS-simulated feedback on handwritten work (Figure 45);
3. QAS-simulated feedback on word-processed work (Figure 46).

Figure 44: Scenario 2 - Handwritten feedback on handwritten work

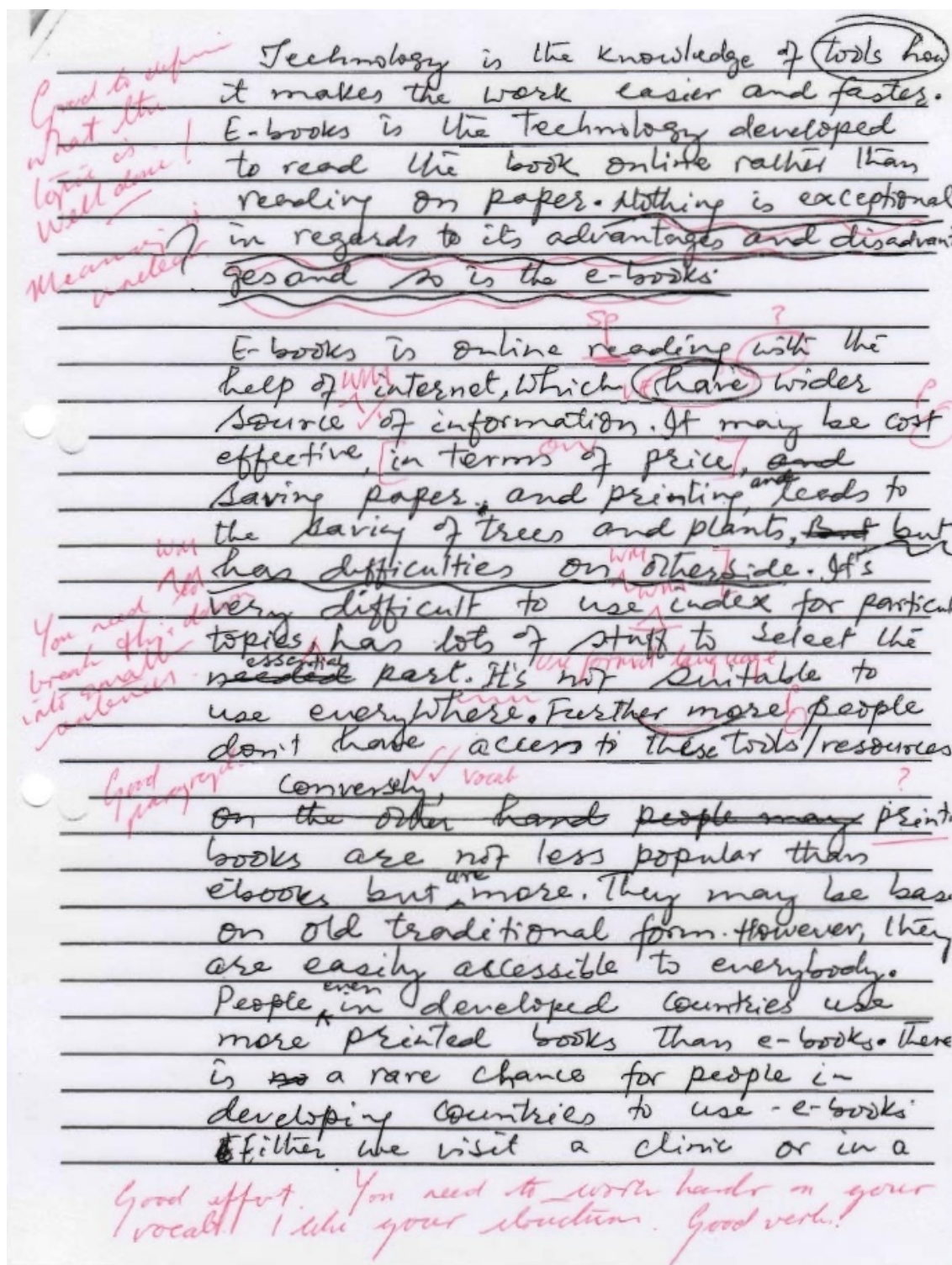


Figure 44 is an actual feedback task. I provided the feedback (in red) to emulate the most customary method of marking observed at the research site. The sample was presented and discussed as a baseline for comparing feedback in samples in Figure 45 and Figure 46. The questions I asked were not pre-drafted and varied slightly from student to student. However, all students were asked to:

1. read the handwritten work of the submitting student;
2. read the comments written by the teacher;
3. identify and explain the correction codes used;
4. interpret the symbols (selected from: wiggly lines, carets, ticks, question marks, square brackets, circles and underlines);
5. express their satisfaction with the quality of feedback
6. express to what extent they would have been satisfied if the homework had been theirs.

The students responded to the above questions and supplemented their answers with additional information and comments. I allowed the students to express their emotions, also when this did not relate specifically to the questions asked. Recording such expression allowed me to analyse and understand better the background, or context, of the students' responses.

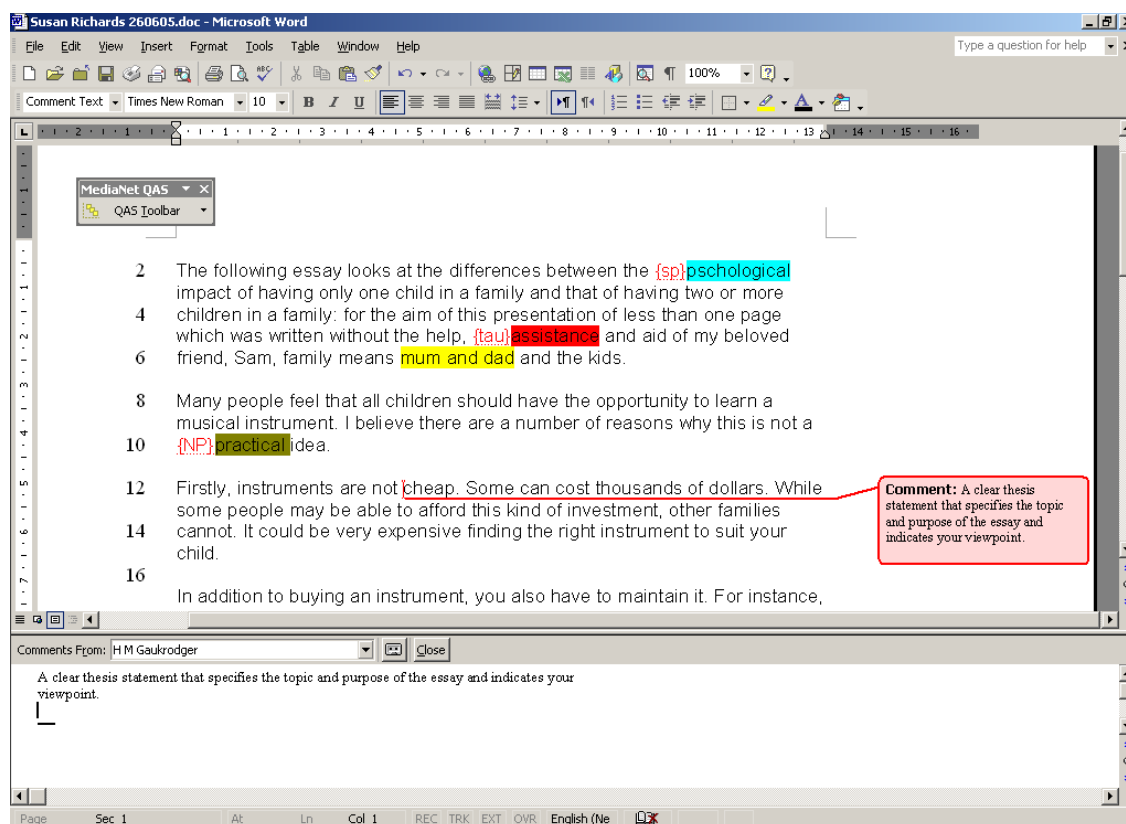
I then presented Figure 45, illustrating an actual feedback task with marking that I had inserted to simulate use of the QAS-Grid. The feedback items are highlighted according to the type of item (preposition, verb form, link word) and a correction code (e.g. "PR" (preposition)) is added to the highlighted box. Comments are shown in a red box in the margin, and are linked to the feedback item with an arrow.

PR Sunday, I woke up late. I PR listened music, I cooked lunch and I ate lunch at 1.00 pm. I PR went sleep at 1.30 pm. I woke up and cooked dinner at 5.00 pm. → I ate dinner at 5.30 pm. I showed PR several and I did homework at 6.00 pm. I walked PR in the street at 9.00 pm. I went home and I PR went sleep at 10.30 pm. P Today, I felt bored and tired.

Finally, I presented the sample in Figure 46. This illustrates an artificial task that I had marked prior to the interview using the prototype QAS. It was used in the experiment to illustrate the options of colour-coding the feedback items and adding correction codes. It also displayed the teacher's comments that the early prototype of the QAS inserted using Microsoft's default comments function.

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Figure 46: Scenario 2 - QAS-simulated feedback on word-processed work



Following the interviews of student participants examining the different feedback types on handwritten homework, the QAS-Grid and the QAS-WP, I presented the participants with the QAS Student Progress Report (Figure 47). The information provided in the report was added manually for a fictitious student and course.

Figure 47: Student progress report

Student Progress Report

Date of Report: 28.05.11 For period from: 01.05.11 To: 20.05.11

Student Details

Student ID	1044221	Course code	ELP 2344	Assignments allocated	3
Student name	Nina Bukowski	Course name	English FCE prep.	Assignments submitted	3
Known as	Nina	Semester	1	Year	2011
		Tutor	Samantha Brown	Submission percentage	100
				Assignments resubmitted	3
				Re-submission percentage	100

Attendance **Corrections and Comments** **Grades**

Correction	Occurrences	Date	Comment
App	7	05.05.11	This is a good start. Focus on verb tenses. Good vocabulary.
Co	15	08.05.11	You need to read the question more carefully. Good progress with tenses, but you still have problems with auxiliary verbs.
Cul	2	.	.
Log	4	12.05.11	I like the introduction - tells the reader what to expect. Good topic sentences to start paragraphs. Well done.
NP	12	.	.
Num	10		
OW	21		
Plg	2		
p	17		

(Sort data by single-clicking on any of the column headings. Click again to reverse the sort.)

No. of error types: 15

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The participants had not seen the report before, so I gave them one minute to look at it. I then asked the following questions:

1. What is this report?
2. What information does it give you about the student?
3. How many homework tasks (assignments) has the student done?
4. How many has she resubmitted?
5. Describe the student's most common grammatical errors.
6. What is the advice the teacher gives the student to improve?
7. Is this report useful?
8. Would you be happy to have such a report?

The responses to these questions, as well as participant reactions to viewing the report, provided the data necessary to analyse the value of such a report. It was not feasible, however, to determine from discussing just this one report whether the availability of such collated feedback data

would change student attitudes and/or behaviour in relation to task completion.

7.7.2.2 Teachers

Scenario 2 interviews for teacher participants were performed to investigate reactions and responses, and any changes in behaviour, relating to feedback as a result of:

- a) using the prototype QAS simulated in the experiment;
- b) viewing selected QAS reports.

The five teachers were interviewed one at a time in a tutorial room in their normal work environment. Four teachers completed their interviews immediately after the experiment. One teacher extended her interview with a second meeting a week after the first meeting. The interviews were held over a period of six weeks in one nine-week term.

In relation to topic a), above, I asked all teachers the following questions (the wording varied slightly from person to person):

1. Where do you keep records of the feedback you give students?
2. Can you describe how awkward or suitable the QAS marking system appeared to you?
3. How fast did you find it – using the QAS to mark homework?
4. Do you see any advantages or disadvantages in having a lot of comments stored for use in the QAS database?
5. Can you think of any ways you could make the database more useful?
6. If the database is customisable, one teacher might add a comment that another teacher deems inappropriate. What's your take on that?
7. Are there any ways you can think of to ensure the quality of comments?
8. You've just marked three pieces of work. What was the most common mistake?
9. Which student had the most "Omit Word" mistakes?
10. How easy/clumsy was it to use the QAS?

Following completion of the questions on topic (a), I went on to ask questions relating to topic (b), the QAS reports. The reports are not “live”. That is, they cannot be displayed by the QAS in its current prototype form. The current design status is as standalone items intended to demonstrate the planned functionality of the QAS.

I presented the teachers with four feedback reports to observe how they reacted to the data and to record how they responded to my questions on quantitative and qualitative issues. The teachers had not seen the reports before, so the time the participants took to peruse the data in the printed QAS reports reflected the time they might be expected to take in viewing live data on a computer. The questions I asked are described under each respective report.

Figure 48: Assignment details

The screenshot shows the 'QAS Administration' window with the 'Assignment details' tab selected. The form includes the following fields and options:

- Assignment ref.:** HG/T1 Task 2
- Instructions:** Write a 200-word essay on: "Learning English in New Zealand. Use the plan prepared in class. Look at the resource material below.
- Type:** New assignment
- Submission deadline:** 12th August
- Auto e-mail reminder:** ☒ Enable ☐ Disable
- Grace period (days):** 3
- Resource material for students (optional):**
 - URL:** http://cnn.com; http://www.nzherald.co.nz;
 - Library:** Book: ISBN 23 234 1234; Newspaper: NZ Herald 15.06.11.
 - Lecture/Tutorial:** Mon 30th July
- Assignment category (optional):**
 - Category:** Select or add
 - Sub-category:** Select or add
 - Key words (separate with commas or semi-colons):**
- Tutor check list (optional):**
 - ☒ Assignment details provided in writing
 - ☒ Assignment details available on website
 - ☒ Hand-outs given
 - ☒ Moodle / Blackboard updated
 - ☐ Forum activated
 - ☐ Chat enabled
 - ☐ Pre-checked for plagiarism potential
 - ☒ E-mail addresses confirmed

At the bottom of the form are buttons for E-mail, Print, Save & Continue, Save & Exit, Cancel, and Help. The footer contains copyright information: Copyright: MediaNet Ltd 2008. All rights reserved. Patent App. No.: NZP 538471.

The report in Figure 48 would be completed by the teacher when assigning homework.

The questions I asked in relation to this report included:

1. Can you describe the report and its purpose?
2. How useful is the information in this report?

3. How do you currently record the data that you can see in this report?
4. Would you use this report now, if it were available?

I then presented the report in Figure 49.

Figure 49: Group assignment analysis

QAS Analysis

Assignment Analysis

Date of analysis: 13th August 2011

Assignment details | Student and course details

Assignment ref. HG/T1 Task 2

Instructions Write a 200-word essay on: "Learning English in New Zealand"
Use the plan prepared in class. Look at the resource material below.

☒ **First submission** Submission deadline: 12th August 2011
☐ **Re-submission** Submission date: 12th August 2011

Attendance | Comments | Corrections | Grades & Summary

+/-	Occurrences	Comment
+/-	2	Some valid points, but the text lacks cohesion. See essay planning notes.
+	1	A good introduction; it tells the reader clearly what to expect in the essay.
-	3	Your opinions lack support. Try to explain why you hold an opinion, then seek references to support your opinion.
-	3	The essay wanders off topic. Try to focus on arguments you draft in your plan.

(Sort data by single-clicking on any of the column headings. Click again to reverse the sort.)

Special circumstances

☒ Recent arrival/admission ☐ Family/Health issues
☐ Irregular attendance ☐ Other
☐ Language problems

Add confidential notes here (not shown to student)

The students have only been in the country three weeks. They are not used to Western education methods.

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The questions I asked in relation to this report were:

1. Can you describe the report?
2. What are the most common problems experienced by the group?
3. Are there any extenuating circumstances influencing performance?
4. Would the data in this report help you in your future teaching and/or feedback?

My next questions related to the Student Progress Report.

Figure 50: Student progress report

QAS Report: Student Progress

Student Progress Report

Date of Report: 28.07.11 For period from: 01.05.11 To: 30.06.11 Requested by: Tutor

Student Details

Student ID: 1044221 Course code: ELP 2344 Assignments allocated: 6

Student name: Nina Bukowski Course name: English FCE prep. Assignments submitted: 6

Known as: Nina Semester: 2 Year: 2011 Submission percentage: 100

View report for: Essays Tutor: Samantha Brown Assignments resubmitted: 5

Re-submission percentage: 83

Attendance Comments Corrections Grades

Correction	Occurrences	Date	Action Taken
App	7	08.05.11	Provided graded readers.
Co	15	15.05.11	Student asked to draw up table of feedback relating to essay structure and plan future essays on notes in feedback.
Cul	2	19.05.11	References given (Thomson/Martinet, Murphy) to practise preposition ex.
Log	4		
NP	12		
Num	10		
OW	21		
Plg	2		
p	17		

(Sort data by single-clicking on any of the column headings. Click again to reverse the sort.)

No. of error types: 15

Notes

Nina was ill for two weeks (25.05.11 - 07.06.11), but still managed to complete all tasks, with only one resubmission lacking.

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I asked the teachers:

1. What can you tell me about this fictitious student?
2. What does the expression "Action Taken" (in the report) mean?
3. How would you describe the student's conscientiousness regarding homework?
4. How would this report help you plan your subsequent lessons and feedback?

The last report I gave the teachers (Figure 51) was the most complex. The report would allow teachers to extract task feedback for any student in the respective teacher's class for two selected tasks. The report would then compare the feedback for the two tasks and calculate the changes in performance with regard to the grammatical errors made.

Figure 51: Student progress report - resubmissions

Student Progress Report - Resubmissions

Date of Report: 28.07.11 For period from: 01.05.11 To: 30.06.11 Requested by: Tutor

Student Details

Student ID: 1044221 Course code: ELP 2344 Assignments allocated: 6
 Student name: Nina Bukowski Course name: English FCE prep. Assignments submitted: 6
 Known as: Nina Semester: 2 Year: 2011 Submission percentage: 100
 View report for: Essays Tutor: Samantha Brown Assignments resubmitted: 5
 Re-submission percentage: 83

Submissions

Correction	Submission 1	Submission 2	Change %
App	2	1	50%
Co	3	1	66%
Cul	2	0	100%
Log	4	2	50%
NP	12	4	66%
Num	10	1	90%
OW	21	0	100%

Comments

1. Very good spelling. Well done. Look at the resources (URLs) in the task instructions to read more about essay structure - particularly paragraphs. You can use other people's work, but you need to reference it - please see the attached sheet for ways of doing this.

Correction	Submission 1	Submission 2	Change %
App	3	1	66%
Co	2	1	50%
Cul	0	0	0%
Log	1	0	100%
NP	2	0	100%
Num	4	1	75%
OW	10	0	100%

Comments

2. Good paragraphing. Your essay is well structured. You seem to have mastered how to reference other people's work - this is good progress. There are still many "omit word" mistakes - this means you are using too many words - perhaps because of Language 1 interference, or perhaps due to collocation errors. Do talk to me about this at our next tutorial.

Correction	Change %
App	-50%
Co	66%
Cul	100%
Log	75%
NP	83%
Num	60%
OW	52%
Plg	100%
P	51%
Pu	60%
Rep	10%
Sp	25%
S/V	7%
Tau	0%
?	60%

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The questions I asked in relation to this report included:

1. What does this form tell you about the progress of the student?
2. What can you use this report for?
3. How could relievers use the data in this report?
4. Would you use this report if it were available now?

The discussion of this report completed the interviews with teachers. The next stage of the fieldwork involved interviewing the administrators.

7.8 Fieldwork – Administrator Interviews

The method I adopted to validate the data provided by the teacher and student participants was triangulation. To do this, it was necessary to interview the academic administrator. This administrator had a comprehensive overview of the English Language Programme:

"I'm manager of staff and budget. In a second sense, I'm an academic in that I manage the curriculum and design the mechanics of the curriculum or the programme document, and am responsible for the quality management and compliance of the program. I also am a tutor, so my main jobs are with student orientation and working with student groups and relief work and sometimes I teach courses. I'm project manager with group business and coordination duties" (Administrator A01).

With such a range of responsibilities, Administrator A01 was a valuable resource for cross-checking the data supplied by the teacher and student participants, and for supplementing the data with additional insight. The administrator was not directly involved in the provision of feedback on student tasks, but her managerial and administrative functions did involve her with feedback processes, and in the resolution of feedback issues.

I interviewed this administrator twice, each interview lasting 60 minutes. The interviews were held in the administrator's office. Figure 52 shows the pre-drafted questions forming the framework for the interview with the administrator.

Figure 52: Interview questions for administrators

Questions for administrators

1. What is your role?
 - a. What are your areas of responsibility and executive authority?
2. How do you interact/work with teachers?
 - a. Method and quantity of communication
 - b. To what extent do you direct/instruct teachers as to what to teach and how to teach?
3. How would you define the term homework?
 - a. What do you know of your staff's process for allocating and appraising homework?
 - b. (Is the homework moderated for consistency?)
 - c. (What is the role of computers in homework (in teaching)?)
4. How important for your administration processes is the feedback that teachers give their students?
 - a. how would you rate teacher feedback now?
5. Have complaints from students or teachers ever related to homework/feedback?
 - a. What is your role here?
6. How would a system help resolve problems between teachers and students
 - a. how would you know, for example, if feedback was an issue
7. What do you find good or bad about the following processes
 - a. student placement
 - b. student progress change of class to next/previous level
 - c. quality control of students, teachers
 - d. what would you like to change in these processes?
8. What is the process for relief teachers to teach and allocate homework?
9. How do you practise quality assurance in the English language program
 - a. records of teaching -- following the syllabus
 - b. quality control -- what are the checkpoints
 - c. consistency -- an individual teacher and all teachers
 - d. homework -- marking -- formative/summative
10. What information goes to the faculty database
 - a. do teachers post such information or is it the administrator only
 - b. is it editable
 - c. are records printable for students
 - d. how does the database safeguard against loss of paper copies of e.g. homework

During the course of the interviews, matters arose that evidenced the need to interview non-academic administrators. I therefore arranged one-hour interviews with two administrators whose role was to provide student support services and to help resolve academic disputes (for example, feedback issues on homework).

The above questions proved a suitable starting point for all administrator interviews. However, the non-academic administrators moved the topics towards student support, dispute resolution, and the use of ICTs. The input from the academic and non-academic administrators helped complete a full circle of research into feedback, and provided an additional perspective on the potential changes in behaviour that implementation of the QAS might bring about.

7.9 Categorising and Coding the Data

The data collected from the seven students and five teachers was recorded using a digital video recorder, then transferred to my private PC. The transcription of these data comprised 176 A-4 pages, totalling 104,000 words. I then proof-read the document, and performed preliminary categorisation using an approach that adhered loosely to an approach frequently discussed in the literature (Charmaz 2000), involving coding the data (categorising) and memo-writing.

To assist in the more refined categorisation and analysis of the research data, I used the program "nVivo" from QSR Software. This simplified the handling of the large quantity of data and helped identify recurring themes.

The benefits of using such software for this project were to: facilitate writing up, editing, coding, storing, searching and retrieving data, data linking, memoing, analysing content, displaying data, and drawing and verifying conclusions (Weitzman 2000). More specifically, it helped exploit the software to:

"conduct multiple searches to zero in on the data that really apply to a particular question... to re-sort a database, redefine codes, and reassign chunks of text... to revise the analysis and the thinking about it... to pull together all the text for cells in a complex matrix... to run down provocative leads and new ideas" (op. cit. p. 807.)

7.10 Data Validation

According to Creswell and Miller (2000), validity methods for qualitative research may be categorised under five headings: member checking, triangulation, thick description, peer reviews, and external audits. In this project, validation was carried out using triangulation methods.

Patton identifies four kinds of triangulation contributing to verification and validation of qualitative analysis: methods triangulation, triangulation of sources, analyst triangulation, and theory/perspective triangulation (1999). In this project, I followed an approach combining triangulation of methods (observation, interview, experiment) and triangulation of sources (teachers, students, administrators). This method is well supported in the literature:

"The logic of triangulation is based on the premise that no single method ever adequately solves the problem of rival explanations. Because each method reveals different

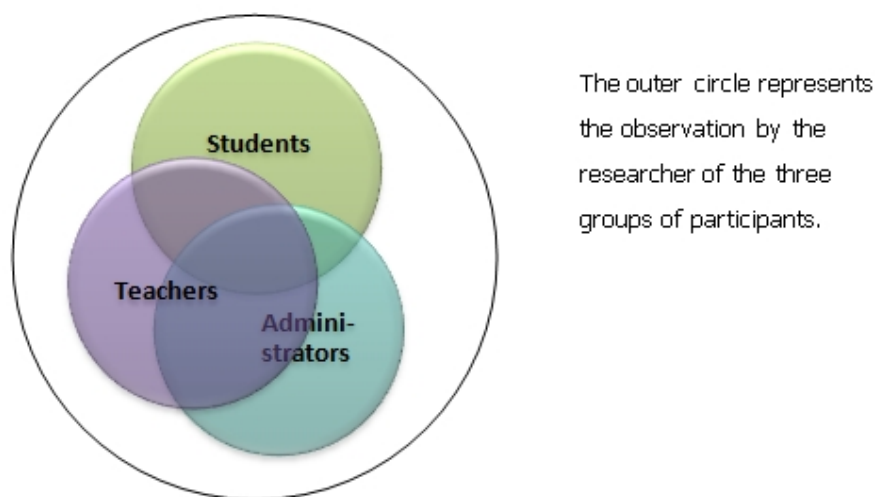
aspects of empirical reality, multiple methods of data collection and analysis provide more grist for the research mill. ... " (Patton 1999, p.1192)

However, these methods were subject to strict time constraints, as student participants were available for only seven weeks of their nine week terms (at which time, some students left the institution and some returned to their home country). To complete data collection, therefore, additional students from successive terms participated, and the triangulation method of validation exploited different approaches involving observation and interview with and without an experiment (as discussed above). Participant documents (homework tasks, student records, teacher feedback) as well as documents prepared by the researcher also contributed to the fieldwork and subsequent data validation. This approach accords very well with one of the methods put forward by Patton:

"Triangulation is ideal, but it can also be very expensive. A researcher's limited budget, short time frame, and narrow training will affect the amount of triangulation that is practical. Combinations of interview, observation, and document analysis are expected in much fieldwork." (op. cit. p.1192).

In view of the constraints placed on the validation approach, the method I adopted had to maximise validation within a small window of opportunity. The validation model shown below illustrates the approach taken.

Figure 53: Validation model



Ideally, the circles of participants would overlap completely, indicating that all data were validated by all participant groups. However, such a scenario is not realistic, nor feasible. Discussion questions may be interpreted differently by different participants. Furthermore, the partly-inductive nature of the interviews led participants to narrate their reality of feedback in subjective ways that took the discussion to differing boundaries within the interview framework.

In this project, as illustrated by the model, and consistent with the validation method defined earlier in this section, the responses of some interview questions put to students were validated by questions put to the teachers and administrators. Likewise, responses to some questions put to the teachers were validated by administrators and students. The consequence of research constraints was that some data from each group could not be validated by other groups (as illustrated by the non-overlapping sections of the above model). By using a combined validation approach, however, certain additional data could be validated, and researcher observation was a key method of accomplishing this. An example of such validation can be illustrated with the question that was put to teachers: "Do you mark all the mistakes in students' homework?" In this fieldwork activity, three teachers said they did, but my observations of these teachers marking their students' homework indicated they did not. This inconsistency in responses triggered supplementary questions to cross-check interpretation of the question. It transpired that the term "all the mistakes" in my question was interpreted differently. Those teachers who stated they had marked all the errors, but whom I observed had not flagged them all had interpreted the term to mean "all *significant* mistakes", while the other teachers had interpreted the term literally "*all* mistakes". When the term was clarified, the responses were more nuanced: "It depends on the class and the task" (T03), "Well, they [the students] think I identify all the mistakes" (T05).

The final form of validation was that facilitated by members of the same group: intragroup validation. This involved asking the same question of different members of the same group. For example, "Do all teachers practise resubmission?" (instructing students to revise and resubmit their homework tasks after considering the teacher's preliminary feedback). In this example, the teacher participants were unanimous: all teachers *did* practise resubmission. Such unanimity confirms the veracity of the data.

Thus, with an approach that combines methods and uses cross-checking questions to investigate inconsistencies, I have sought to maximise the validity of the data.

7.11 Potential Influences Affecting Data Collection

The literature highlights a number of ways in which field data can be affected by the presence of the researcher. Patton identifies these as: a) participant reactions to the researcher, b) changes in the researcher during the data collection, c) biases of the researcher, and d) researcher incompetence (Patton 1999). I maintain there are two further factors affecting the research data and which cannot be attributed to the researcher: e) the work environment, as perceived by the participants, and f) issues of language competence of the student participants.

Items (a) and (b), I have confronted through the combined research methods adopted (see above, in this section). Triangulation and cross-checking inconsistencies are methods that minimise the effects of these two factors. Item (c) is an issue that all researchers have to acknowledge. As Johnson points out:

"the conduct of fully objective and value-free research is a myth" (Johnson and Onwuegbuzie 2004, p.16)

Since the nature of the project, as participants had been informed, was to investigate the innovative method of administering feedback through the QAS, it was important to declare this to participants. Recognising the bias that the researcher may bring to the study is an acknowledged and well-discussed issue in the literature:

"... the researcher filters the data through a personal lens that is situated in a specific socio-political and historical moment. One cannot escape the personal interpretation brought to qualitative data analysis... This introspection and acknowledgement of biases, values, and interests (or *reflexivity*) typifies qualitative research today." (Creswell 2003, p.182.)

To address this issue and minimise the effects of this bias, I adhered to the method of "self-disclosure and collaboration with participants" (Creswell and Miller 2000, p. 126.). While this method does not remove the bias, it does alleviate some of the participants' potential stress that is caused when

participants believe they must answer in a particular way to accommodate the bias of the researcher.

Furthermore, an information sheet was distributed providing participants with the background for the research. Participants were reminded that it was I who had designed the software that was used in the experiment and which they were evaluating. Notwithstanding this, I acknowledge what Denzin says:

“all researchers bring their own preconceptions and interpretations to the problem being studied, regardless of the methods used: All researchers take sides, or are partisans for one point of view or another. Value-free interpretive research is impossible.” (Denzin 1978, p.23)

I maintain, however, that being a “partisan” (op. cit.) (of the point of view that the QAS is a useful tool), my engagement in the research is both apparent to research participants and unavoidable. This can motivate participants to respond, and as long as the researcher remains aware that the responses may be influenced by the his/her presence, further in-depth questions can be asked to corroborate or reject the participants’ views.

I was also conscious of the fact that my emphasis on feedback during interviews might lead to an increase in awareness by the research participants of the feedback process. This then might inadvertently engender a concomitant feeling that feedback was more significant than the participants previously thought. To minimise this risk, I chose to use open questions as far as possible, to elicit a description of the participants’ experience of feedback, before asking more in-depth questions on these experiences and on the QAS. Further, use of a camera supported my interpretation of the words expressed: participants emotions were captured on the recording and evidenced appropriate analysis.

Item (d), researcher incompetence, is a factor I will leave readers to decide upon. It is my hope that, having read this work, readers will acknowledge the solid foundations on which my conclusions are drawn.

Item (e) relates to the environment at the research site. Regrettably, over the course of the project, the faculty experienced a downturn in student numbers for the ESOL programme. Jobs were lost and austerity measures were imposed. The implications of this for the research are that the teacher and administrator participants were in a demoralised state of mind, stressed

that they might lose their jobs, and overworked. In such a position, the participants might have considered the sacrifice of their time to attend interviews an extra burden. They might also have viewed the prototype QAS as a cause for alarm, as some teachers were less ICT-enthusiastic than others, and might not have accepted willingly the discussion of a new ICT program. In this environment, I found it particularly important to remain conscious of the participants' state of mind, to be judicious in my fieldwork approach, and to listen carefully when participants expressed personal concerns.

Item (f) relates to communication and the language ability of the student participants. I anticipated that as they were, by definition, seeking to improve their language competence, they might not have the linguistic tools to express precisely what they felt. This led me to considering the use of an interpreter. Such a data collection method would not have been new and is supported by Hughes:

"Major cross-cultural studies often employ interpreters or bilingual researchers, although problems associated with lack of linguistic and cultural equivalence still arise (Lonner, W. J. & Berry, J. W. (Eds). (1986))" (2004, p.6.)

In the event, however, all participants save one were able to express themselves adequately to respond to interview questions, and an interpreter was not called upon. The one exception was a Spanish-speaking student, and my competence in Spanish was sufficient to communicate with the student to clarify the particular point she wished to make.

7.12 Summary Comments

In this section, describing how I sought to validate the research data, I have specified the methods used and have acknowledged shortfalls. As stated by Patton:

"Limitations will arise in the situations (critical events or cases) that are sampled for observation (because it is rarely possible to observe all situations).

* Limitations will result from the time periods during which observations took place, that is, problems of temporal sampling.

* Findings will be limited based on selectivity in the people who were sampled either for observations or

interviews, or on selectivity in document sampling” (1999, p.1197.)

Given these limitations, the selected methods revealed valuable data (analysed in Chapter 9). The student participants were keen to offer their views, overcoming pressures of face-to-face interviews and the obstacles of discussion in (for them) a foreign language. Teachers and administrators remained engaged and conscientious throughout the fieldwork and were more than happy to answer all my questions.

Further, I discussed the methods used to permit a comparison of participants’ actual feedback practice with the feedback that could be provided by the QAS.

As evidenced by the participants’ references in Chapter 9, “Fieldwork Analysis – Participant Responses”, the combined methods (described in Section 7.10) proved appropriate for the scale of the research undertaken, and the above research goals were all addressed, though inevitably to a varying degree of depth.

The success of the fieldwork was aided by a number of factors: presentation and distribution of information, flexibility of scheduling, conscientiousness and willingness of participants, and an overall belief in the value of the research. The presentation I made at the research site was a brief 15-minute, non-interactive *exposé* of the aims of the research, given to all the ESOL teachers one term (9 weeks) before the fieldwork started. After this, in the same term, I distributed an academic research information sheet to all potential participants to inform them again of the research aims and of the confidentiality of the data collection.

Finally, in the knowledge that I was someone they had become acquainted with, the majority of participants seemed comfortable in their discussions with me. The pre-drafted interview questions gave the Scenario 1 fieldwork a general structure, and introduced the tone and scope of the research to the participants in advance of the experiment carried out in Scenario 2. The experiment for teachers in Scenario 2 was aided by the fact that the participants were not asked to use a new system; the QAS had been designed to work as teachers already work. It is arguable that the absence of computers to perform the experiment had an effect on the state of mind, and perhaps the actual results, of the fieldwork. Further research with a later, more developed, version of the QAS installed on computers would need to be carried out to ascertain what effects these might be.

Immediately following the experiment, I identified a number of emotions expressed by the teacher participants. There was the anticipated feeling of relief, but, less anticipated, was the feeling of satisfaction. Teachers said using the QAS was easier than expected, would make marking quicker and more consistent. One teacher wanted the QAS installed immediately. Despite the stress pervading the department at the time, teacher participants were generally intrigued and motivated to discuss the project more.

Student participants, who were recipients of QAS feedback, were generally impressed by the QAS – in particular, the clarity of the feedback and the ability to query the database to extract a history of feedback and task details. It enabled them to use feedback well, providing them with the tools necessary to benefit their subsequent work.

The research methods evidenced their appropriateness through the successful collection of comprehensive data that, once analysed, elucidated the implications of using the QAS. The analysis identified how the QAS promoted a feedback system, how it might change teacher behaviour by engendering more consistency in feedback provision and recording, how students' behaviour might be changed by having access to current and earlier feedback, and how all participants perceived its usefulness. The research methods also facilitated an insightful examination of existing and potential feedback methods, demonstrating that the QAS fits comfortably into commonly-practised academic processes and supports the task and feedback process. This research is thus a timely contribution to the limited literature on the subject, as stated by Nicol and Macfarlane-Dick:

"The literature on external feedback is undeveloped in terms of how teachers should frame feedback comments, what kind of discourse should be used, how many comments are appropriate and in what context they should be made. Much more research is required in this area" (2006, p.10).

In Chapters 8 to 10, I analyse the fieldwork and summarise my conclusions.

Chapter 8: Fieldwork Analysis – Accomplishments and Weaknesses

8.1 Summary of What Worked Well with the CCT

The QAS is a software prototype whose design is based on the proven concept of the QAS' forerunner, the Correction Code Toolbar (CCT), as explained in Section 5.7. Before summarising responses and reactions to the QAS' functions and design elements, as identified in the experiment, I present a summary of the evaluation of the CCT.

Figure 54: Feedback summary following presentation of the Correction Code Toolbar (CCT)

FEEDBACK FORM

To complete the form, please click on the grey bits called "fields". Add your name in 1. Click on boxes 2, 3 or 4 to select the appropriate answer. Then, add a number in the fields in questions 5 to 17.

Please enter a number from 1 to 10.

"10" means you agree absolutely. "1" means you don't agree at all.

Any comments can be written in the fields to the right.

1. Name: (Summary of all respondents to date)

School: 2. SoL 3. SEAL 4. Other

Opinion	1-5	6	7	8	9	10
1. The CCT worked well		1		111		111
2. The CCT was easy to use			1	111		11
3. The CCT does not require more than a few minutes training per person		11		1	1	11
4. The CCT allows me to correct work, make comments and praise students in a way that the students will easily be able to read and understand			1	111		111
5. Students will easily be able to see their mistakes and write the corrected form in the space provided		1		11	1	111
6. The CCT will save paper					1	111111
7. The CCT will lead to greater consistency			1	1	1	1111
8. The CCT will allow me to circulate work more easily and therefore save time		1	11			1111
9. The CCT will help students prepare for more online work (task submission and IELTS) and promote their use of IT in general		1	1			11111
10. The CCT will contribute to SoL's and SEAL's efforts to promote UNITEC as an institution at the vanguard of IT use in teaching		1				111111
11. The proposed developments of the CCT student records, error analysis, marking limits, automatic e-mail notifications, etc.) will be useful		1				111111
12. I'd like to try the CCT in my class / department				11		11111
13. I've seen nothing else on the market that is as easy to use, and effective as the CCT	1	1				11111
TOTAL	1	9	6	15	4	54

The feedback summary in Figure 54 shows that there were seven participants who provided feedback on 13 questions. Participants were asked to grade their evaluation of the CCT from 1 to 10, with 10 being the

maximum grade. The evaluation was completed on paper and the papers were given to me either at the end of the presentation, or at a later date chosen by the participants. The participants were not aware of others' evaluations, but names were requested on the evaluation form.

There was a theoretical maximum of 91 for the whole evaluation. Two respondents failed to answer one question, reducing the maximum to 89. One teacher with one question gave a response that was less than 6. All other respondents indicated their agreement with the statements, providing grades ranging from 6 to 10.

Table 5: The Correction Code Toolbar (CCT)

What worked at the time of presentation	Actor	Perceptions
The insertion of correction codes, storing the feedback in the CCT database.	Teacher	Teachers observed it took 2 mouse-clicks and only a few seconds to insert correction codes
The insertion of comments, drawing on the CCT database.	Teacher	Teachers observed the system functioned in the same way as MS Word 2003.
Editing the comments database	Teacher / Admin	Teachers acknowledged what they saw as being useful and effective, but said they needed to try it themselves to see if it saved time / proved necessary.
Customising the correction codes (adding new codes)	Teacher / Admin	n/a (either the participants did not give a clear idea of their perceptions, or I do not remember what these perceptions were).
Customising the colour of correction codes and highlighting	Teacher	n/a
Listing high-frequency words in student's work	Teacher / Admin	n/a
Log-in with username and password	Teacher / Admin	n/a
Task retrieval, opening/saving, numbering and returning by means of CCT menus/user boxes	Teacher	n/a
Rudimentary reports providing statistics of grammatical errors	Teacher / Admin	n/a

8.2 Summary of What Did not Work Well with the CCT

What did not work at the time of presentation

The CCT was presented using a data projector to display the software that was hard-coded onto my laptop computer. It was impossible to ascertain whether the CCT would have worked when/if interfaced with the institution's network.

Use of the CCT to insert feedback items onto scanned handwritten documents was not tested

This presentation of the CCT and the subsequent contract with the institution to implement a trial version provided the stimulus to take up development again. My design of the renamed software, now the Quality Assessment System (QAS), and the business plan I developed for it, won funding from the Foundation for Research, Science and Technology. However, the funding was less than 10% of the estimated cost of development and ran out after completion of only the draft software architecture / specification. The project fell into limbo. Several volunteer and low-cost programmers started work on the project, but failed to complete it. Within three years, the existing code had become so corrupt, it was unusable. The concept, however, remained clear and presentable. It was the presentation of the conceptualised QAS that was the catalyst for my PhD at the University of Waikato.

The concept of the QAS differed from the CCT in that:

- the software would have been written in .Net
- the reports function would have been greatly enhanced
- the students' requirement to have the QAS installed on their computers would have been removed
- the software would have been designed to import student enrolment data from the institution database

I used the "Wizard of Oz" simulation in my research as the CCT could not be used (for reasons stated above) and the proposed QAS developments were at the conceptual stage only. In Table 6, I list what went well during the experiment.

8.3 Summary of What Worked Well with the QAS

Table 6: The QAS experiment - what went well?

What went well?	Actor	Perceptions
Simulation of feedback provision	Teachers	Teachers took less time than expected in becoming accustomed to emulating mouse-clicks to select and insert correction codes and comments.
Adoption of rubrics	Teachers	Teachers found the QAS to work the way they worked already.
Acceptance of digital feedback	Students	The majority of students found the QAS feedback easy to identify, read and understand.
Display and understanding of the QAS reports	Teachers / Students / Admin	All actors found the majority of reports useful, and the experiment reflected accurately what users would see.
Teachers' use of the comments database	Teachers	Teachers thought the use of a pull-down menu to display feedback comments was useful and that the simulation accurately reflected the time they would spend on locating the appropriate comment if the QAS were implemented.
Teachers' additions of feedback items	Teachers	Teachers found it easy to add comments and correction codes in the simulation.
Teachers' use of QAS reports	Teachers	The digital reports provided teachers with some information they could not obtain in other ways, and some information that could only be obtained with significant extra work done with pen and paper.
Students' use of QAS reports	Students	The simulation allowed students to view feedback and task data on detailed reports.
Administrators' use of QAS reports	Administrators	The QAS reports could be perused by administrators seeking to determine student advancement and resolve any disputes regarding feedback.

8.4 Summary of What Did not Work Well with the QAS

Table 7: The QAS experiment - what did not go well?

What did not go well?	Actor	Perceptions
The use of customisable colours.	Students	Students identified the weakness that customisability would lead to lack of consistency between students, teachers and classes.
The use of reports	Students	Students were not unanimous in their reactions to the QAS reports. This may have been due to the complexity of the reports, and/or may have been due to the simulation not allowing for the identification of active/inactive fields, and use of other display/ data options.
Reviewing and editing the database	Admin	This function was not tested in the experiment.
Interaction with the institution's database	Admin	This function was not tested in the experiment.
Submitting, retrieving, opening, saving, returning tasks	Teachers/ Students	This function was not tested in the experiment.

Chapter 9: Analysis of Fieldwork - Participant Responses

In this fieldwork chapter, I present the responses from students, teachers, and administrators to questions relating to feedback and feedback methods as currently practised, and as practised using a "Wizard of Oz" experiment to emulate use of the prototype QAS. I analyse individual responses and interpret them in the light of other participants' responses and generally-accepted education practices. To identify the speakers in my references to field data, the abbreviations "P" and "R" are used for "Participant" and "Researcher".

My methodology comprised two scenarios: feedback using the normal practice at the research site, and feedback using the prototype QAS (these scenarios are described in more detail in Chapter 7).

As discussed in the Literature Review (Chapter 3), teachers are not motivated to give feedback if they know there is little hope that the students will read it. Students also know that there is little point in correcting their work in the light of teacher feedback if the revised work is not going to be resubmitted. This issue has led to substantial research literature discussing the value of resubmission (Sadler 1989; Boud 2000). In developing the QAS, functions to promote and record resubmission were incorporated, and this fieldwork chapter also analyses participants' views of the QAS functions to administer resubmissions, and discusses the merits of the QAS' functions to record and provide statistics on the feedback. Resubmission was not practised at the ESOL institutions at which I had had experience teaching¹⁴.

Feedback, in this research, is the comments and corrections provided by teachers to students on written work in ESOL courses (English for Speakers of Other Languages), and the responses to this feedback from the students to the teachers.

I discuss the methodology in detail in Chapter 7. For convenience here, I summarise the experimental work done.

¹⁴ On starting the fieldwork interviews, it came as a pleasant surprise, therefore, to learn that all six teachers interviewed did in fact practise resubmission, especially as the QAS design already supported this new practice.

The fieldwork was carried out at a New Zealand tertiary education institution over several terms, each of which ran for nine weeks. I interviewed six teachers, 13 students and three administrators. The students were predominantly from Oriental countries.

The fieldwork investigated two scenarios. These were:

- Scenario 1: feedback as currently practised, including resubmission;
- Scenario 2: feedback with the QAS and resubmission.

Scenario 1 involved observation and interview of the participants' current feedback practice. Scenario 2 involved use of a "Wizard of Oz" experiment to emulate use of the prototype QAS, and also comprised observations and interviews.

The presentation of the fieldwork analysis is in the approximate order of the academic process:

- the administration and the placement of students,
- and the administration of the course as a whole,
- syllabus and resources,
- task (homework) allocation and feedback using current methods,
- the experiment using the Wizard of Oz method to elicit responses to the prototype QAS,
- external factors affecting the participants' perceptions of the QAS, feedback, and work methods.

This is followed by a presentation of the recommendations for improvement of the QAS software identified (or inferred) by participants or the researcher, and a concluding analysis of the findings.

9.1 External Factors

I acknowledge there are many non-pedagogical (external) factors that may influence both the study process and the participants' perceptions of the issues discussed during the fieldwork. I also acknowledge that, as both the researcher and the designer of the software mediating the feedback being researched, I will be biased in my interpretation of participant responses. These external factors and biases are discussed in detail in Chapter 7. In this fieldwork analysis, I mention the issues raised by participants that relate to external factors directly within my interpretation of participant

perceptions of the QAS, rather than separate the issues as though they were divorced from the focus of the research.

9.2 The ICT Environment

ICT plays a fundamental role at the research site. Implementation of a new ICT such as the QAS would therefore be complementary to an existing ICT structure - especially since the QAS is an add-in for a product already used at the institution (Microsoft Word). The following subsections discuss the ICT issues arising during the fieldwork and that might affect use, or perceptions, of the QAS.

9.3 General

The faculty has begun to adopt a learning management system, Moodle, and has a digital language laboratory. The faculty also provides staff with digital cameras and digital audio recorders for use in their lesson-planning and their lessons. This infers there is a willingness (or need) to adopt new technology and that the research site is, therefore, an appropriate environment to consider use of the QAS.

However,

P: "The institution hasn't really come to grips with the technology of all the available resources - about one or two percent of the whole campus uses Moodle. I would say we have a state-of-the-art language lab but it's not being used. There are very different forms of technology, whether it's digital cameras or audio cameras. Not every classroom has a computer, not every teacher has access to a computer – it's an ongoing issue. It will be revamped this semester where there will be training provided for staff and they will have to provide evidence that they have the right skills in technology in order to use all the technology, but, as mentioned, this might be quite overwhelming for some tutors" (T03).

This indicates that the existence of the technology does not mean that the staff use the technology. Unless technology meets the requirements of the users and is easy to use, there is likely to be resistance. The QAS must be fit for purpose, and for this to be established, it cannot be half-used as the reports would be incomplete and misleading. I discuss this further in the next section.

9.4 Use of ICT and Accessibility

The QAS is used most effectively and efficiently when all parties have access to a computer with Microsoft Word installed, and have the basic skills to use the software, for example, to activate drop-down menus. Administrator A01 indicated this should not be an issue as teachers were expected to have, or to acquire, the skills necessary to use Microsoft Word:

R: Would you reject a teacher [job applicant] who was a good teacher because the teacher couldn't ... use Microsoft Word? P: Couldn't use Microsoft word? Yeah, there would be some issues there, and they would have to say that they're willing to do the training necessary" (A01).

When students submit tasks electronically, the feedback provided by teachers is inserted using the QAS-WP. Students do not need the QAS to be installed on their PC to receive and read the feedback, but they do need access to a PC and for that PC to have Microsoft Word installed.

When students submit their work on paper, the teachers scan the work and import the resulting image into MS Word, ready for marking using the QAS-Grid. Teachers then print out the work and return it by hand to the students.

The resubmission process follows the same procedure. Students using MS Word to respond to the feedback choose whether to rewrite the whole text, or to revise the teacher's marked-up version, then resubmit their work by e-mail to complete the "feedback loop" (op. cit.)

Students who receive their marked first drafts as a print-out can either rewrite their work or revise their first drafts on the printed copy. These students then resubmit their work by hand to their teachers.

Accessibility to computers is an important factor in considering the most effective use of the QAS. Fieldwork revealed, according to one teacher (T02), that students did not have a computer at home and that this was why instructions for the homework were not e-mailed to the students:

P: "they are not that completely comfortable with e-mail" (T02).

It is possible T02 said this because it was s/he who was not comfortable with computers, or because T02 really did believe that the students did not

have access to computers. The institution is, in fact, well equipped with computers that the students can access until five o'clock during the summer and six o'clock in winter. However, not all students have access to a computer at home (in NZ).

P: "I can only use computers in the library. My computer is in Japan" (S07).

Another student did not have access to the Internet even though they had a computer at home:

R: "Would you use your computer at home if you had Wi-Fi? P: Yes. R: Would you write your homework on the computer? P: Yes, I want to research" (S10).

The issue of accessibility depends, therefore, on the time of day the person wishes to use a computer. During the day, there are no issues; during the evening, not all students could access QAS-marked homework. The issue of evening accessibility to computers is not considered significant by some teacher participants:

R: "And what about accessibility? Are all students able to access a computer? P: Yes" (T04).

And:

P: "Language students really do have adequate access to computers and tutors too" (T02).

It is relevant that not all students would be able to access QAS feedback in the evening, as this might affect perceptions of the software, but it is beyond the scope of this research to discuss possible solutions and alternatives.

All participants used computers, but not all of them used them for academic purposes. Student participants reported using computers several hours a day:

R: "Regarding your use of computers, how many hours a day to use a computer? P: Maybe four or five. R: Can you tell me approximately what you do? P: Facebook or Skype" (S08).

The teachers stated that students used computers also for listening to English songs and for watching English films. By contrast, teachers used computers for preparing reports, exam papers, student worksheets, and

lesson plans. The introduction of Guided Independent Learning (GIL), which is carried out in the computer laboratory, meant the supervisory teacher might also need to use computers for guidance there. Lesson preparation for teachers involved, to some extent, choosing websites and referring students to these. The fact that all participants used computers and were acquainted with Word is an indication that participants would have the necessary computing competence to view and insert QAS feedback.

9.5 Scenario 1: Current Feedback Practice with Resubmission

9.5.1 The Homework Process

To be able to compare current feedback methods (as practised at the research site) with feedback methods that could be administered using a computer-assisted assessment system (CAAS) such as the QAS, I asked participants about the current homework process. Responses revealed there was no common method of allocating homework. A variety of methods was used, including:

- a) verbal instructions;
- b) verbal instructions with modelling;
- c) verbal instructions accompanied by photocopies of tasks, or references to course books;
- d) uploading instructions to the institution's shared network (server);
- e) reiterating verbal instructions used during the class for the work to be finished at home;
- f) providing students with template worksheets.

This variety of methods may reflect the flexibility in approach that is required in the classroom. However, the verbal communication of instructions to learners of English does have the inherent risk that the instructions may not be understood precisely as the teacher intended.

On the other hand, the availability of the teacher in the classroom when giving the instructions provides students with the opportunity to ask for immediate clarification of instructions and enhances the student-teacher relationship.

If an appropriate CAAS were used, however, a database would be available to record such instructions. This would mean the instructions could be made

accessible to all students and other stakeholders, difficult words could be looked up, model sentences could be referenced, and time could be gained in class for other educational activities.

One teacher spent several hours a week preparing worksheets for students to complete their homework:

P: "usually at the pre-intermediate level, there are hundreds of worksheets. I'm always preparing worksheets. Because you know they need some format to present whatever it is that you want them to do" (T02).

The teacher acknowledged this was a very time-consuming way of helping students. While it was outside the scope of my research to investigate this, it did throw up an opportunity for an additional function of a computer-assisted assessment system to store template worksheets that could be customised by the teachers as required (see Section 12.14).

Most homework was set according to what was covered in class, so lesson-planning was an important indicator of what was likely to be allocated as homework. Participants did not use templates to complete lesson plans; they were written by hand on loose-leaf paper, in a plan book, or occasionally on a computer using either Word or Moodle. The plans were not available online for access by other teachers, relievers, or administrators.

All six teacher participants practised resubmission i.e. they requested that students revise and resubmit their homework in the light of the teacher's preliminary feedback, though two of the six did not require resubmission with all homework. The teachers did not keep a record of the feedback, so they were unable to tailor subsequent feedback to individual students, or to provide progressive feedback for each student based on earlier feedback. Student participants did not keep a summary of feedback received, requiring therefore that they examine each piece of homework to judge for themselves where to focus their attention when completing subsequent work. Unless teachers chose to write extensive notes to help students focus on specific areas, there was therefore the risk that current feedback might convey the impression to students that all feedback items were of the same significance.

By contrast, an ICT-based system would facilitate the use of different colours to identify different types of mistakes, thus allowing students to

recognise types of grammatical errors quickly. This function might also be used to flag errors according to their significance as perceived by the teacher, and in this way provide a method to evaluate the quality of a piece of homework by taking into consideration the weighting of each mistake.

Furthermore, feedback on homework was commonly used by teacher participants for analysis and extra practice in a subsequent class. This inferred that teachers had to have knowledge of the problems that students experienced in the respective homework, but research showed that this was not often the case. Only one teacher maintained a plan book to keep a record of student learning difficulties. Moreover, relievers, and teachers starting a new class, rarely used notes written by previous teachers:

R: "Do you ever use former teachers' notes or reports to determine what to teach students or how to teach the students? P: I have never consulted it. I've never referred to it. I make a fresh start with my students" (T03), and

P: "I will rarely look at another teacher's lesson plans at the beginning of the semester" (T04).

A suitable CAAS might address these problems through its database design, providing an overview of teachers' feedback and notes on students' learning. Such a system could also facilitate the quick retrieval of these reports, thus pre-empting the issue of teachers trying to locate previous term's handwritten documents and/or asking the class teacher (if available) for details.

9.5.2 Student Completion of the Homework

The students' most common approach to writing homework was using paper and pencil:

P: "I write on paper I try to use the new words. I always write in pencil because if I'm wrong, I can very easy correct it" (S01).

Of 13 student participants, only one preferred to complete homework using a word-processor:

P: "I prefer doing my homework on the computer - it's easier. Because you don't need to use paper. I wanted to save the resources. I only need to delete some words - I

don't need to write the whole essay again if I want to change things" (S03).

Pedagogically, the fact that the student might need only to edit a few words can be interpreted in different ways. Firstly, the student can be seen as focusing on the identified weaknesses, which is good; secondly, the student may be considered to be ignoring the weaknesses in the context of the whole, which is not very constructive. Furthermore, it could be argued that rewriting something from scratch enhances awareness of structure and cohesion - language issues that many teachers indicated were problems for learners. However, rewriting the work from scratch can also lead to introducing new errors. Insufficient research was carried out to establish whether teachers viewed and corrected, or even identified, these new errors, whether they concentrated only on the errors that had been corrected, or whether they took a fairly general view of the piece of work and decided on its overall merits. From observations, it appeared that some teachers corrected the second draft as though it were the only draft, and some were very superficial in their feedback.

All the student participants who wrote the homework by hand maintained that this method gave them more writing practice and helped them improve:

P: "I write by hand on paper. I prefer handing it to the teacher as paper because writing is a better way because I can practise more my writing" (S04).

As all but two students interviewed were Asian students, it may be argued that the students meant it was good to practice joining the letters together in a foreign language, i.e. the mechanical process, as well as being useful to improve their grammar. Furthermore, several students volunteered that the reason for not wanting to write their homework on computer was that Word automatically corrected their grammar and spelling and they did not get the practice they needed.

These student comments highlighted several issues of significance for research into feedback. Of greatest significance is the fact that the design of any technology-based feedback system would arguably benefit from recognising the desire of some students to write their homework by hand. Secondly, student comments reflect the lack of computing skills – of the students, but also of the teachers – in the failure to appreciate that the word-processing software comes with options to turn off spelling- and grammar-checkers. What is more, the students imply the language-checking

functions of Word are reliable, yet this is far from the truth (the following sentence would be approved by the MS Word 2007 grammar and spelling checker: "Eye bough down too ewe as ewe is the king")¹⁵. Feedback provided by a computer-based feedback system thus imposes an obligation on administrators to provide the users with the necessary degree of training and time to understand and use the software in the specific environment in which it is to be implemented. It also imposes an obligation on users to learn how to use effectively the host software (in this case, Word) in order to optimise the progressive nature of feedback methods that promote one or more submissions, as administered by the feedback software. Finally, if a system were implemented to facilitate the marking of handwritten work on a computer, this would also impose the requirement for training in use of a scanner to scan students' work for subsequent marking. I analyse the issue of ICT training and the importance of time in Section 11.1.

9.5.3 Feedback

9.5.3.1 Types of Feedback

Teacher and administrator participants were experienced in two types of feedback: summative and formative. Summative marks/grades/evaluations were not given during the observations, and participants reported that such feedback was not practised for homework. However, an administrator indicated there was some confusion as to the definition of summative and formative feedback and this prompted further research:

P: "Whereas the rest of the teachers can't do that. They're like, if it's formative, how can it be summative? Well you know you start with the formative bits and then at some stage you make a judgment that yes this could be the summative assessment of it. So you know, it's an interesting tension. But [teacher's name], she just sees it. Other people don't see that or struggle with it and across the sector people are struggling with this nature of formative and summative and summative is going out of fashion sort of and in learning and teaching you have to have it. Again for the compliance you have to have because of the qualifications. But actually for practice for learning and teaching it's actually of little value" (A01).

Even the terminology struck a nerve with one participant:

¹⁵ This sentence was created and tested by the researcher.

R: "Would you class your feedback on homework as formative or summative? P: I just hate the words they use. Class feedback's formative" (T02).

Another participant was more categorical:

P: "Well, we don't have summative assessments. Everything is formative" (T03).

Teachers acknowledged, therefore, that they provided formative feedback on homework tasks, and that the cumulative assessment of the best tasks submitted was summative. Teacher T03 put forward that diagnostic feedback was an option, but that time constraints prevented what s/he interpreted as diagnostic feedback: the analysis and subsequent communication to the student of feedback items in the homework. The participants did not proffer any views on feed-forward nor on sustainable feedback (see Section 9.5.3.5).

When discussing types of feedback with student participants, I was keen to gain insight into their perceptions of feedback in the form of numerical values and grades in order to facilitate comparison with feedback using comments. I anticipated that students receiving a high mark would be happy, and students with a low mark would be unhappy; this was not to be the case.

R: "So, it's 100%, but you're not happy, why? P: Because I think 100% in English I have never, I need to study English may be more than that because it's not my language so I think 100% I never have, and I think I need to study more I need to fix it" (S01).

A second student said they would be happy to receive 100% as a mark, but believed the teacher might have made a mistake in not identifying some of the student's mistakes:

P: "maybe she's not paying attention to all the sentences that I wrote" (S13).

The lack of satisfaction with a 100% mark might indicate lacking self-esteem, or lack of confidence in the teacher. However, it is just as likely that the mark of 100% was used to indicate the teacher's complete satisfaction with the work produced, and not necessarily that there were no errors in the work.

There was some confusion as to the interpretation of numerical grades. Several students said they preferred 60% to 6/10, but could not explain why, even though, mathematically, they have the same value:

R: "Which is the mark you prefer? This one or this one?
6/10 or 60%? P: This one. R: So 6/10 is better than 60%?
P: Yes" (S02).

There was also no consensus as to what grade letters meant. Except for Grade A, the other grades given as examples were not interpreted consistently by the students interviewed. Also, the use of textual summative marks was not considered valuable, and students did not know how to interpret them consistently:

R: "What's the best grade? P: 'A'. R: What's the worst grade? R: I don't know what grade's the highest and the lowest. It's not clear. R: Are you happy if your grade is 'Achieved'? P: I'm happy because I could achieve but only this mark is not enough; I want to know more comments" (T06).

In summary, student participants indicated there were grounds for dismissing summative feedback, not only because it did not provide students with the constructive comments they needed, but because numerical values and grades were not interpreted the same way by all participants, and arguably not in the way the marker had anticipated. Summative feedback did not help them learn from their mistakes and did not identify the areas of particular competence on which they could build and gain further motivation. Investigating why students did not find summative feedback useful or desirable provided evidence that the students wanted formative feedback. This element of fieldwork underlined the essential need for formative feedback in the form of comments. As discussed in Sections 9.5.3.2 and 9.5.3.3, both current feedback and feedback that could be administered by the prototype QAS used comments to provide students with feedback on their homework, but there were fundamental differences in method, scope, customisation and recording of this feedback, as well as significant differences in how such feedback was perceived by the participants.

9.5.3.2 Feedback Characteristics

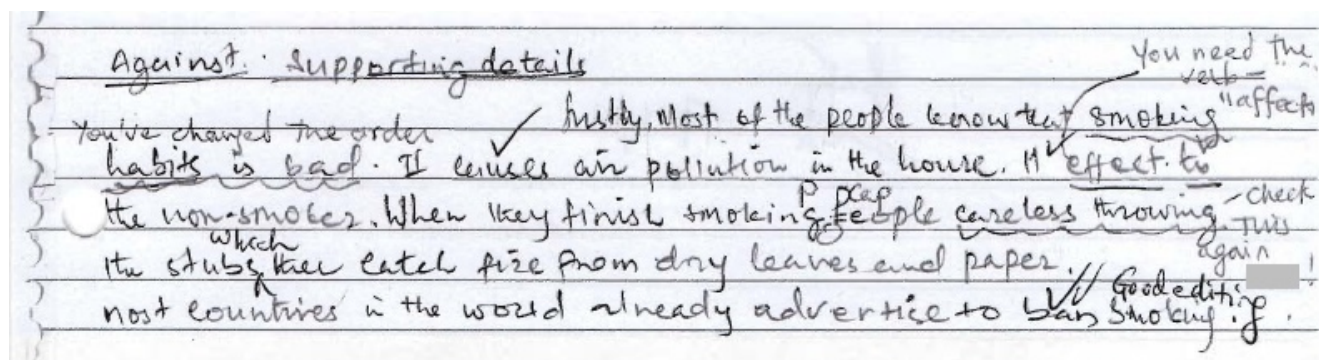
The feedback observed consisted of handwritten correction codes and comments added to handwritten homework and/or to homework that had been written on a word-processor then printed. The homework varied from 70-word descriptive/narrative texts (elementary level) to 500-word descriptive/narrative essays and report-writing (upper-intermediate). I observed teachers marking 14 pieces of homework; 12 pieces had been handwritten. The teachers' feedback was provided in handwriting in all cases and was interwoven into the students' work (see, for example, Figure 58: Handwritten homework and feedback without correction codes). Few students left sufficient room in the margins for teachers to add comments. None of the homework had been written with sufficient space between the lines for teachers' comments, or for the students' own revisions. The response of students to teacher feedback in all cases observed consisted of the students rewriting their homework from scratch. No students left comments for the respective teacher to consider.

Feedback provided to students observed during the fieldwork took the following forms:

- wiggly lines
- straight lines
- dotted lines
- double underlines
- ticks, double-ticks and triple-ticks
- stars
- smiley faces
- circling of words
- strike-through
- lines leading to comments at the side of the page
- comments inserted between lines of text
- references to the bottom of the page
- correction codes
- corrections
- comments in the margin (when students had left a margin)
- summary comments at the end of the task

No two teacher participants used feedback with identical characteristics, but the feedback of all participants adhered to the same logic and rationale.

Figure 55: Handwritten homework and feedback without correction codes



T02 marked the homework in Figure 58, adding comments and corrections by hand in the space available. The teacher left concluding comments at the end of the homework, differentiating praise from criticism by the use of smiles (one happy face and one sad face).

Criteria sheets (used for appraising end-of-term assessments) were not consulted, and the teacher marked the homework using his/her own discretion and experience.

All five teacher participants used a correction code, but three different codes were used and not all the participants used a code for all homework (as evidenced by the above image).

In the next section, I analyse how teachers conveyed feedback and how students responded to it.

9.5.3.3 Methods of Communicating Feedback

The observation of teachers marking student homework revealed the following:

- 6/6 used a correction code, inserting the codes from memory
- 6/6 used red, blue, or green pens for marking
- 6/6 inserted the correction codes by hand on handwritten and word-processed homework
- 6/6 practised resubmission and marked the second drafts differently from the first
- 6/6 provided comments at the end of the homework
- 2/6 acknowledged they did not identify all the errors (T03, T05)

- 2/6 claimed they did identify all the errors, but were observed as not having done so (T01, T06)
- 2/6 claimed they identified all the errors, and were observed as having done so (T02, T04)
- 2/6 provided comments in the margins of the homework and at the end (T03, T02)
- 2/6 compared the second draft with the first, when marking the second draft (T02, T04)
- 2/6 expressed difficulty in knowing what comments to write (T05, T06)
- 1/6 expressed difficulty in knowing what code to use to identify some of the errors (T05)
- 0/6 had a copy of any correction code available for consultation during the marking observation
- 0/6 had a pre-defined list of comments to draw on
- 0/6 provided feedback with references to help students correct their mistakes
- 0/6 compared the homework of one student with that of another during marking

Of particular significance to this research was the observation that all participants used a correction code for communicating information on errors. Research revealed that the administrator was aware the faculty had a correction code "We do have a system" (A01), but teachers were under no obligation to use it. This observation indicates teachers found it advantageous to have a method of referencing student mistakes to a consistent set of correction codes, inserted as 2-3 letter abbreviations or symbols. On investigating the consistency of feedback using a correction code, however, it became apparent that there was more than one code. T05 showed the researcher the correction code they said they adhered to, (Figure 56), but no other participants had seen this code, and the teacher did not use this code during the observations. A second teacher stated s/he used the faculty correction code as a basis, but then customised it to meet her/his own requirements.

R: "Do you use the correction code given to you by [the faculty]?" P: Yes and no. I use my own codes basically which are based on the code given by the school; I also

use my own code because I can never be satisfied with one version" (T05).

This implies that for a computerised feedback administration system to be of value to teachers, it would have to be sufficiently flexible for the teachers to customise, yet sufficiently structured to remain consistent. I analyse participant perceptions of this issue in respect of the QAS in Chapter 9.

Figure 56 shows a correction code that differed in essence from the other feedback codes used in that it offered the marker a list of non-item specific abbreviations to flag more general weaknesses. I describe such codes as macromarking as opposed to micromarking (the flagging of errors specific to an individual word, or item). Macromarking is not a function of the current QAS design, but I discuss the potential of this as a design opportunity in Section 12.6.

Macromarking may be a function considered to fit between the insertion of correction codes and the insertion of comments. Regarding the correction codes 1-19 under "as well as", only 5 of the 19 codes were the same as those used in the correction code presented to participants during the interviews.

Figure 56: One of three correction codes used by participants

Proofreading Symbols

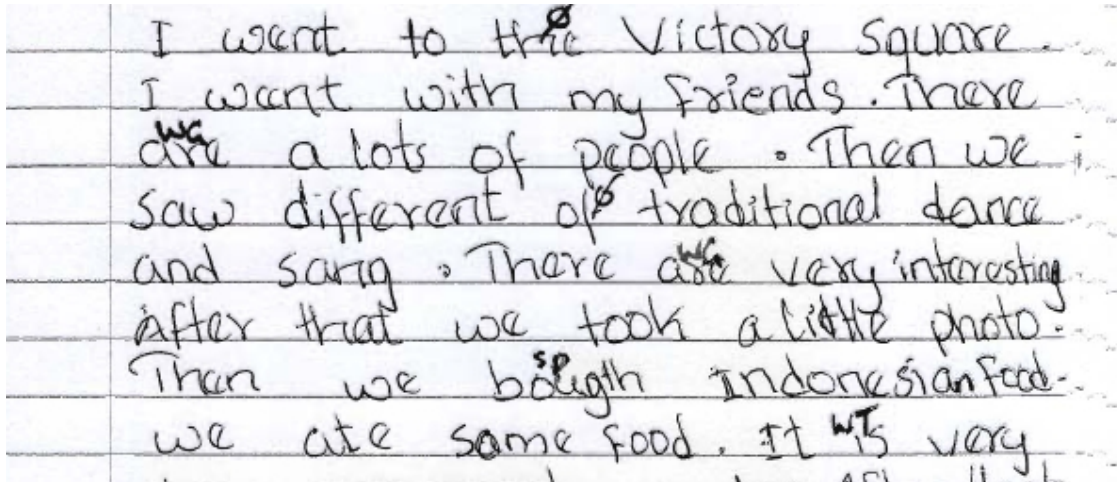
After writing, I have checked my writing for such errors as			
1	AQ	the essay question not addressed in the introduction	
2	C	faulty conclusion e.g. the main ideas from the body not restated	
3	I	Irrelevant	
4	IR	Inappropriate register/genre/tone	
5	LS	lack of support or development	
6	PTF	poor or no task fulfilment	
7	Txt	faulty text structure (introduction, body and ending)	
8	TP	no/inappropriate topic sentence	
9	TS	no/inappropriate thesis statement in the introduction	
as well as			
1	C	Capital letter needed or unnecessary	
2	L	linking devices (like however; in addition; finally etc.) needed	
3	P	punctuation	
4	Prep	preposition	
5	PS	plural or singular	
6	R	run-on sentence	
7	SO	Sentence order	
8	Sp	words for spelling mistakes	
9	SS	sentence structure	
10	SV	subject and verb agreement	
11	T	tenses	
12	TV	two verbs with one being unnecessary	
13	UW	unnecessary word	
14	WF	word forms	
15	WW	wrong word	
16	^	missing word(s)	
17	?	I can't read/understand	
18	~	not quite natural	
19	x	wrong expressions(e.g. no/faulty collocation)	

The correction code in Figure 57 is characterised by its predominant use of symbols (eight) as well as its short list of abbreviations (seven). Despite T04 providing this code and maintaining that s/he used it to mark students' work, I observed that s/he actually added customised codes and did not use those in the code list provided (see Figure 61). On some occasions, I observed that customised codes were used because of their omission in the code list provided. On other occasions, the customised codes appeared to be used as alternatives to those in the list.

Figure 57: An alternative correction code used by some teachers

WF	wrong form:	^{WF} the <u>best</u> will be its achievements
WW	wrong word:	patient, funny and ^{WW} <u>kindly</u>
T	wrong tense:	In the last few weeks you <u>didn't have</u> much fun
Λ	something is missing:	You arrived in Brighton ^Λ the 1st
Sp	wrong spelling:	<u>confortable</u> ^{sp}
WO	wrong word order:	You haven't seen [yet] London
P	wrong punctuation:	Look out. ^P
V	wrong verb form:	The Titanic <u>sunk</u> ^v very quickly
//	new paragraph needed:	
∅	not necessary:	John came in and he sat down
U	You don't need a new sentence. Join up the ideas.	
?	I don't understand what you're trying to say.	
wavy	This isn't quite right: it needs clearer expression (usually the teacher provides an alternative)	
[]	This part needs to be re-arranged or reworded.	
!!	You really should know what's wrong here because - we've just done it in class. - I've told you so many times.	

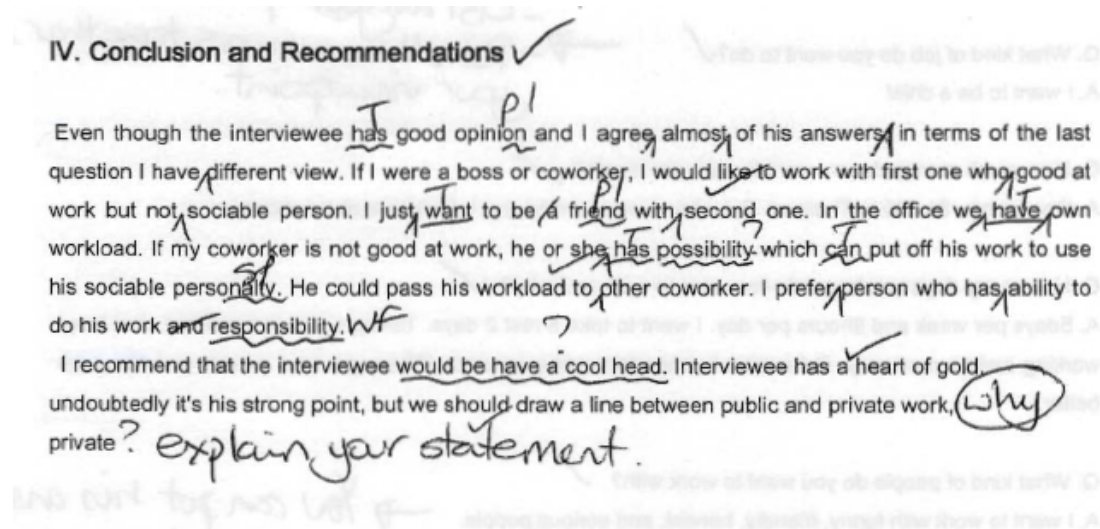
Figure 58: Teacher-specific correction codes



My analysis of the feedback provided with and without these correction codes is given in Chapter 9, together with an image of the third correction code used by participants during the experiment.

As well as current feedback at the research site being inserted by hand on handwritten homework, as illustrated in Figure 61, feedback was also inserted by hand even when the homework had been word-processed (see Figure 62). The efficiencies of word-processing work, e.g. clarity and ease of editing, were therefore lost, as the teacher had to print the homework in order to mark it.

Figure 59: Handwritten feedback on word-processed homework



T03, who marked the work in Figure 59, used mostly the codes that appeared in Figure 56, but, like T04, added items of his/her own: the code 'pl', the wiggly line, and the tick. On investigating why, I established that the participant believed it was clear from context and from practice that the wiggly line, for example, was only a flag to indicate the location of an error, and that it was the abbreviation that identified what type of error it was. The participant stated that students at this level would, or certainly should, know that 'pl' meant plural, especially if they had already completed at least one other ESOL course.

Feedback was communicated by all six teacher participants using handwritten correction codes and comments. All participants stated that the feedback stood out more if they used a colour other than that used by the students for completing their work. I had observed that all participants had used red, green or blue, and research showed that the choice of colour was significant.

P: "I don't like... it's just me, but I don't like using a red pen because that tends to highlight everything in a negative way, whereas a green pen – it's like a green light, good progress and I think they [the students] do the same they look at it and say there are fewer mistakes so it's better than the first one" (T02).

I asked the teachers whether their methods for communicating feedback were the same. My intention was to identify as many characteristics of current feedback as possible. This would allow more in-depth analysis

during my questions relating to participant perceptions of feedback and the characteristics the participants themselves had identified. It would also throw light on the diversity of feedback that students were subject to, and thus provide a better basis on which to interpret their responses to interview questions. The consensus was that feedback methods used by all teachers were the same. Teacher T02 interpreted "method" to mean the choice of feedback colour:

R: "Is your method the same as the method of other teachers? P: I suspect it's the same because... I have always done positive and negative marking, but never thought I could use two different colours for that, because previously the teachers were only allowed to use one colour and that's red, but now, you know, you can use blue so that is something I have picked up from here. So I'm sure other tutors do the same, because when we mark, we do give positive and negative feedback" (T02).

However, I observed clear differences. T03, for example, used two colours – green and red. Green was used for marking the first draft, and red for the second.

Figure 60: Green ink used to mark the first draft

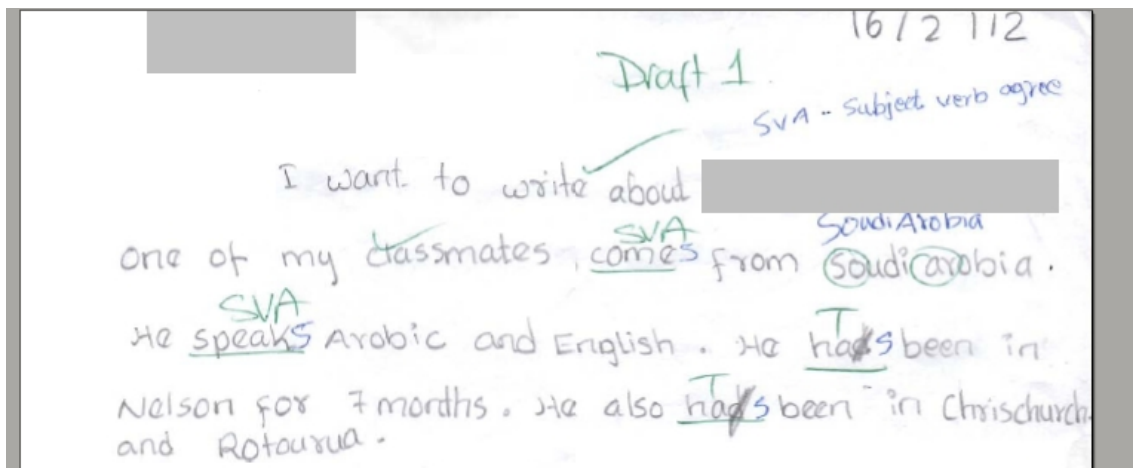
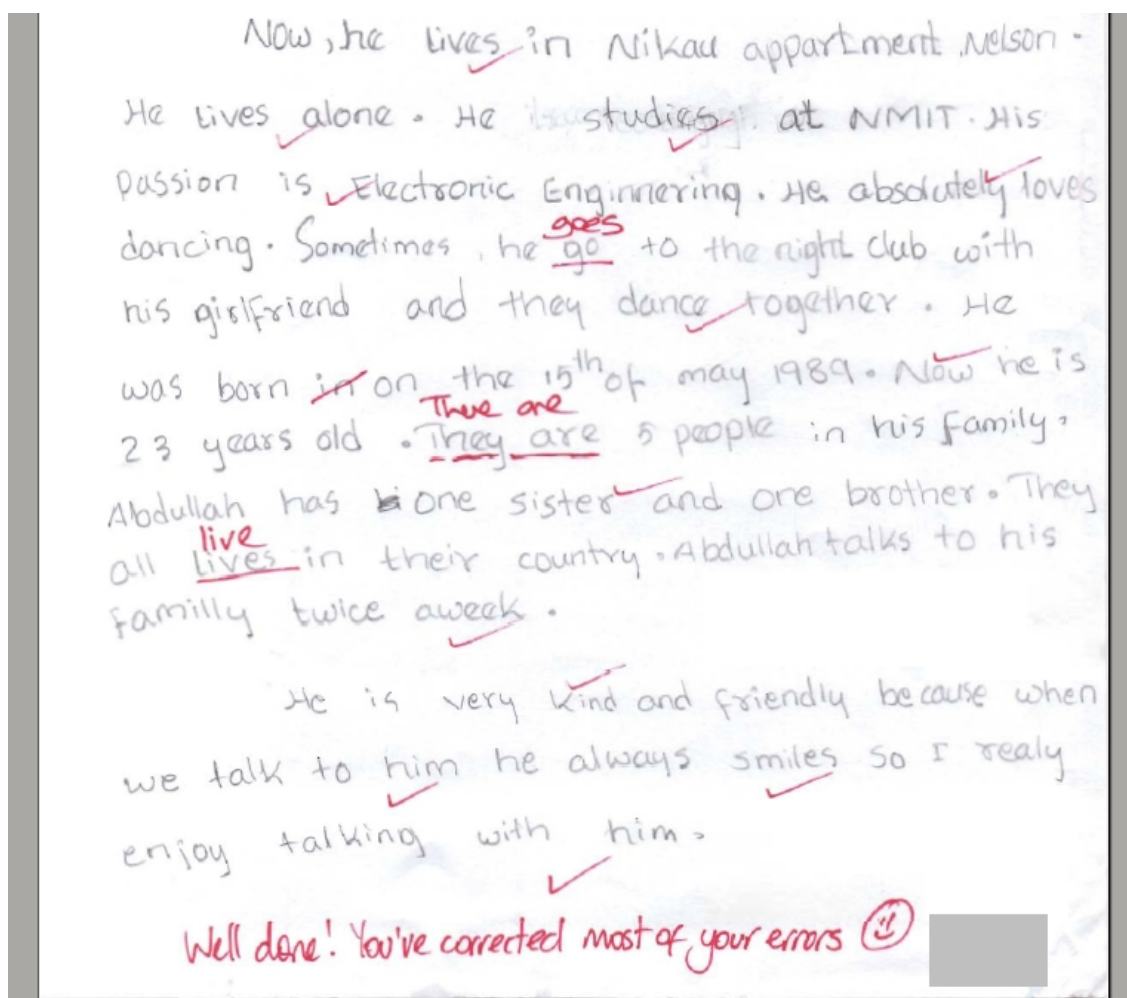


Figure 61: Red ink used to mark the second draft



T03 explained that s/he used green ink on the first draft as s/he felt it was more encouraging than red ink and therefore motivated the students to revise their work. T03 used red ink on the second draft because s/he stated it provided both contrast and an indication of the improvement the student had made. This represented an interesting reversal of convention, as confirmed by T02 ("because previously the teachers were only allowed to use one colour ink and that's red"); errors were customarily marked in red, and improvements in green.

T02, however, used blue and red ink.

P: "Colours are good because it's what we're trying to do by using blue and red. And the students ... have been told that when they do their corrections, they have to use a different

coloured ink and that's what the QAS will help to do as well.

The colours are always very clear, very obvious" T02.

In contrast to the rationale put forward by T03 for using red and green, T06 acknowledged the usefulness of colours, but argued it was not the colour in itself that was important, but the fact that the feedback was conspicuous, i.e. that it was a different colour from the student's work:

R: "Is the choice of colour significant? P: It's not so much that it's a colour, it's that it's different to what's there. So if it was blue it would be all right or if it was green, because this is all black" (T06).

Praise was identified as important, but only one participant used flags of praise other than ticks:

R: "So how does the student know how well he has done? P: By looking at those ticks... I tend to use a lot of visual cues with my class. R: Could you expand on that - what is a visual cue? P: Smiley face means well done, stars mean excellent. There is a single tick, double tick, triple tick and they are all used with a green pen" (T03).

T03 thus supplemented the conventional tick of praise with other motivational symbols. However, there was no further communication of pedagogical information.

In summary, all feedback observed during the research was provided using red, blue, or green ink. Different participants had different reasons for selecting a particular colour, and students received feedback that was inconsistent in presentation from class to class and teacher to teacher. I discuss the perceptions of student participants to the use of colours for feedback in the section: "identification" In the next section, I present the field data that elucidates precisely what it is that teachers flag with these different colours and codes and comments.

9.5.3.4 Selective Feedback

Teacher participants were observed not to have flagged all mistakes in student homework (see lines 1 and 3, Figure 61). Participants also flagged work they thought worthy of praise, though there were few or no indications of what it was that had constituted praiseworthy work. In other

words, feedback was found to be selective. This section presents an analysis of the participants' selectiveness of feedback.

Teachers needed to advise students of their mistakes and praise them for good work. Yet, fieldwork showed that they did not decide prior to marking homework:

- a) what percentage, or number, of all items should be marked
- b) what category of items should be marked (e.g. macro- or micromarking items),
- c) and whether feedback should relate to the significance of the item (i.e. weighting).

The fieldwork revealed that these decisions were answered on a case-by-case basis, primarily according to the level of the students (as perceived by the teacher) within the same class. Initially, current feedback appeared characterised by randomness. Two of six participants stated, for example, that they tried to mark all errors:

R: "Did you correct all the errors that you saw in your second draft? P: Almost, yeah. R: When you say correct, that means identifying as well as giving the corrections? P: Yes. Yes, I did try to, yeah" (T02).

P: "I do mark all errors which I know some teachers don't. But whether it's right or not, I don't know. R: So you do mark all the errors? P: Yes I do, unless I'm told not to" (C06),

but then qualified their statements:

P: "I might have ignored a couple of insignificant punctuation errors. R: So there's room for subjectivity? P: Yeah" (T02).

P: "If you are teaching, often a very low level class, if you mark every mistake it would look quite ghastly. Generally, with low-level students, I may just be looking for certain things because if you corrected everything, it would look quite dreadful" (T06).

What first appeared as random marking was therefore a subjective decision based on experience (in the field and of the student's work) to optimise marking for maximum pedagogical benefit without being demotivational.

Participants did not indicate there was a system in place to facilitate the administration of this process. Furthermore, no record was kept of the decisions of the teachers as to what they had chosen to mark and the perceived level of the students that determined why they had chosen to provide more or less feedback on the feedback items of the respective piece of work. T03 explained how s/he decided precisely how to mark students' work:

R: "Have you corrected all the errors on this second draft? P: No. R: So how did you select which ones to mark? P: By their enrolment and also by what they need to be assessed on. R: What do you mean by enrolments? P: I have two, maybe three different levels of student in my class and they are enrolled in particular papers or courses which will determine their level. So I will have a beginner, elementary, high elementary... I have to mark someone who is enrolled as a beginner differently from someone who is enrolled in upper elementary, so there will be more expectation from that student who is about to move into pre-intermediate. Whereas the beginner has probably just come in and is obviously not going to produce a lot of work. This student is about to move to pre-intermediate so I mark it accordingly, and if there is a mistake at that level - at pre-intermediate level - I overlook that and say "well, we haven't learned it in class. That student is not expected to know that particular grammar point", so I just move on, I ignore that" (T03).

T03 thus clarified the variability of feedback, explaining that the different levels of students within the same class required the customisation of feedback. Notwithstanding this, fieldwork indicated there was no method for current teachers to ensure consistency of this customised feedback even from task to task with the same student. Of the three issues (a-c) listed at the beginning of this section, none was observed as resolved with a system or routine that all teachers were instructed to use. However, T05 stated that precise numbers and percentages were not important:

P: "you don't need to be really precise. For me, it's a kind of fuzzy thing. You just have kind of a gut feeling. Roughly, you know, if he or she falls into this category,

and if I can make that kind of judgement, then I am fully satisfied" (T05).

Current practice without the QAS appeared to make it unfeasible for teachers and administrators to know which students had the most feedback items and of what type. Yet, such information was stated as necessary to determine the placement and advancement of students. T05 focused on the bigger picture and not on types or quantities of feedback items, while the other five teacher participants focused on detail. This had implications for CAAS software: the design of such software should strive to facilitate effective micromarking and macromarking. I discuss this issue further in Section 12.6.

Participants did not explicitly state they selected items for feedback based on the weighting they gave the particular item. However, there were indications from some teachers that, as "a couple of insignificant punctuation errors" (op. cit) might have been ignored, errors were given some kind of weighting implicitly.

Current feedback was therefore selective to an undefinable degree in that there was no system, or weighting scheme, to guide teachers in their choice of what feedback to provide, if any, for what type of item. The current design of the QAS would not facilitate weighted feedback either. It would, however, provide statistics on students' most common feedback items, and, in this way, allow teachers to decide where to focus their feedback on subsequent occasions. The lack of weighting of feedback items in current feedback practice and in the QAS design may therefore be viewed as a lack of a resource to facilitate grading (summative feedback). On the other hand, the provision of statistics that facilitate customised feedback and comments may be considered a formative tool that fosters continuing, or sustainable, feedback. The two are not mutually exclusive, however, and the addition of a function to the QAS for weighting feedback items is discussed in Section 12.5

9.5.3.5 Customisation of Feedback and the Role of Memory

To throw light on perceptions of the effectiveness of current feedback, I asked teacher participants whether they customised feedback to the needs of individual students. My intention was to establish whether teachers had a method, and the desire, to use historical data to provide students with ongoing feedback on items previously flagged, and, in this way, build on the work already completed.

R: "Do you ever provide comments customised to a particular student based on the historical data for that student? P: No. The closest we come to is writing a report at the end of the term or semester when a student is leaving and that is based purely on my knowledge of that student in class" (T03).

This response corroborated my observations that, during marking, teachers did not refer back to earlier homework comments and corrections, and appeared not to have any means of referring back to such homework. Without a record of student work and feedback, the feedback already provided could not be used to help customise subsequent feedback, and this risked compromising the progressive nature of the process of learning through homework. In nearly all cases, essential notes were left to memory, as discussed later in this section.

I asked teacher T04 his/her feedback methods to gain further insight into the customisation of feedback:

R: "Would you like to improve it [feedback]? P: Overall, I think the feedback is good. Time constraints are the biggest problem because you want to do it individually as much as you can... The best feedback I find is one-to-one and time is always the problem with that - especially at lower levels when you can't so easily set a task for someone to do while you talk to someone else" (T04).

T04 thus sought to provide customised feedback in class, but was hindered by lack of time. But how feasible and practicable is it to provide individual feedback in class? There is a significant risk that discussion (feedback dialogue) on a feedback item relevant to only a few in the class might reduce the concentration and motivation of the majority for whom the feedback item was not relevant.

Use of a suitable CAAS would store feedback and allow teachers to identify which students made which mistakes and thus resolve the issue established by the fieldwork that teachers did not keep copies of students' work:

R: "When you mark the homework, do you keep copies of the homework before you give it back to the students? P: No, I don't. But I would like to" (T03).

In this way, teachers could maintain focus on the entire class and also assure students that they [the teachers] had registered the individual feedback issues of each student. This, in turn, would facilitate the option to discuss these issues at a mutually convenient time.

The faculty had implemented a system of portfolios, and these were used in different ways by different teachers. T03 said they tried to avoid the problem of not having a record of feedback by asking students to keep all their work in the portfolio. On asking whether s/he could identify the feedback items of students by consulting the portfolios, and in this way customise the feedback, T03 responded:

P: "Only if students have kept a copy of all their work, but they don't. R: So you need to ask them for that work because you don't have a record yourself? P: That's right. R: Would you like to have a record? P: Well, yes, because I need to be able to tell students that you've submitted two pieces of work, but you're still making the same mistakes – what can we do about it? At the moment, I say give me your portfolio and let's see how you're progressing, and the portfolio comes back empty" (T03).

For recording current feedback in order to customise future feedback, therefore, portfolios did not appear to be a suitable method. Finally, in cases where portfolios were kept by the students, teachers were obliged to request return of the portfolios each time they wished to mark work in order to facilitate comparison with earlier drafts and tasks.

T04 said it was difficult to be specific when it came to recording which students were strong in a particular skill, and that s/he was *obliged to remember the recurrence of errors* over the course of the term:

R: "Are you able to keep an overview of the abilities of each student? P: To a degree, but it's quite difficult to be quite that specific. But I expect that when I'm marking their work, I will see if they are continually repeating an error. Then I'll be able to work on that particular thing" (T04).

The use of memory may be an effective tool for some teachers with small classes, and when the feedback items are few. However, teachers T02 and T03 stated:

- they had 12 students in their classes;
- they allocated two or three written tasks per week;
- they practised resubmission;
- the students did not all submit their tasks at the same time;
- the course lasted nine weeks.

It is therefore difficult to see how the use of memory can be a reliable method of recalling the personalised feedback provided to students on 24 to 36 tasks a week under these conditions and when an egalitarian evaluation of the progressive feedback is required.

Without teachers maintaining a feedback report, and without the practice of teachers keeping a copy of student homework, absence of a teacher will also mean absence of the knowledge of feedback. Relievers may therefore find it impossible in such an environment to provide continuity of teaching and constructive feedback to extend the spiral of accreting knowledge, as illustrated by the Conceptual Model discussed in Section 2.3. In Section 10.1, I analyse participant responses relating to the feedback reporting functions of the prototype QAS, and the extent to which they believe these functions might support their use of historical data to provide constructive feedback on subsequent work.

Hitherto in this section, I have focused on the issue of memory in relation to the *provision* of teacher feedback. However, the fieldwork identified that the issue is equally as significant in relation to the *reception* of feedback by students.

As Sadler pointed out:

“Feedback is a key element in formative assessment”
(1989 p.119).

However, there is little advantage gained if the feedback provided helps to put right only that which was done wrongly, when knowledge of the error does not, or cannot, help students avoid the same error in future. It seems clear that feedback should help students to perform their subsequent work better. Such feedback may be called feed-forward, feed-ahead, and, more recently, has been researched as a field called sustainable feedback, defined by Carless, Salter et al. as:

“Dialogic processes and activities which can support and inform the student on the current task, whilst also

developing the ability to self-regulate performance on future tasks" (2011).

It seems logical, therefore, that if students are to reflect on feedback provided over the duration of their course, they must have an effective method of storing and accessing their work and the teachers' feedback at any time. As mentioned earlier in this section, students were allocated 2-3 homework tasks a week. They needed to compare work and re-read feedback for resubmissions and for formulating questions for peers and teachers. I therefore investigated whether student participants had a suitable storage system to allow them to perform these tasks efficiently. This fieldwork revealed that students had no generally-accepted method of storing homework:

R: "Where do you keep your homework? P: On my desk.

R: Is it easy to find homework from last week or two weeks ago? P: It depends how long ago. Last week's homework is okay, but one month ago the homework is not easy to find" (S11).

Thus, the fieldwork indicated that neither teachers nor students had an efficient storage system for tasks and feedback, and that the provision of meaningful, ongoing feedback dialogue relied upon the teacher's memory. This was corroborated by teacher T01:

R: "Do you have the same ability to extract that information [feedback corrections and comments] quickly now? P: I couldn't give those figures but I make a mental note as a class" (T01).

Yet, the participants acknowledged they could not remember feedback; making a mental note did not work and was not transferrable knowledge:

R: "Can you tell me anything about the particular strengths of the students' work that you have just marked? P: Well, correct sentence structure. That's all. R: And could you remember such things from previous days or previous students? P: No" (T03).

This fieldwork revealed the fundamental importance of memory in current feedback methods, and how reliance on memory permeated the task/feedback process:

R: "But it sounds like it's a question of remembering - you don't have a record? P: I don't have a record, no. R: Is it possible for you to, first of all, identify and, secondly, measure any change in performance as a result of homework and reading your feedback? P: I can only wait till the next piece of writing and if that's improved then I know the student has learned something" (T03).

The fieldwork thus identified the lack of a generally-accepted method of managing the task and feedback processes. However, some teacher participants and administrators recognised this. Administrator A01 stated that one solution had been discussed with teachers, and that this involved the use of Plan Books. I observed that teacher T02 maintained a Plan Book and kept a hand-drawn template for each class for each month (see Figure 65). T02 was the only participant who practised this method. The teacher consequently had a good overview of the students' class performance and of the submission of homework. However, the template did not store the feedback on students' homework, so the teacher could not easily identify the feedback items of any given student. Furthermore, drawing up this template required considerable time and effort every month. Ultimately, the value of such a system was determined by the conscientiousness of the teacher in maintaining the record over the duration of the entire course for each group of students for which s/he was responsible. While T02's Plan Book did not record the feedback on homework, the teacher had, by use of ticks, recorded whether or not students had submitted their work: one tick for the first draft, two ticks for the second draft.

Figure 62: Teacher's Plan Book - task and feedback record

CLASS WORK VARIOUS																		
Name		11/2	17/2	18/2	21/2	07/03				03/03	11/03	22/03		14/03	14/03	16/03	17/03	
1		✓	✓			5	100	x		✓	*	()		100		✓		
2		x	✓			5	100	✓		✓	→ 4.4					✓		
3		✓	✓			←												
4		✓	✓		5.7	5	100	✓		✓	✓	6.0		100	✓	✓		
5		x	✓		5.3	AB	AB	AB		✓	→ 5.4			100		✓		
6						5	100	x		✓				100	x	✓		
7						5	100	✓		✓				100		✓		
8						5	100	✓						100	✓	✓		
9						5	100	✓						100	x	✓		
10						5	100	✓		✓				100	✓	✓		
11						5	100	x						100		✓		
12							2	80	✓		✓	✓	5.0			✓	x	✓
13							4	80	x		✓	→ 5.0		100	✓	x	✓	
14							5	100	x		✓	(4.9)	✓ 5.0	60	✓	✓		
15							5	100	✓		✓	✓	5.4	800	✓	x	✓	
16												(5.1)	5.1	60		x	✓	
17											!!	✓	OK	100		AB		
		Grammar: Question Structure				5	Listening - assess			Writing: Leisure Draft 1				Listening Test		Follow instructions		
		Writing: Learning English: Draft 1				%	Writing - assess + Note taking		✓	Writing: Leisure Draft 2				Reading/Info Transf Task Chart		2nd + Parallel Text		
		Speaking: Tell								Writing: Final draft								
		Listening: Listen								Writing: 2nd draft								
		Writing: Learning English: Draft 2								Dicto Gloss 11/03								

A second teacher, T03, also found it necessary to draw up his/her own system for recording homework tasks and submissions. These were based on the content of the lessons, and the lessons were planned and documented in this system. In order to obviate the need to remember which tasks had been allocated to each student, and the dates of allocation and submission, the teacher had used Microsoft Word and designed a special template (see Figure 66).

Figure 63: A teacher's self-designed template for recording homework details

Term 1 2012 - Pre-Intermediate Task Record Sheet

Tasks	Student 1	Student 2	Student 3	Student 4
Writing Task 1 – Draft 1 Due Date:				
Writing Task 1 – Draft 2 Due Date:				
Writing Task 2 – Draft 1 Due Date:				

As with participant T02, T04 used his/her own system, but chose to use a technological solution to increase the efficiency of homework administration. By creating a Word template and storing it on the institution's server, T04 explained that s/he could mark the homework anywhere and update the record sheet immediately. Notwithstanding this potential functionality, however, T04 printed out the template and updated it by hand, adding a tick to indicate submission and adding a summary evaluation word (such as "excellent") to provide an idea of performance. The teacher did not appear to keep a record of comments given to students, nor was there any indication that the teacher stored information of a student's feedback items. Furthermore, T04 stated that the lack of a consistent and generally-adopted method of being able to evidence submissions was a cause of friction between students and teachers when there was disagreement as to what had been submitted and when. T04 used

this template also as evidence of homework submission in order to minimise such disagreement.

In addition to some teachers finding it necessary to design their own methods of storing homework feedback, administrators, too, needed a method of storing such information in order to evaluate students' readiness to advance to a higher academic level. Teacher and administrator participants pointed out that a method was in place to store in a student's Rainbow Folder (see Section 5.2) their best three pieces of homework (i.e. the homework having fewest errors and/or greatest praise), and that these pieces of work were used in conjunction with information provided by the respective student's teacher to determine the advancement of the student. The participants reiterated that they had to rely on their memory:

R: "Does that mean you have to try to remember the change in performance? P: Yes. I would highlight one or two extremely outstanding performances" (T03).

These findings were of value to the research in that they identified that teacher participants' feedback could be seen not to build significantly or consistently on prior student-teacher communication (feedback and subsequent dialogue), and the benefits of providing and receiving feedback were essentially a function of memory.

In Section 10.1, I analyse participant responses to questions relating to the function of recording feedback and whether participants felt this functionality might resolve the above issues. First, however, I report and analyse the responses of participants to fieldwork relating to perceptions of current feedback.

9.5.4 Perceptions of Current Feedback Methods

As discussed in several sections above, participants indicated that two significant characteristics of current feedback were inconsistency (due to subjectivity, time-constraints, differences in class composition, lack of prescribed method, different correction codes and methods of conveying feedback) and the inability of teachers to build on previous feedback due primarily to the lack of a recording system.

Administrator A01 explained that feedback inconsistency was significant because it could lead to student complaints of unfairness:

P: "One student has recently shown examples of feedback comparing one teacher to another. Their complaint was

that the feedback was different; they didn't find it acceptable" (A01).

The administrator explained that the reason for the difference in feedback on this occasion was that the teacher had discovered that the "near-perfect" homework was not the work of the student who had complained. The administrator stated there were therefore mitigating circumstances for the teacher providing different feedback.

In addition to issues of unfairness, inconsistency can also render more difficult the evaluation of student progress and may make an accurate judgment of student advancement more difficult.

T03 added to this, saying that there could be no consistency in the approach to marking because teachers used different marking philosophies depending on the level of the student:

R: "So, correct me if I'm wrong but what you are saying is there cannot be any consistency in the approach to marking, because you use a different marking philosophy depending on the level of the student in your class. P: Yes, I have three different levels, so I will have three different philosophies" (T03).

Administrator A01 confirmed that feedback consistency was a problem. As a result of participating in discussions with teachers to determine the advancement of students, A01 had to review student tasks and feedback, and, in this way, became aware of inconsistencies:

P: "I see through cross-marking (shadow-marking) teachers' marking what they write, and looking through students' portfolios I see examples of feedback. I don't think there's as much consistency in their approach as maybe there should be – that's a moot point" (A01).

To gain further insight into participant perceptions of current feedback methods, especially with regard to efficiency and effectiveness, I asked teachers how they could identify and locate information specific to a student. Having identified the need for teachers, in four cases out of six, to remember the feedback provided (see Section 9.5.3.5), I also sought to establish whether teachers had a system for recording and accessing details of any external factors and/or academic issues from previous courses that might affect student performance and thus feedback. If teachers had such a

system, it could provide teachers with a resource to understand better any learning difficulties of particular students: Had they just arrived in the country? What were the interests of the students? What was their performance record like? The system might also be used to provide teachers with additional data that could help optimise new feedback and customise elements of teaching. Speed of access to this system could be maximised by storing the details in an online database.

T03 was asked whether s/he could think of a better way of locating such information rather than using just memory. S/He responded:

P: "I would love to have a database where we could just look in there and find out anything about that student, but somebody has to put that into the database" (T03).

A database system called Artena is currently in use at the research site. Developed by Student Management Software Solutions Ltd. (SMSS), it is promoted by SMSS as:

"a student management tool developed specifically for the New Zealand tertiary education sector, offering a range of administrative features, managing students from their initial enquiry, through admission and enrolment, to graduation" (SMSS 2012).

The Artena system does not, however, provide functions to record task allocation details, feedback dialogue, and student performance. There is, therefore, an interesting opportunity for CAAS software with database functionality to satisfy the needs of teachers such as T03. Student details could be imported from other database systems, and thus obviate the need to "put that into the database" (op. cit.). Pending agreement on confidentiality issues and access permissions, the data available to teachers would contribute to ensuring subsequent feedback remained appropriate for each student. I acknowledge, however, that, as with any database system, the consistent input of data is necessary to obtain the most useful output. In Section 10.1, I analyse the field data regarding the QAS database functions that would require users to input task details in order to display feedback reports and analyses.

Having investigated the issues raised by teacher participants regarding feedback consistency and accessibility to student/task details, my analysis

now looks at the perceptions of participants to feedback. Administrator A01 reported that teachers believed feedback was not achieving its aims:

P: "One of the things that teachers say is that students don't listen to the feedback, they don't go away and digest it, so you spend quite a long time on detailed feedback in writing and I'd be very surprised if most people acted on it, or if any of the pieces we got back showed any improvements to be honest with you. So, that's the other side of feedback. As giving the feedback is one side of the coin, and then what the students do with it is the other" (A01).

A similar view was expressed by T03, but s/he took the view further by saying also that students did not learn in class:

P: "I don't think students learn in class. I don't even think students learn by the feedback we give them. They only learn when the teacher steps out of the picture, or the dictionaries or the guidance or any form of help or assistance is taken away, and they're literally dropped into the deep end where they have to survive... it's only when they go to the bank and they've just arrived in the country and they open a bank account - then I know they have learned something" (T03).

Two participants thus said that learning may not take place through classwork or homework – students only learned through immersion. Regardless of teachers' perceptions of student learning, however, feedback was considered important:

P: "I do think the students really appreciate feedback because if you don't give some feedback they are just lost really... I do think feedback is very important" (T04).

Student participants also perceived feedback as an important tool to help them improve. They did not share the scepticism towards the benefit of feedback expressed by some teachers:

R: "The teacher looks at your homework, gives it back to you, what do you do then? P: I will read it and will find where is my problem. And I will rewrite the homework and give it back to the teacher. R: So you resubmit your

work? Are you happy with that? P: Yes, I'm happy with that because it shows me why I have this problem and I can fix it" (S01).

The student went on to emphasise that it was not a mark that s/he was looking for either. What was important was the feedback that helped her/him understand the teacher:

R: "Your teacher gives you a mark and no comments or feedback. Are you happy with that feedback? P: No, I'm not because I don't know what the teacher is thinking. R: What is more important the mark or the feedback? P: Feedback is more important" (S01).

This view was corroborated by S03:

R: "If you received this mark and no feedback, would you be happy? P: No, because I don't know the details, it's just the points" (S03).

All 13 student participants said they preferred feedback to marks (grades). Responses indicated there was a strong case, therefore, that feedback was read and appreciated by the students. However, teacher T03 shared a certain scepticism in keeping with A01, but more in relation to how students revised their work in the light of the feedback:

P: "the student may have shown that he or she has found a way to correct the mistake, but I don't think I can tell if a student has learned that... I can see there is an improvement but I don't know if that's stuck" (T03).

For teachers to observe that new knowledge has become "stuck" (op. cit.), it must be re-used in subsequent lessons and/or homework. The expression of improvement can therefore be a protracted process, and one which may be difficult to identify and record. Research into improvement with and without the prototype QAS is outside the scope of this project. However, the practice of resubmission is one method to ensure students re-use correct language (when they rewrite their homework). The practice also encourages students to reflect on feedback items, as commented on by teachers, before revising their work.

On discussing the resubmission of homework, all six teacher participants stated that they required their students to resubmit their homework for

final review having considered the feedback the teachers had provided on the first drafts.

Administrator A01 believed resubmission was very important:

R: "So that's resubmission - you called it ping-pong suggesting it's more than one resubmission. You think more than one resubmission is feasible/useful? P: I think it's absolutely essential actually. Otherwise we are wasting our time giving the feedback" (A01).

On further investigation, this participant explained it was the method of resubmission that indicated that the feedback had been read. Resubmitted work showed that many of the errors had been revised. However, the participant concerned did not expand on whether it might have been a resource person who had read the feedback and helped revise the text. It was the teacher's responsibility to judge whether revisions had been made by the student or a resource person, and to what extent such an issue was significant. Use of a CAAS would not change this situation directly, but it is arguable that the recording of the feedback and change in the number of errors made over time would be an indication of the progress made by the student (it is highly unlikely the same resource person would be available to make a consistent stream of revisions for the same student, bearing in mind the errors previously made and the repetition of errors).

With the additional workload of administering resubmitted homework, handed in, perhaps, on different days, teachers need an efficient system to maintain an overview of who submits which tasks at what time. The fieldwork established that only two out of six teacher participants had a system (see: Figure 62 and Figure 63), and both these systems relied upon consistent, manual input. A suitable CAAS might have a function to display a data form in which users could record resubmissions, and thus provide quick access to all the data for each task, student and class.

While handwritten forms and computer input systems both require effort to add data, the former can easily be overlooked, and papers lost, and the information can only be shared by physically handing over the document to another individual. With a computerised input system, however, data can be stored centrally on a server, and any user with the appropriate permissions can access the data at any time.

While teachers' comments and concerns regarding current feedback appeared to relate mostly to consistency, system, and efficiency, students' comments related more to the quality of feedback. Student participants found reading teachers' handwriting difficult – both in terms of legibility and content. They saw the teacher as a resource, a human face that could put meaning to the feedback on their homework, the jargon of grammar books and the vocabulary definitions of dictionaries. Students discussed homework and feedback with peers, but also sought face-to-face interaction with the teacher to discuss feedback.

R: "Do your peers help you? P: Yes, they help me because I can talk to them and get some information from them and this is very helpful for my writing" (S01).

and

R: "And do you ask your student friends when you have problems? P: Yes, I discuss with my friends. R: And what about your homestay parents? P: No" (S02).

Twelve out of thirteen student participants said they regularly discussed homework with their friends (peers), while one participant said they did so only sometimes. All the participants said they would ask the teacher to explain feedback if they did not understand it.

R: "What do you do with the feedback from the teacher.
P: First, I look at what is my mistakes and I read through the mistakes and then I ask my friends if I don't understand my mistakes, but I usually ask the teacher why it is a mistake and I can learn that way" (S03).

This sought-after interaction with the teacher may be a natural component of the learning process. However, it does place a considerable burden on teachers, in terms of time required by students outside the classroom, and in terms of the distribution of attention dedicated to each student. Only one teacher (T03) had a method for providing students with website links and other resources that could help them consult online grammar texts and dictionaries, and thus reduce the time spent on face-to-face meetings:

P: "I try to use "[name of faculty] Online" where possible, but I'm not allocated a PC Lab, so I take my students to the library to show them how to use "[name of faculty] Online", if there are free PCs available. Then, I use the

site as a repository – links, documents, materials used in class etc. As far as I know, I’m the only tutor who’s using a Moodle site” (T03).

However, general use of the Moodle-based “[name of faculty Online]” was limited:

"because they [the teachers] don’t know how to use Moodle - as they’re not allocated time to learn how to use it – therefore, they feel they don’t need to know how to use Moodle and there’s no support person" (T03).

The significance of this for the current research is that while a CAAS may enhance the feedback process, the above teacher inferred that its general use would depend on giving teachers time to learn how to use it, and on providing support to resolve problems. This issue is further discussed in Section 9.6.1.

Assuming acceptance of a suitable CAAS, however, teachers and students could use the software, with its database of task-related resources and web links, to maximise the students’ independence and their responsibility for learning, while minimising the demands on the teachers for face-to-face consultations with students. Many of these consultations related to the clarity of feedback. With current feedback, student participants indicated that they could often not read the teacher's handwriting:

R: "Is it possible for you to read the teacher's feedback?
P: Sometimes, because the writing, I can't understand, so I ask the teacher. So sometimes it's difficult to understand the words. R: What do you do if you can't speak to the teacher? P: I would guess" (S08).

Of 13 student participants, 11 expressed difficulty in reading the handwriting of teachers (the students were not necessarily given samples of feedback written by their own class teacher). This problem of legibility would not be an issue if feedback were provided by means of a word-processor (see Section 9.6).

Paradoxically, two of 13 students stated that they preferred handwritten feedback to word-processed feedback despite the difficulty they might have in reading such feedback:

R: "Do you prefer feedback given in handwriting, on a computer, or by e-mail? P: Handwriting. R: What do you

like about handwritten feedback? P: It's clear and you can keep it. Typed feedback is too cold" (S05).

It was difficult to understand how, in one instance, the student could say "it's clear", but in another instance, state that the teacher's handwriting was difficult to read. This ambivalence became an emotional issue when the same student proffered that "typed feedback is too cold". I interpreted this to mean that the student felt the teacher was not sufficiently engaged in the feedback process, and that the feedback was either generated by the computer, or that the homework and the effort put into writing it had not been sufficiently appreciated by the teacher. I discuss feedback provided by the QAS on handwritten work in greater detail in Section 9.5.4.

In addition to legibility issues requiring consultation between student and teacher, participants raised the issue of readability of feedback. Student S02 indicated that even when the feedback was legible, it was not always understandable.

R: "Is there anything the teacher can do to make it easier for you? P: Yes. The teacher can write it in easier form so that I can understand easily. R: Should the teacher type it, or write it by hand? P: Write it on the paper is okay, but in an easier way. The words are bombastic" (S02).

It may not be feasible consistently to word feedback in such a way as to suit the level of each individual student in a large class of students with differing language abilities. To maximise understanding by the greatest number of students in the class, therefore, teachers may have to use feedback language that more able students could consider oversimplified and lacking in grammatical explanation. Without a recording system, and without the homework being copied and stored by teachers, current feedback risks being inconsistent in grammatical content and choice of wording. Further, by using the simplified feedback language, teachers may inadvertently demotivate higher level students who feel patronised (see also Section 12.2) at being given low-level English explanations and comments.

Regardless of whether or not feedback were administered through a CAAS, there will still be times when students do not understand the feedback. The current fieldwork indicated that students were aware of this and appeared happy to discuss any issues with friends and teachers:

R: "Do you understand the comment? P: Not really. R: So what do you do if you don't understand it? P: I'm going to ask to my friends and after that my teachers" (S13).

The difficulties raised by handwriting are compounded when teachers cannot read students' writing, something which was recognised by one of the students:

R: "Can you read the teacher's comments? [Student shakes his/her head.] What is the problem with it? P: The writing. I can't read properly. R: Do you think all the students have this same problem? P: Yes. R: Do you think the teachers have a problem reading students work? P: Yes" (S11).

I asked the student whether s/he thought there was a method of resolving this problem using technology:

R: "So what can you do about it? P: Write as clearly as you can. R: Is there a technological solution? P: No" (S11).

The student may not have understood the question, or may not have viewed the use of computers and word-processing software as a means of conveying feedback more clearly. Alternatively, the student had overlooked, or had not been given the opportunity to consider, use of the faculty's Moodle-based online system. However, in concluding comments, having seen the functions of the prototype QAS, the student spoke positively of the potential solutions offered by technology to organise their work and teacher feedback:

R: "Do you have this system now? P: No. R: Would you like the system [the QAS]? P: Yes. Yes I would. R: Would you use the system? P: Yes, for me, I would. R: Have you anything to add more talk to me about? P: I think the computer program is a very good idea for the students and teachers. It helps them organise their work and the comments from the teachers. That's very good" (S11).

As stated above, students felt teacher comments were more important than summative marks, so any system that could help students "organise... comments from the teachers" would be a positive development.

R: "Does the teacher give you a lot of written comments?
P: Yes, it depends sometimes. R: Do the comments help
you for the following work? P: Yes" (S13).

However clear and organised students were with the teacher feedback, though, it was found to be important that students had access to resources to find out what the feedback actually meant.

R: "Do you understand the feedback? P: [Hesitation] Not
100%, maybe half. R: Are you happy with the feedback?
P: If I knew what it meant because I'm not familiar with
it but I think it means good" (S04).

Telling the students verbally what these resources are and where to find them reduces teaching time in the class. An alternative system might therefore use a once-to-many method where the teacher writes the information once and communicates it to many people, in this case all the students in the class. This can be done using photocopies, though this is environmentally unfriendly, expensive, time-consuming, and relies on the presence of students in most cases to receive the documents; or it can be done using ICT. One of six teacher participants used ICT on some occasions to communicate homework, but his/her methods varied between using e-mail and the institution's online learning management system. Teachers appeared to have no generally-accepted ICT method of organising homework and communicating instructions.

Use of an appropriate CAAS could release teachers from the task of explaining to a class the details of homework and resource material. It could also:

- ensure all students had access to the same instructions;
- absentees could access the details, thus pre-empting the pretext of absence for completing their work;
- clarifications could be made using model sentences;
- and there would be no disagreement as to what the teacher "said".

The time saved by using such a CAAS could then be used for more face-to-face contact to resolve feedback issues, or for other matters deemed important. However, I acknowledge that the use of any ICT-based system requires practice, and that the insertion of data, especially for non-touch typists, takes time. In Section 9.6, I analyse the results of the experiment

that simulates use of the QAS, discussing teachers' provision of feedback and students' reading of feedback. Precise times were taken for these computer-simulated activities, and participants were asked questions relating to the speed of feedback provision.

This section of the fieldwork analysis has hitherto focused on feedback in the form of comments. However, as stated in Section 9.5.3.3, all six teacher participants used some form of correction code to flag feedback items in student homework. These correction codes were similar in design and use to the prototype QAS correction code and to correction codes used widely in the domain of ESOL. As stated by the British Council:

"Writing correction code... This is a common tool to optimise learning opportunities from mistakes learners make in written homework and to encourage the editing stages of process writing. You show the learners where the mistakes are and what kind they are, and then they try to correct them as a second stage to the initial writing task." (2007)

In addition to analysing participants' perceptions of comments, therefore, it is important to analyse their perceptions of correction codes. These data would then permit a comparison of users' responses to questions regarding current feedback and feedback administered by a CAAS.

When teachers flag items for attention on student homework, students can quickly identify areas they can build on, and areas they need to work on. With the addition of codes that indicate the type of mistake made, teachers aim to improve students' self-correction techniques and self-directed learning. This technique was appreciated by all student participants:

P: "They give us a list of abbreviations. It's really good to improve. R: Are you happy to receive correction abbreviations? P: Yes" (S12).

It became apparent, however, in this fieldwork that not all students understood all the abbreviations.

R: "Can you find a spelling mistake? P: [Student points to a feedback item marked as (PR) - preposition.] R: Is there a verb form mistake there? P: [Student does not know the abbreviations relating to verbs]" (S09).

This indicated, therefore, that whatever feedback system was used, time must be dedicated to helping students understand and become confident in using it. Student S01 had similar problems, even though s/he had been exposed to feedback using a correction code for many weeks and had almost finished his/her course:

R: "Imagine this is your homework and the teacher has used these codes. Can you tell me what this is [SP]? P: Spelling. R: Correct. And what's this one [WM]? P: It's probably a... I don't have a verb in my sentence. R: No, it's actually word missing. Imagine this is a whole sentence, and the teacher gives you a wiggly line. What does that mean? P: I have no idea. R: And the teacher gives you two ticks? P: Something good. R: Double-underlining? P: No, I can't know this one. R: And this one [WO]? P: Word order. R: Good" (S01).

S01 may have been distracted, or nervous, during the interview, but it appeared that they had difficulty with two functions of the correction code used in their class. Firstly, the student failed to recognise several of the codes and symbols, and secondly, they misinterpreted one of the correction codes; that is, they believed one of the codes required them to add a verb to their sentence. However, the correction code did not have a code for this, and the time they might have spent on seeking to correct this mistake would have been misspent. Feedback design must therefore ensure accurate communication to avoid such problems, and training must be given regardless of whether the system is ICT-based or not. The responses of students S09 and S01 revealed a breakdown in this communication, and constitute an opportunity to consider a revision to the QAS design. That is, the technology that allows teachers to insert a correction code could perhaps also insert a pop-up¹⁶. This could be used to inform viewers of the document what the abbreviation stands for and also to give an example of what the student should do. For further discussion of this design opportunity, see Section 12.4.

The above students may also have had problems identifying the correction codes because of the inconsistencies in the codes themselves. As shown

¹⁶ A "pop-up" is an information item that can be programmed to appear when a user: a) passes the mouse over the item to which it refers, or b) clicks on the item to which it refers

above (Figure 56 and Figure 57), at least two codes were circulating at the faculty. When discussing current feedback with administrator A02, the issue of consistency again came to the fore, but, for this administrator, it related to the quantity of feedback and equal treatment of all students:

P: "it [the QAS] certainly would have standardised... I think it would help standardise what students get" (A02).

Use of a system such as the QAS would not necessarily prevent teachers from giving different quantities of feedback to students, but the fact that such feedback was recorded would facilitate its subsequent review by an administrator. This, in turn, would lead to the identification of inconsistencies in the quantity of feedback provided, and would give the administrator the opportunity to provide teachers with guidance on how to ensure equal treatment of the students.

The issue of inconsistency of current feedback was exacerbated by the lack of an effective storage system to provide quick access to sought-after homework, according to one administrator (A03). The administrator maintained that students would come to talk to them with the homework written on paper, but there was no way at that point to look back over previous homework, nor to consider the teacher's instructions:

P: "they've got both the task, the question, and what they've written on the paper, but they can't necessarily refer to, back to anything online. So it is that sort of level of inefficiency, really" (A03).

When students felt the feedback from teachers had been too harsh, they would often go to the administrator to complain. This was because the students disliked face-to-face meetings with teachers to resolve problems, according to the administrator. However, the administrator had little or no information to go on to assist the students. If a server-based feedback system were available, administrators could access information not only on the task and what the students had done, but also on marking over a period. The administrator could compare the feedback from one teacher with that of another, or could compare feedback on the same task to that given to other students in the same class. In this way, the administrator could ascertain the veracity of the student's statements and whether there was cause to pursue the matter. Without such an ICT-based system, the resolution of such issues was considered inefficient:

“just inefficient sometimes. Definitely, it can create inefficiencies” (A03).

This view was corroborated by another administrator who also pointed out that issues were more difficult to resolve with students whose English was of a low level. They affirmed that using a system with a database of the students' work would be very helpful:

P: “That you could see a history of their term’s work and you could look back over it. It would certainly be useful because often, particularly with that group of students, we do fly blind a bit when their English isn’t that great and they come in with an issue. ... We’re like, ‘Go away and come back with all the paperwork relevant to the issue.’ So if they do that and we come back together and sit down with all the paperwork and look at their progress and the feedback they’ve been getting, yeah, it [the database] would certainly be helpful” (A02).

Analysis of fieldwork data that includes discussion of such a database is given in the next section. In this section, I have analysed the fieldwork data elucidating participants’ perceptions of current feedback, indicating how some participants believe feedback methods could be improved.

9.6 Scenario 2: Feedback Using the QAS with Resubmission

Analysing the fieldwork in the order in which it was carried out, I now present the fieldwork results, and interpretation, of my investigation into feedback using simulated use of the prototype QAS. First of all, I examine the data relating to administrator and teacher participants (Section 9.6.1). I then examine the data relating to student participants (Section 9.6.2).

9.6.1 Administrator and Teacher Perceptions of the QAS

The fieldwork analysed in this section was carried out with administrator and teacher participants during the Wizard of Oz experiment described in Section 7.7.1. I present findings and analysis of issues relating to:

- time (constraints and savings);
- data ownership and privacy;
- technology acceptance and adoption;
- training and support;

- the QAS with word-processed tasks (QAS-WP) and with handwritten tasks (QAS-Grid);
- Customisation of the QAS;
- the identification of QAS qualities;
- the resubmission process.

Time constraints, a topic discussed in greater detail below, was a factor that all three groups of participants felt affected by. The administration of the ESOL courses necessarily imposed a structure on the schedule and completion of courses, and it became apparent through the fieldwork that the QAS was perceived as having a potential role to play in alleviating some of the pressures of these time constraints.

P: "It's easier for a student to make excuses when it's pieces of paper, because the teachers are poorly organised as well. So with the QAS, at least you can track it and they can track themselves and if it's like [the faculty's] online system, it shows you what you've achieved and what you've not achieved, and if you can set up that you have to do eight pieces of writing this term, and if you don't do them all, then you can't get signed off. So it's more like a control -- they've got a bit more control - the students. And obviously that teachers have a better overview" (A01).

Administrator (A01) indicated the QAS could have a useful administrative function complementing its feedback functions by saving time and keeping order in submissions and results. Such organisation would be possible through the automated reports of the QAS, discussed in Section 10.1. By controlling the permissions/access to the forms displaying the homework and feedback data, students could obtain an overview of homework allocated and submitted, and of the appurtenant feedback, while teachers could see more comprehensive data about their respective classes and confidential information about their respective students. A01 also brings up the subject of control, pointing out that students would have "a bit more control" over their homework submission process. Further research would be required to ascertain the implications of this. However, it is possible that greater control might equate to greater motivation for some students, or that greater control would enhance students' overview and holistic

understanding of homework tasks and possibly the direction of study, and increase confidence and efficiency in their organisation of submissions.

A01 indicated that the faculty was at a turning point in its methods of administering feedback, recognising the shortfalls of paper-based administration, but as yet unclear how best to go about improving it. The following extensive quotation highlights the administrator's perceptions of how the QAS might resolve a number of critical issues in the faculty's current system. I have enumerated the most significant comments, and discuss these after the quotation. The functions of the QAS that I discuss are, to some extent, illustrated by the form used to order reports in Figure 64, below.

P: "From an administrative perspective, thinking of the system, how would a system such as the QAS benefit you? We have a lot of quality assurance (a), self-assessment, we don't get external audits anymore; we self-assess and then the quality of our self-assessments is evaluated, so that means the more evidence that I have for these self-assessments that we need to do, the better (b). And the more visible that things are, peer-to-peer as well, the more robust the system and the more that people can learn best practice from one another (c). At the moment, people's feedback is sending them paper files. The tutors' feedback to students is in paper files which get passed from teacher to teacher if somebody moves class, but otherwise it just stays in the file and nobody sees it until maybe the very end and then I might look at it with the teacher (d). If we had a system where we all had access to one another's work, then I think it would really help with things like benchmarking and standardisation of assessments (e), it would really help new teachers get to grips with how they mark and what level 4 performance and a level 3 performance looked like (f). At the moment we go to great lengths to achieve that in other ways. But I think a system like that would be helpful in that regard. So one of the keys to the system I think would be to be able to share our feedback with one another and tell each other how we carry out the feedback with one another(g)" (A01).

The underlying characteristic of administrator A01's response is that of the *co-operative aspects* that might be created and/or fostered by access to feedback information stored in a database:

- "the more visible that things are, peer-to-peer as well, the more robust the system and the more that people can learn best practice from one another";
- teachers would have "access to one another's work";
- new teachers would have models to help "get to grips with how they mark";
- "teachers would be able to share our feedback... and tell each other how we carry out the feedback" (op. cit.).

Without a suitable ICT-based system to administer feedback, it may not be feasible to obtain the co-operative benefits outlined by the administrator.

To analyse the administrator's response in greater detail, s/he infers that the feedback that could be stored by the QAS would aid the quality assurance process (a), because the system would provide a comprehensive record of all the homework tasks done (b), thus constituting robust evidence (c) to support the self-assessment necessary to ascertain whether quality requirements had been met. A QAS database of homework tasks and feedback would ensure transparency (or "visibility" op. cit.), and users with the appropriate permissions (such as administrators) could access information for a number of categories, e.g. teachers, students, class, term. This would facilitate the comparison of data, and provide the transparency that A01 considered desirable (c) and (g). (However, such comparison using the current QAS prototype requires either the opening of two views using Microsoft Word's "View side by side" function to compare data for different periods, or the printing of the reports. A function to simplify and/or enhance the Microsoft function to facilitate the comparison of data using just one report on the same screen therefore presents an interesting opportunity for consideration in the development of the QAS (see Section 12.11). Use of the QAS would also ensure that all relevant tasks could be viewed by users with the correct permissions, thus making the transmission of "feedback to students ... in paper files" (d) redundant. This would render the system more efficient i.e. by saving time and effort. It would also save resources, and, as controlled "access to one another's work is possible", it would assist "benchmarking and standardisation of assessments" (e).

Finally, A01 considered the QAS useful for assisting new teachers (f) in that the record of feedback could be used to gain a grasp of standards ("levels of performance"). This would facilitate more consistent task evaluation and end-of-term appraisals.

Figure 64: QAS group report

Pursuing the subject of time, I sought to establish whether teachers felt the QAS would save them time. Participants responded unanimously that the QAS would save them time, though the questions were not identical and respondents identified the time saved in different ways. Teacher T02 stated use of the QAS would save time inserting correction codes:

R: "Do you think you would increase the speed of using this feedback method with time? P: Yeah, I think if... I mean, that one is brilliant. (points to a paper). R: Which one? Would you tell the camera? P: Oh, what is it called? The one with the errors - the correction codes" (T02).

Teacher T06, on the other hand, stated the QAS would save time inserting feedback comments:

R: "Did you find that anything you did today in the experiment was different from the way you would normally mark a piece of work? P: Yes. I think that when I'm marking myself I'm usually writing a lot and probably my explanations would take me longer because I'm having to write a lot of the explanations that I just clicked on" (T06).

Teacher T03 said the QAS progress report would save time by speeding up the process of determining what to focus teaching on, in turn resulting from the quick turnaround (submission and return) of homework facilitated by the ICT-based marking system:

R: "Would this type of report save you time? P: Definitely. Yes. R: Do you think it would improve the learning process or the teaching process? P: Well, this would be very immediate. I could go in tomorrow and find the section that related to punctuation, and do it, and concentrate on that, whereas with my current method, they [the students] have to wait for two weeks before they get a turnaround. And if I have 16 students in the class, that two weeks can be stretched to three" (T03).

Teacher T03 also described the time s/he would save by not having to perform a number of manual administrative jobs with the homework and feedback:

P: "I wouldn't have to photocopy it. As it stands I have to mark the students' work, then photocopy it, return the original to the student and then keep the copy in the student file as a form of evidence. Well, that's time consuming and I think it's wasteful" (T03).

But speed is not everything. If feedback is of poor quality, students will not benefit from a fast turnaround. Teacher T02 indicated that QAS feedback would be quicker and of the same quality as that given without the QAS:

R: "Did the QAS increase or decrease your marking speed? P: I suspect it has made it faster. I'm sure yeah, I wouldn't have marked that fast. I'd be writing the comments still. R: And has it changed the quality of your feedback? P: No, because things like specific,

grammatical mistakes, that is just straightforward. That is just great. R: Would there be a change in quality? Would it be the same quality as you had before? P: It will be, it will be the same. The only difference is they didn't have to decipher my handwriting" (T02).

Teacher T05 indicated that keeping up with the marking was difficult, but that use of the QAS would alleviate some of the workload:

R: "Can you comment on the following: you find it difficult to deal with all the marking with the current status quo. What do you think of the ability to add comments with the QAS? P: Well, one of the significant differences it can make is reduce my work load a little bit" (T05).

While administrator A01 could see the benefit of the QAS, as discussed above, administrator A03 believed "the key thing around things like this" (A03) related to privacy:

P: "I think the key thing around things like this is the stuff around privacy and having student ownership, so students feel that they're learning, they are earning their learning and they are able to actually choose who can see what's happening... I think these sorts of things will work and should work really well. The students feel that they've got their own control over it" (A03).

Administrator A02 shared a similar view on privacy, but pointed out a second issue of "power imbalance":

P: "But the two drawbacks I would probably see as being risks [to the acceptance of the QAS] would be the first one around privacy and so the students' right to have support and keep that private, even though under the privacy act it might not quite count because it's not necessarily actual personal information. This has already come up at [name of faculty] this year with individual learning plans on Moodle, which is that those plans can actually be seen by a large number of staff and most students don't know which staff can see them. They don't have update clauses and there's been a lot of backlash

from students about that. So I think the privacy thing is quite key. So the student actually needs to be able to opt, have an opt-in mechanism for allowing people to see things.

"The other one would be the power imbalance between staff and students which is something we're quite big on here. Just like in the employment relationship, there is power imbalance between staff and students. There's a power imbalance. Right. Which is that staff have the overall power in marking, in stating that a student has met the criteria to pass. And it could be...this is an extreme scenario to present but you may well have a staff member that has a conflict with a person, you know say a member of the student association, and when they see that student is getting support from that member of the student association, it may well bias their view of that student as a result. Now that's a very extreme scenario. There are many, many tutors that we work very well with who, if they saw that the student had support from us, they'd probably think it was a good thing. It's all about working together. But I can see that being a risk to some students" (A02).

The significance of the administrators' comments is that they could contribute to ensuring a well-considered interface between ICT and human interaction: the QAS feedback system must safeguard confidential information and perhaps offer students an opt-in to determine who can see their data. Being only a prototype, the design of the QAS does not currently have a refined structure of permissions, and access rights are still at an early stage of development. Teachers have access to their respective students' information relating to academic matters and to matters that may affect academic performance, while students have access only to their own information. Students do not have access to the confidential notes that teachers may record in order to help them customise their teaching and aid understanding when performance changes unexpectedly. Academic administrators have access rights to all information. The opt-in idea raised by administrator A02 is thus an interesting issue with implications for the acceptance and adoption of the QAS and should therefore be considered a development opportunity for the software (see Section 12.12).

In addition to the possible development of an opt-in function relating to data privacy (storage of personal data, and access to them), the response of administrator A02 prompted a further design opportunity for the QAS. This development would be to ensure that the software included a user-definable area for the creation and customisation of usage terms and conditions. At the end of this information, a tick-box (or similar) could be added that users must check before use of the software to confirm they have read and accepted the terms.

The responsibility for learning (A03) and the potential power imbalance (A02) are issues whose implications go beyond this research into feedback administered through a CAAS. However, it seems reasonable to argue that the practice of encouraging the resubmission of homework offers students the chance to embrace the responsibility for learning by responding to teacher feedback, doing as much or as little work as they think appropriate on the second submission, and entering into a dialogue with the teacher. Use of the QAS would seem to address the issue of power imbalance in that it records all tasks and feedback, and is designed to permit review and even auditing. In this way, if students feel they should have received better feedback, or that they deserve to advance to a higher level class, all relevant parties can discuss the work in question, teachers can refer students to earlier feedback, and all parties can consider overall performance together.

Administrator A03 brought up the subject of technology adoption. As mentioned in the chapter: Implementation, the acceptance and adoption of new technology is a well researched subject in its own right. However, it is appropriate to bring up the subject again here as the administrator's responses to interview questions elucidated a significant issue that could affect acceptance of the QAS. A03 pointed out that teaching was becoming more IT-focused but that delivery excellence failed due to lack of training for teachers:

P: "I think generally teaching and learning is becoming very IT-focused and there's a lot of change and development happening. One of the biggest concerns I have is that resourcing is being taken out of face-to-face contact time and being appropriated to online and blended learning, but that the institutions that are doing it don't actually have in place all of the resources to

actually deliver it in an excellent way. Tutors don't have a clue where to begin. It isn't their fault, they haven't grown up in an IT society. It's not their...it's certainly not their fault, it's just the situation that they're presented with" (A03).

The implications of this for the QAS are that any removal of paper and pencil feedback methods currently used by teachers, and replacement with an ICT-based feedback system should be accompanied by an analysis of training and support requirements. Different users will have different training requirements, but for those users who "haven't grown up in an IT society", more training and availability of support may be necessary if the QAS is to be accepted. However, the QAS was designed with a view to being as close as possible a reflection of commonly-practised, manual, feedback methods, using functions that users are likely to be acquainted with in Microsoft Word. The simple concept of the QAS's point and click insertion of correction codes and comments was intended to appeal to users of all levels of ICT ability. Teacher responses to questions as to whether this had been achieved (in the Wizard of Oz simulation) are given below:

R: "What was your first, or preliminary, reaction to using the QAS drop-down menu? P: It was actually easier than I thought it would be. ... For me it seems quite quick and it was clear. You know - easy to follow" (T06).

R: "Is there anything you did in the experiment with the QAS that you would have preferred to do otherwise? P: No, I think a system of marking like this is clear and it's consistent. I think those are two key things for students getting back marked work" (T06).

R: "In the light of this trial with QAS, does the QAS allow you to mark as you want or do you feel constrained in a way? P: No, I felt it was very smooth. ... R: Was there anything about this trial of the software that you considered awkward? P: No, no" (T03).

In order to gain further insight into how teacher participants perceived the principal functions of the QAS, I asked them for their opinions about the correction code system. Teacher T03 believed it would provide a suitable add-in tool for Word and would fill a gap that was not currently addressed:

P: "So, personally speaking, I find myself printing Word documents, marking them with green pens, writing my codes and then giving them back to the students, but I need a stepping stone, I need something in the middle to cover the middle ground. So I need to be able to do my marking on the screen on the Word document and then immediately return it to the students. It should only take 20 minutes... So I need something that already exists and, just like TurnItIn embedded in Moodle, I can go to this extra add-in, extra tool, and incorporate it into my marking and then give it back to the students all within an hour. R: Do you think the QAS would be a suitable stepping-stone? P: Yes, I really do" (T03).

So, if the QAS could fill the gap and provide an acceptable structure for administering feedback, what did teachers think of the specific functions? T02 commented on the correction code:

P: "I think the coding that you have is excellent" (T02).

This indicated the teacher was happy with the correction code, despite the fact it was a prototype with limited abbreviations, not tailored to the specific needs of the research site. T02 continued, saying:

P: "I think it's a good idea. I'm sure my marking will be quicker. After a while, you know where to click" (T02).

The teacher believed s/he would save time, thus reducing the burden of non-contact work - considered a critical issue by all participant teachers citation required.

Teacher T06 emphasised the clarity and consistency of the QAS feedback:

P: "I think a system of marking like this is clear and consistent" (T06).

However, for this consistency to be of general value, all teachers would have to use the same correction code. That is, the abbreviations to flag errors would have to be the same for all teachers. Customisations would then require approval by the auditing administrator to pre-empt confusion when students moved class or changed teacher. For example, one teacher may wish to use "T" to indicate the tense of a verb was incorrect, while a second teacher may wish to use "VF" (verb form) to indicate the same

thing. Consistency must be applied across the board, and teachers would need to be willing to give up their own paper-based codes.

The customisation of comments would not have such implications, however, as they are more advisory and descriptive in nature, rather than indicators of right and wrong. Teacher T02 believed the drop-down menu of comments would reduce the need for handwriting – while that is a given, since the QAS is computer-based, the teacher went on to explain it would make the feedback clearer:

P: "It cuts down the writing... So even if it doesn't cut down on marking that much, it will reduce the lack of clarity. I think the clarity is the main thing" (T02).

Clarity issues included the inability to read handwriting, which is a problem addressed by the QAS, and the inaccuracy of expression used by the teacher in providing feedback. The teacher inferred that time spent on marking might not be greatly reduced. I did not research, however, whether there could be a reduction in face-to-face meetings with students resulting from the need to explain feedback that was not legible.

Teacher T02 believed that when using the comments in the prototype QAS, s/he would need to spend less time determining and writing the comments. With additional customisation, the teacher thought a comments database might reduce further the time spent on marking, as long as the database did not balloon out of control. This prompts a new opportunity for a design revision: a function within the QAS to categorise feedback preferences by teacher. At present this function does not exist, but it is technically feasible to incorporate it (see Section 12.13).

Teacher T03 fully understood the concept of the customised database and appeared to approve:

P: "I wouldn't say the list of comments was rigid, it may have a limited number of comments, so as you use the comments and add new ones, I don't see why you couldn't add that to the database and grow the database, it lends itself to that" (T03).

T03 grasped quickly how the QAS functioned and how it could be customised. This reflected, perhaps, the teacher's general interest in, and use of, ICT. It was therefore valuable to receive a response from teacher T06, as T06 had little ICT knowledge and expressed nervousness at using a computer for marking:

P: "It's actually very interesting for me. I was a little bit nervous about doing it because you always think it's going to be terribly difficult to work these things out and don't want to appear stupid. But it's been really good and I would certainly be very interested in seeing the program when it is finally developed and out there for us all to use. I think it would be most helpful for the teachers and I think for the students too it has many benefits for their learning and then for communication" (T06).

Following interview questions relating to the QAS-WP, I progressed to questions regarding the QAS-Grid. The QAS-Grid is used to mark handwritten homework and requires that the homework be scanned in order to be appraised by the teacher using Microsoft Word. It allows teachers to keep a record of the homework and feedback in the same place as any homework submitted as a computer file. This was not possible with handwritten work at the time of the research, and the faculty's system involved returning homework by hand to students. Three selected pieces of homework for each skill used for evaluating Evidence of Pass (see Chapter 15, Glossary) were copied and kept, but a record of performance for each student and a record of the tasks allocated by teachers were not kept.

Some teachers liked the idea of homework being scanned for marking:

R: "Does the fact that the QAS allows you to mark scanned work appeal to you? P: Yes, very much so" (T03).

However, other teachers expressed some ambivalence about the scanning process. T01 thought the scanning of homework would be "time-inefficient", as feedback could be written directly on the paper copies. T01 said that if homework was "just a thing that goes backwards and forwards" between teacher and student, the scanning process was not required. T01 did not share the views of the other participants that having a record of performance (and quick access to it) was useful because, s/he stated, the students could be asked to show their work to the teacher again at any

time. The weakness here was that students did not always know where earlier homework was. If it was kept in a book, they would not be able to do subsequent homework in that book while it was being held by the teacher/administrator. Loose pieces of homework would result, with possible loss or damage occurring. Furthermore, immediate access to performance records would not be feasible.

T02, who had never used a scanner, provided insight into the level of knowledge in the field, and in doing so gave an indication of what s\he thought of the QAS-Grid process:

R: "The only difference is the scanning. But if there were a common scanning room like the photocopy room then you could go through it. P: Yeah. Because now it's quite quick, isn't it? It's like a photocopier... we've just sort of discovered that it can be done. But those sort of things, can you, if it becomes a word document, can you edit it? The students' handwriting? R: There are different ways of doing this [researcher explains how the QAS-Grid works]. P: Oh right. So the software would have to do that. I think it's a good idea" (T02).

I asked teachers to look at homework marked using the QAS-Grid and sought comments on the function of the QAS to customise colours (each colour represented a different category of grammatical error, or indicated praise):

P: "Right, so teachers decide what colour they want to use. Brilliant" (T02).

Teacher T06 explained why they thought the use of colours was good (their practice was to use green to highlight errors).

P: "Well, I think it would be really helpful from the teaching point of view because if you are teaching a class and... the classes are at least six students... if you glance over the work that they handed in and there's heaps of green, and say green was to do with the forms or something, then, right, that's our next lesson!" (T06).

This teacher found the use of colours helpful in determining the next lesson; this would reduce the work necessary to identify what should be done next, and ensured continuity of teaching by building on what was done

previously. Additionally, any reliever coming in would be able to see the same data and make a corresponding decision.

During the interview process, I became aware of a previously-unconsidered consequence of colour-customisation, however. Students changing class each term, or even changing teachers within a term, could receive feedback with feedback items highlighted in different colours according to the personal customisations made by the teacher. For example, Teacher 1 may highlight a verb mistake in red and a noun mistake in blue, while Teacher 2 may highlight a noun mistake in red and a verb mistake in blue. This could lead to misunderstanding. To avoid this potential confusion, the QAS design would need to be revised, so that access to the QAS function to customise colours were restricted to the administrator, who could then adopt a colour set appropriate for the group of classes or period of time s/he deemed suitable.

A further function of the QAS, intended to save teachers time in dealing with feedback, was that of automated e-mail reminders being sent to students who were late with their submissions. Administrator A01 believed it would serve little purpose:

R: "So what about automated chasing with e-mails that indicate that the work hasn't been submitted and needs to be submitted? Would that reduce the chasing? P: It's a really interesting question because we've not had a system like that, so we don't know. What I find with even my face-to-face chasing on the fourth attempt in front of the class is that it's still not being done. So I don't think it would be the answer because it's easier to ignore the email prompts than it is to ignore a teacher in your face" (A01).

With staff aware of the cultural importance for many Asian students of not losing face, this response indicated that the time-saving function of sending automated e-mails might not be particularly effective with some students.

A further time-saving function of the QAS was considered by T03 to have ramifications for the environment. Not only would the software save time by not requiring homework to be photocopied, but the reduction in the need to photocopy would lessen the consumption of paper and of trees.

Participants believed they would need to become familiar with the QAS, but that, being accustomed to Microsoft Word, this process would not take long. Even within the duration of the experiment, teachers indicated a certain confidence.

P: "it was relatively easy once I got used to it" (T01).

And

P: "for me it seems quite quick and it was clear. You know? Easy to follow" And like any system, once you understand it, you just get quicker at it (T06).

Perhaps the most prevalent thread of consistent responses, however, was that of the time-saving features of the QAS. Regardless of whether or not homework contained a lot of errors, the QAS was deemed fit for purpose:

P: "if I was marking work with a lot of errors I still believe it would be fine" (T06).

and would help teachers speed up the return of homework to their students (see T03 reference, p. 228). Another teacher (T06) said that the experiment promoted quicker marking and more concise explanations. Clicking on drop-down menu items for comments increased efficiency:

P: "when I'm marking myself, I'm usually writing a lot and probably my explanations would take me longer, because I'm having to write a lot of the explanations that I just clicked on" (T06).

The comments of T06 were supported by those of T03, who said that use of the QAS in the simulation made him/her feel the need to be quick. On pursuing this comment, the teacher inferred that using the QAS reduced subjectivity:

R: "Did using the QAS change your marking method? P: Well, yes, apart from being watched, I needed to be, well, quick. R: That's an interesting expression, you need to be quick. Can you explain what you mean? P: Well, if I'm subjective I could just sit here and dwell on it saying, ok, this student has ... I might just give myself all that time. Whereas in a system... by definition it's systematic, so I know - yup ok, this is the rhythm. You get into a rhythm and say, OK, great, done! Next! Almost sounding

like a factory - like an assembly line. But that way I get the work done much faster: it's already recorded, return it to my students and get on with the teaching so it encourages me to be more systematic, efficient" (T03).

The software would offer users a database of resources that could alleviate some of the effort and time teachers have to invest in thinking what to write. T03 identified this as one of the strengths of the QAS:

P: "Well, immediacy. Pool of resources already in place; I don't have to think about it in a way" (T03).

Simulated use of the QAS instilled a feeling of efficiency and enthusiasm amongst teachers.

P: "And do the marking and return it almost immediately even before students arrive at the class the next day. I would really be motivated and encouraged to do it almost immediately. I don't know why but it lends itself to that kind of speed" (T03).

To what extent users' responses were influenced by the fact that the QAS was a new concept, or because they were speaking to the designer of the software, or because they thought the QAS would be able to cut down their workload and improve their efficiency, it is impossible to tell. However, it is significant that teachers T03 and T06 brought up the characteristics of ease and speed – topics that were not mentioned in my questions – indicating that rapid marking might be possible.

A second prevalent thread in the responses given by the teachers was that of clarity of homework and feedback completed with the prototype QAS.

One teacher indicated that students sometimes corrected their work but put their corrections in the wrong place because they were in a hurry; s/he believed the use of the QAS would help alleviate this problem:

P: "It would obviously be a lot neater because the other thing is, sometimes the students, they'll do their corrections but often put them in the wrong place or they make silly errors with things which is just because they're in a hurry or whatever. I think that would be fine" (T06).

Participants found use of the QAS instrumental in ensuring the qualities of legibility, clarity and comprehensibility were safeguarded:

P: "well, everything is totally legible, isn't it?" (T06).

When asked whether the quality of QAS feedback would be equal to the quality of non-QAS feedback, teacher T02 said it would be, except that the students would not have to "decipher my handwriting".

P: "Sometimes, when I'm too involved, my handwriting gets really out of control. And with clarity, sometimes when you're thinking of a sentence, it doesn't come out as clearly. But once you've planned it and put it in and used it all the time, the clarity is going to be there" (T02).

Here, the teacher emphasised the importance of comments in the database, not only the clarity of the teacher's handwriting. Teacher T05 thought that it might be difficult using pre-defined comments to address complex language errors, but when informed of the QAS function to customise comments, the teacher changed his/her mind. It is a valid point, however, that the provision of detailed feedback on a large number of macromarking items would be difficult using pre-defined comments, as the possible permutations of errors could exceed the practicality of creating the advisory comments to cover them. T05 thought the QAS could have a free-text option, offering users the opportunity to add any text required at the end of the homework (see Section 12.7). This is certainly an interesting opportunity for revising the QAS design, but it has two drawbacks. Firstly, it might distract teachers from using the drop-down comments and from inserting new comments to fill any gaps in feedback. This would then defeat one of the essential aims of the software, namely to ensure consistency of feedback. Secondly, despite the fact that the free text could be stored in the QAS database and maintain the function of auditability and performance evaluation, the writing of the text would slow down the feedback process, reinstating the problems expressed by teachers that feedback took too long and that it was sometimes difficult to know what to say. Further research into this issue would be necessary to determine the best course of action.

During observations, I noticed that teachers did not normally look at submission one when marking submission two. This implied the teacher would not be able to identify the changes in performance, whether the students had read the feedback and tried to correct the mistakes, or even to what extent the second piece of work was the same as the first piece of work.

If teachers used the QAS, they could see very quickly any changes students had made in Submission 2, due to feedback items being flagged. Viewing both submissions entailed opening two Word documents and resizing the windows either automatically with the “side-by-side” function of Word, or manually. This raised the opportunity for a design improvement in the QAS: the addition of a toggle to load and position selected documents side-by-side (see Section 12.11). However, one teacher believed there was an issue of screen space. The screens available at the faculty were not always large enough to make such comparisons comfortable, i.e. viewing two A4-sized documents would mean for some teachers either a) reducing the viewing size to say, 80%, or b) constant use of the mouse to cursor to the parts of the documents outside the boundaries of the screen. Where the screens were big enough, however, one teacher thought it would be a very good idea to view two documents side-by-side using the QAS:

P: “Oh my gosh, you can see the difference. Maybe, hopefully, if the students have learned and you've done the editing well, you can see at a glance... it's like flipping the paper, yeah” (T02).

T02 used the term “flipping the paper”, and this suggested an alternative means of viewing two documents. A toggle could be added to the QAS design so that when a user clicked on the toggle, Word would flip between Submission 1 and Submission 2. This might be particularly useful for users with small screens.

The subject of comparing documents was brought up again by teacher T03. this teacher found it necessary to compare the work of one student with that of another to ensure consistency of feedback.

P: “Well. Subjective. Yeah. When we do final assessments especially on written work we are always... teachers, are wary of... if I give a high mark to this student, how does that compare to the other one. And we are always told off for comparing students, because we shouldn't but you can't help but make comparisons as you are going through the marking. I think the argument for it is that teachers want to be consistent, so if a student says 'Look you marked [name of student]'s excellent, I wrote exactly the same thing and you just wrote good', you know the teacher should be able to explain the reasoning” (T03).

If the QAS were used, teachers could use the drop-down menus to add the comments and corrections that were appropriate. This does not remove completely the perceived risk of adding two different comments to two identical submission items, but it reduces the probability due to the comments being predefined and fewer in number than the almost infinite forms of expression a person can create. Where teachers wish to ensure perfect compatibility of marking, however, the QAS offers teachers the option of viewing and comparing feedback in the student and class reports (see Chapter 10), and Word provides the option of viewing documents side-by-side for comparison, as described above.

With QAS feedback recorded in the database, students would be able to request, or be given by default, a copy of all the assignments details and the feedback provided over the course of their studies, and to use this for presenting to subsequent education institutions, employers, or just for personal use. This was not feasible with the faculty's current homework (and coursework) system. Administrator A03 was very enthusiastic about this function:

P: "Absolutely, I think there's real benefits to having... to being able to... students being able to take some of the learning module work that they have heard... that happened in the feedback they've got and take it around with them wherever they go because there's a lot of change around you know, students do change institutions, and being able to keep your work and refer back to it. Absolutely and that includes the [inaudible] and the feedback. Absolutely, yes" (A03).

This indicated the potential benefit of the QAS went beyond the immediate and faculty-specific functions of feedback, making a it program that could promote continuity of students' education in that subsequent educators could see at a glance the tasks completed by the students and the respective feedback, and would have the opportunity to build on this information. However, this line of questioning was not pursued as it was outside the scope of the current research. Further discussion of the participants' responses to issues relating to the QAS database and the forms that draw on the data stored are given in Chapter 10.

This section has analysed teacher and administrator participants' perceptions of the QAS correction code and comments drop-down menus. To

summarise findings, 6/6 teachers found the QAS correction code to be a suitable and efficient means of flagging feedback items on handwritten and word-processed work. 4/6 teachers found the QAS comments menu to be correspondingly useful. Of the two teachers who expressed negative reactions to the QAS comments menu, the first teacher, T01, said:

P: "I would find the comments a bit limiting... when it comes to my comment for the student I don't think anything written there... I wouldn't choose it. I would write my own. It's my relationship with the student we're dealing with here. It's not their work. That's my dilemma here. I'm trying to keep a relationship with the student. A human-to-human relationship" (T01).

Teacher T01 raises an important point here. Regardless of the potential usefulness of a program such as the QAS, the teacher implied that it might distance him/her from the student. The teacher sought a level of customisation that would allow teachers to personalise their comments to encourage the "human-to-human" relationship. Longitudinal studies would be necessary to ascertain the level of success of the QAS customisation function, and such studies were not feasible in the current project.

The second teacher (T02) thought the comments were "very impersonal". However, on further discussion, when they had understood the QAS function facilitating the customisation of the comments, they were more positive:

P: "I'd like it to be a bit more personalised. R: And can you customise it? Can you add your own comments? P: Yes, I believe you said we can add those things. R: And would that answer your question? P: Mm. Yeah, oh, that's good" (T02).

Considering the prototype QAS was evaluated in just a one-hour interview, the responses to interview questions put to the teacher and administrator participants revealed valuable data indicating an overall interest in the feedback methods administered by the QAS. In the next section, I present and analyse the results of questions put to student participants.

9.6.2 Student Perceptions of the QAS

The fieldwork relating to student participants is presented here as a separate section because students' experience of the QAS is restricted to the reception of homework marked using the simulated QAS, and to the

display of a limited number of QAS reports that summarise the feedback for this homework. Students would not have the QAS installed on their computers and therefore would not be able to use the QAS' drop-down menus.

To introduce the QAS to student participants, I presented them with homework written and marked in different ways, as described below, and initiated the interviews with questions on legibility and readability. While these issues were analysed in part earlier in this chapter, the issues raised here relate specifically to the QAS-WP and QAS-Grid. As the majority of students (8/12) were found to prefer submitting their homework in handwritten form rather than as a word-processed document, this led to the majority of data collected relating to the QAS-Grid.

9.6.2.1 Legibility

Legibility was a significant issue and student S09 acknowledged that reading handwriting might be a problem for the teachers.

P: "I think the computer [QAS] gives the teacher... it is better to use a computer because the teachers don't waste time trying to understand my writing" (S09).

However, this modesty I found to be inappropriate, as I observed his/her writing to be clear and consistent. Student S09 came from a Western country; students who came from the Middle East or Far East were observed to have greater difficulty writing English (due to having different alphabets and/or directions of writing). This did not mean that their writing was any less clear, however, as they expended greater effort in producing each character, and words were normally printed rather than written. Furthermore, it cannot be assumed that writing on a computer is any easier, or quicker, for some nationalities than writing by hand. The processes are different, and pose different challenges. For a Vietnamese student who had little experience of using a computer (student S02), operating a PC and locating the characters on the keyboard was more time-consuming than the effort required in forming the characters by hand. It was also recorded that 12 of 13 student participants felt they improved their English more if they wrote their homework by hand. Further questions established that this "improvement" related to the mechanical process of joining the letters and creating a suitable layout, rather than making students think more about the grammatical accuracy and content of what they were writing.

The QAS-Grid was designed to provide those students who preferred to submit handwritten work with the opportunity to do so, yet without impeding use of the QAS for mediating and recording feedback. In contrast to teacher participant perceptions of QAS-Grid feedback, student participant perceptions indicated ambiguity. To identify student preferences, I presented all 13 student participants with, alternately, handwritten homework with handwritten feedback (Figure 65), handwritten homework with QAS-Grid feedback (Figure 66), and word-processed homework with QAS-WP feedback (Figure 67).

Figure 65: Handwritten homework with handwritten feedback

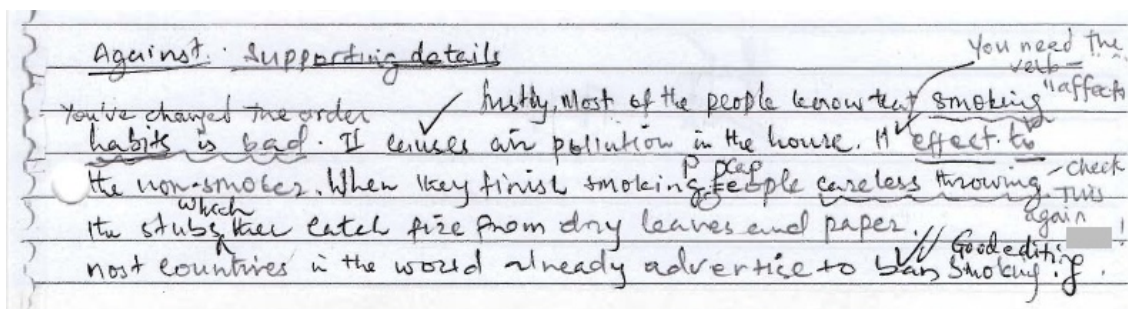


Figure 66: Handwritten homework with QAS-Grid feedback

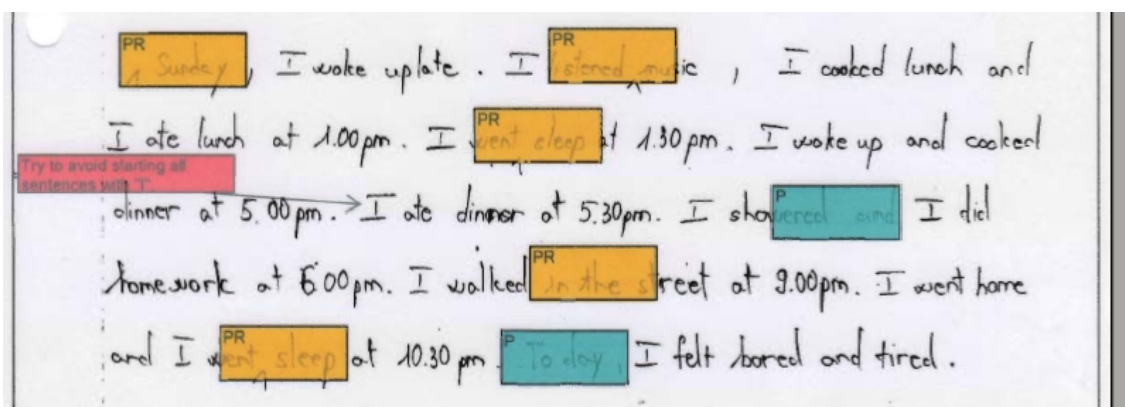
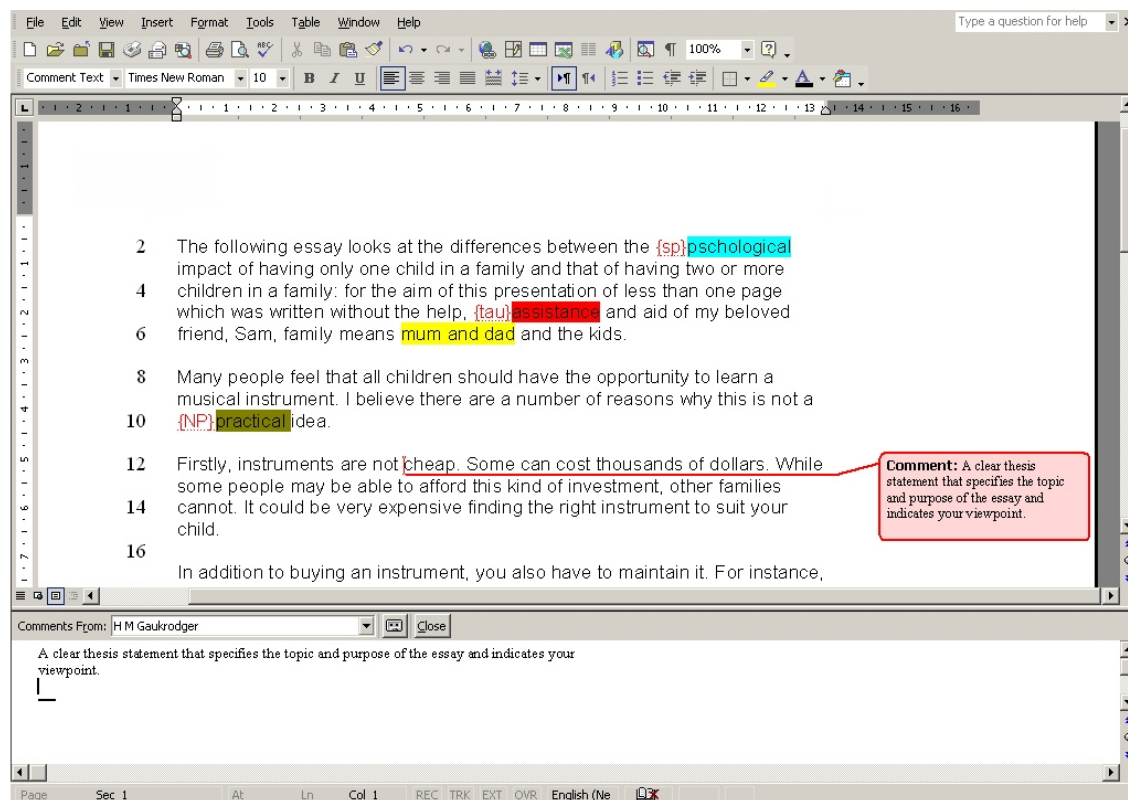


Figure 67: Word-processed homework with QAS-WP feedback



S13 found it difficult to express themselves clearly, but indicated they preferred writing by hand because they were used to this method, not because the method was better or worse:

R: "You prefer the computer written homework and the computer written feedback because it's clear? P: Yes. R: Do you provide your homework like this? P: No. R: Would you like to? P: Not really. I'm used to writing it by hand and receive feedback by hand. R: Can you see that that is difficult for me to understand? P: Yes, of course. Because for me it's quite confused too" (S13).

On pursuing this line of questioning to determine which type of feedback the student preferred, student S13 stated what the majority of student participants agreed upon: students preferred to write their work by hand, but to receive QAS-administered feedback (see Figure 64 and Figure 67):

R: "You prefer writing by hand, because it improves your English writing, but you prefer the system provided by the QAS-Grid? P: Yes, of course. R: So if the computer system allowed you to write by hand but gave you

feedback on a computer, is that the best solution? P: Yes, maybe funny, yes" (S13).

Table 8 provides a summary of responses to whether students preferred writing homework by hand, and receiving teacher feedback by hand. The questions were put to the students at different times during the interviews. That is, the interviews did not adhere to a fixed regime of questions and schedule. The students had not heard of the QAS before the interviews¹⁷ and did not have the opportunity to consider and digest the implications of receiving feedback administered by the QAS. I interpret the results to be initial reactions only to the information generated by the prototype QAS for the research experiment.

Table 8: Student preferences for homework and feedback

	Hand-written	QAS	No preference	Total
Writing homework	8	3	1	12
Receiving feedback	4	6	1	11

Table 8 shows that a majority of student participants preferred to submit their homework as handwritten texts on paper, and a small majority preferred to receive the teachers' feedback in a QAS format. To gain a better understanding of the reasons for the participants' responses, I pursued a line of questioning based on samples of different types of submissions and feedback.

9.6.2.2 Speed of Error Identification

Students were very quick to identify the number of mistakes and the types of mistakes when these had been flagged by the QAS – either via the QAS-Grid or the QAS-WP:

R: "One of the abbreviations is about verbs. I haven't told you which one. How many verb mistakes are there? P: Two. R: What colour are they? P: Red" (S13).

¹⁷ It is possible that those students who knew each other may have talked about the content of the interviews, and that some early interviewees may therefore have communicated the rationale for the QAS program and the question topics to later interviewees.

In another interview I asked student S11 to look at homework marked using the QAS-Grid and asked him/her to identify the spelling mistakes:

R: "Can you see how many spelling mistakes there are? P: One.

R: Do you like the use of colours on this homework? P: Yes, I

do. R: Are the comments easy to read? P: Yes. R: If this was

your homework, would you be happy with the feedback from the

teacher? P: Yes, I would" (S11).

Student S07 also correctly identified all the comments immediately (three). The student identified where the comments were, and was able to read the summary of comments more quickly than s/he had been able to with handwritten work and handwritten feedback. When asked which style of marking the student preferred, S07 indicated comments inserted with the QAS-Grid.

P: "Teacher's comments - I can read easier. Good system. R: Do you think the QAS would be good for you? P: Yes. R: Is there anything you'd like to tell me about this - do you have any comments? P: Is this your project? R: Yes. P: I think it's good, better" (S07).

Student S12 stated the QAS-Grid feedback made the comments easy to read:

P: "Yes, it's easy to read. R: So which one is more useful? P:

The QAS-Grid. Here on the first document, it is so hard to read.

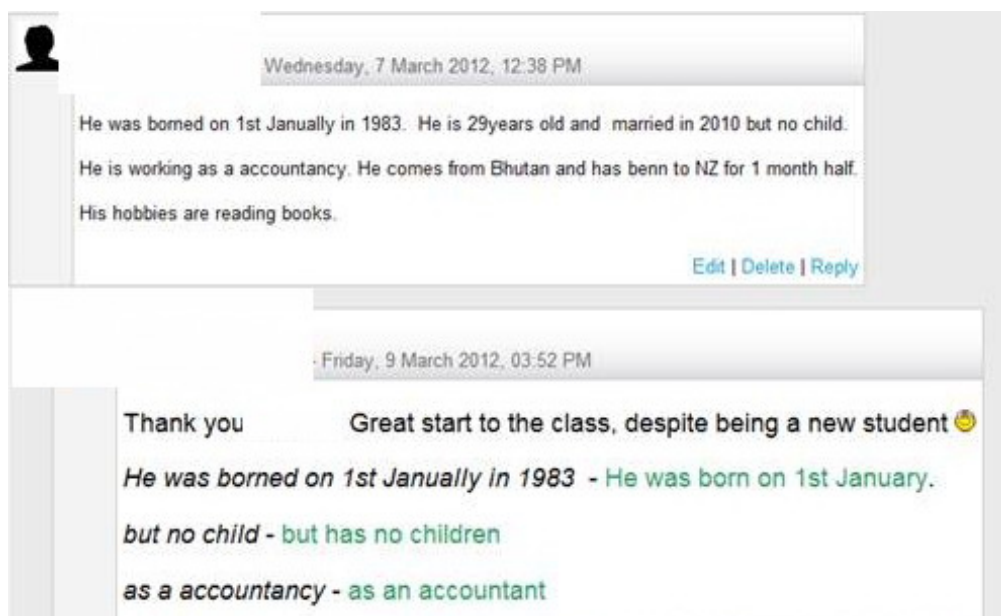
On the QAS-Grid, it's easy to read. It's so hard to read the

teachers comments in handwriting" (S12).

The responses of S11, S07 and S12 indicated that feedback provided using the QAS-Grid was both easier to read and helped them identify their mistakes more quickly than with the conventional, handwritten feedback that they were used to. The reasons for this were two-fold: the feedback correction codes and comments were word-processed, and all the items were coloured according to the category of feedback. Despite the potential for my presence and bias influencing the participants, the clarity of colour and of word-processed feedback are factors of indisputable value. This evidence adds to the support for the use of colour demonstrated by teachers using highlighter pens on handwritten work, and of T03 seeking ways to

introduce colour into the feedback even when marking tasks to write blog entries:

Figure 68: Using green to provide feedback on blog entries



When asked to compare the feedback on the QAS-Grid with handwritten feedback given on handwritten homework, student S10 identified the value of colour explicitly:

R: "Which one is easier to see? P: This one [student points to the QAS-Grid]. R: Which one do you like more? P: The QAS-Grid. Colours are important for identifying mistakes" (S10).

This was corroborated by student S13:

P: "it's easier to read it in different colours and you can identify your mistakes in different colours" (S13).

I observed, however, that the choice of colours might be significant:

R: "Are you happy with red ink? Or would you prefer green? P: I prefer green, because red is stronger than green and it makes me nervous" (S13).

The choice of red or green was a common topic discussed during interviews with teacher participants in respect of marking by hand. With the QAS, many different colours are programmed for use to define different types of mistakes. These colours can be customised. In the event administrators should consider red to have negative connotations for students, they can opt to exclude it from the list of colour options made available to teachers.

As discussed in Section 9.6.1, this functionality may need to be used with care.

Having discussed the positive characteristics put forward by the majority of student participants, it is important to analyse the negative characteristics expressed by the minority.

Student S08 stated that s/he preferred handwritten feedback because the QAS-Grid had too many colours:

P: "I prefer the handwritten homework and the handwritten comments. R: Why? P: Because the QAS has too many colours... I don't like it, it somehow confuses me" (S08).

I asked if the student would prefer the QAS-Grid to handwritten feedback if the QAS feedback did not have any colours. The student said no; s/he preferred handwritten feedback. This was despite my observations that S08 had not been able to read or understand the handwritten feedback used in the experiment:

R: "Is it possible for you to read the teacher's feedback?"
P: Sometimes because the writing, I can't understand" (S08).

This valuable research response indicated there were factors beyond the scope of my one-on-one interview methods that prompted the participant to reject the QAS. The student might have felt intimidated or nervous during interview; they may have felt that any positive response to the use of computers to administer feedback would jeopardise their autonomy in writing homework by hand. Secondly, they may have feared that feedback administered via the QAS was computer-generated. Thirdly, and more likely perhaps, the student may have felt that feedback not provided by hand lacked personal consideration (as discussed in Section 9.5.4): "feedback is too cold" (S05). The response was relevant to the QAS in that it identified a need for potential adopters of the system to seek an understanding of the rationale for any students not embracing it. Research into methods of doing this would be a useful supplement to research into feedback administered by computer, and would complement the well-established literature on technology acceptance. The interviews also provided no time to show recipients of QAS feedback how the feedback was created and applied.

Further to the perceived value of using colours to differentiate feedback items, student S012 stated that the use of correction codes was redundant if the feedback items were coloured differently:

R: "So if you wrote a whole page, would it be useful to see the colour of the mistakes? P: Yes, it would be easy for me to see where is my mistake. If it's blue, I will know all the blue is spelling mistakes, I don't need to see the abbreviations. R: So, you think it's more important to have colour and less important to have codes? P: Yes, but you need to know which colour - what is the meaning. But once I know the colours and what they mean I don't need the abbreviations to be repeated" (S12).

None of the other participants believed the abbreviations within the coloured feedback boxes were intrusive (see Figure 69), and it is difficult to see how the two-character code can distract attention from the feedback item. However, none of the other participants was Arab, and it is possible, therefore, that writers of Arabic perceive superscript abbreviations as Arabic diacritics, or characters. To address this issue, it might be feasible to create a user template in MS Word containing a QAS toolbar item to display customisation options (such as the display of abbreviations). Pending access permissions, this template could be downloaded to the client machine on which the student is working. Unfortunately, there are problems associated with making colour codes optional. Without correction codes, the identification and interpretation of colours alone becomes more difficult. This problem is compounded when considering that the function to customise correction code items available to teachers may lead to a substantial increase in the default 15 codes. Furthermore, the lack of abbreviations within the feedback items would make appraisal of work by a second teacher more difficult as the second teacher would not know what the colours represented, especially if customised codes had been added.

As discussed above, students do not need to change their methods of completing and submitting work as they can choose between writing by hand and receiving feedback via the QAS-Grid, or writing on a computer and receiving feedback via the QAS-WP. The issue of whether students liked and used computers was therefore less significant for this research, than whether teachers liked and used computers (a topic which is discussed in Section 9.6.1). The analysis of field data continues, therefore, with my

interpretation of all participants' responses to questions relating to the reports created by the QAS.

Chapter 10: Fieldwork Analysis - QAS Reports

10.1 Prototype Feedback and Task Reports

The prototype QAS currently produces reports to display data shown in Table 9:

Table 9: QAS reports

Main function Report	Task details	Checklist of duties re task	Comments	Comparison of performance	Corrections	Enrolment details	Grades	Re/submission details	User (teacher) details
Task Analysis	Y	N	Y	N	Y	Y	Y	Y	N
Student Progress	N	N	Y	N	Y	Y	Y	Y	N
Group Progress	N	N	Y	N	Y	Y	Y	Y	N
Resubmissions	N	N	Y	Y	Y	Y	N	Y	N
Administration	Y	Y	N	N	N	Y	N	N	Y

The characters “Y” and “N” represent “Yes” and “No” and identify whether that report includes the features listed in the first row of the table. A feature is defined here as the display of the quantity and/or content of the item listed. For example, the Resubmissions Report (Figure 69) displays for any selected period and student:

- student enrolment details
- the number of tasks assigned, submitted and resubmitted;
- the number and content of feedback items;
- comparison of performance data.

In this section, I present and analyse the fieldwork relating to participants’ perceptions of some of these QAS reports in as far as they relate to

feedback. I presented seven students with one report (Student Progress Report – students’ version), and five teachers with one to three reports (Student Progress Report – teachers’ version, Student Progress Report – Resubmissions, and Administration – Assignment Details). The reports were not presented to administrator participants as administrators did not provide feedback on homework tasks. Some teachers requested to see additional reports, and reactions to these reports are analysed on a case-by-case basis.

Figure 69: QAS report showing resubmission and feedback comparison data

Student Submissions - Comparison

Student Progress Report - Resubmissions

Date of Report: 28.07.11 For period from: 01.05.11 To: 30.06.11 Requested by: Tutor

Student Details

Student ID: 1044221 Course code: ELP 2344 Assignments allocated: 6
 Student name: Nina Bukowski Course name: English FCE prep. Assignments submitted: 6
 Known as: Nina Semester: 2 Year: 2011 Submission percentage: 100
 View report for: Essays Tutor: Samantha Brown Assignments resubmitted: 5
 Re-submission percentage: 83

Submissions

Assignment Ref.: HG/001 Assignment Ref.: HG/005

Correction	Submission 1	Submission 2	Change %
App	2	1	50%
Co	3	1	66%
Cul	2	0	100%
Log	4	2	50%
NP	12	4	66%
Num	10	1	90%
OW	21	0	100%

Comments

Very good spelling. Well done.
 Look at the resources (URLs) in the task instructions to read more about essay structure - particularly paragraphs.
 You can use other people's work, but you need to reference it - please see the attached sheet for ways of doing this.

Good paragraphing. Your essay is well structured.
 You seem to have mastered how to reference other people's work - this is good progress.
 There are still many "omit word" mistakes - this means you are using too many words - perhaps because of Language 1 interference, or perhaps due to collocation errors. Do talk to me about this at our next tutorial.

Assignment Comparison

Correction	Change %
App	-50%
Co	66%
Cul	100%
Log	75%
NP	83%
Num	60%
OW	52%
Plg	100%
P	51%
Pu	60%
Rep	10%
Sp	25%
S/V	7%
Tau	0%
?	60%

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E-mail Print Save & Continue Save & Exit Cancel

A table summarising the reactions and/or responses to viewing the reports is given below. I used a 5-point Likert scale with values of 0-4 to represent the degree to which the participants responded positively or negatively to the respective report: 0 indicates the report had no value or interest, while 4 indicates an enthusiastic, positive reaction. The totals are given as a fraction of the maximum possible value.

Table 10: Participant reactions to viewing QAS reports

	Students	Teachers		
Report	Progress Report	Task Details	Resubmissions	Progress Report
Participant	S04, S07, S08, S09, S10, S11, S12	T02, T03, T05	T05	T01, T02, T03, T06
Response	4, 3, 2, 4, 3, 3, 2	4, 4, 3	3	4, 4, 4, 4
Total	21/28	11/12	3 /4	16/16

10.2 Student Evaluation of Feedback Displayed in the QAS Progress Report

Table 10 shows that student participants considered the Progress Report useful. This overall consensus was as aspired to during the design phase of the QAS, and it was encouraging to see that participants vindicated this in the experiment. However, two students stated only mild interest in the report and a lack of interest in use of the QAS. These responses may therefore be of value in helping to refine the design, or use, of the QAS. Firstly, student S08 said:

R: "Do you like this report? P: I like this part [statistics and comments]: R: Why do you like it? P: Because it's easier for me to search and try not to make the same mistakes again. R: If this form were easy for you to find on a computer, would you use it? P: I would just look at the comments. R: Do you have the system now already? P: No. R: And if this program - the QAS - were started, would you be happy to use the system? P: No. Because I don't like using computers" (S08).

From the above, it can be seen that the student understood the benefit of the database listing the comments, but that the dislike of computers was greater than the perceived benefit of the report. Regardless of computer usage, however, students can continue to submit their work in writing (since the QAS-Grid facilitates the marking of handwritten work), and do

not need to use the report function unless a teacher makes this a requirement. If a faculty demanded use of the reports for students (perhaps to promote reflection on feedback and progressive learning), the solution for those who did not like using computers to view the reports would be for the teacher to print out the report and give it to the students in class. In this way, the wishes of computer-users and non-computer-users can be accommodated. In due course, faculties may adopt a policy that all work *must* be submitted digitally, and, in this case, the issue would be resolved, though it may not please unwilling adopters of the technology.

In eliciting opinions from student S12, I asked:

R: "Can you give me your opinion about this report? P: Maybe the comments are clear to understand, yes. I have no other comments. R: Do you have a way of looking at this information now? P: No. R: How can you get this information? P: Only by asking the teacher, or by computer. R: And if you had the opportunity to use this form, would you use it. P: No, I'm not going to use it... Because for me it is quite difficult to understand and to focus... it's not attractive. R: Is the information useful? P: Yes, it's useful, of course. R: So, how could you change the report to make it more attractive? P: Maybe use some colour. It would help me to recognise the mistakes that I have made" (S12).

Student S12 thus found the report useful but so unattractive that its design confused him/her and put him/her off the idea of using it. This proved valuable feedback indeed, as it was only after I had completed my data collection with the 13 students and had started analysing it that I realised I had presented a report whose design was incomplete. The Student Progress Report for students in the QAS prototype is very similar to the report of the same name for teachers. However, the former should have many of the upper fields that provide student enrolment information and assignment / submission data greyed out (inactive), using, in IT terminology, ListBoxes. The report I presented erroneously displayed these fields as white (active) items with drop-down buttons (ComboBoxes) intended to display alternative student information. While the fieldwork was not compromised by this error since the report was presented as a paper copy, the student's (S12) response to viewing the report made me aware not only of the error, but

also of the opportunity to consider introducing colour to the report – and, in this way, satisfy the requirement of S12 for a more “attractive” interface (see Section 12.15). Furthermore, S12’s response helped me identify the need for a design revision relating to the printing of reports. I realised that there was an opportunity to improve the design of the QAS to ensure a clearer distinction between a) forms that collect data and b) reports that present data, and to ensure that the reports printed well (see Section 12.15).

The response from student S11 was also of particular interest in that it stated what might be considered obvious, but has implications for users of the QAS:

R: “Is it [the report form] useful? P: Yes, it is. R: How can you use it? P: To review your homework and the teacher's comments. R: Would it help you when you work? P: If the students don't look at the report, it won't help them. The students will learn things if they look at the report” (S11).

As with the old saying “You can take a horse to water, but you can’t make it drink”, the QAS could offer a number of useful reports, but they serve little purpose if students and teachers do not look at them. So what can be done to avoid this scenario? Without looking at the reports, the benefits of using the QAS are significantly reduced. Again, it raises an interesting design opportunity in the form of a pedagogical solution and a technological solution. These are discussed in Section 12.16.

Among the responses from students who were enthusiastic or very enthusiastic about the reports, student S05 drew attention to the interface between ICT and human interaction:

R: “And finally I think you said the report was very useful. P: Yes, it combined computer statistics and human comments. Yes” (S05).

It was valuable to hear that S05 had recognised the feedback administered by the QAS was created by teachers, and was not computer-generated. Despite the point being made in interviews with participants, I sensed a certain scepticism towards feedback that had been added with the aid of a computer, especially in respect of participants who indicated they would want feedback to be written by hand. It is possible this scepticism would

dissipate over time, once users became aware and confident that the feedback was indeed teacher-generated and was equally as useful, if not more so, than former feedback written by hand. To aid this process, support could be provided by existing support staff to discuss the issue with students and show 'before and after' scenarios. By allowing sceptical students to compare the feedback prior to use of the QAS with feedback administered by the QAS, support staff could address student concerns and provide evidence of the feedback being of equal when mediated through the QAS.

Student S04 was what could be termed an enthusiastic adopter of the QAS feedback report:

P: "So on this report you have all the comments and all the mistakes that you made. P: Did you make this software? R: Yes. P: It's awesome. I like it. I think all the international students learning English would use this report" (S04).

On asking why they thought other students would use the report, S04 responded:

P: "Because if I learn English I never count the mistakes, I don't know why, I just look at the teacher's feedback..., I mean, at the mistakes I made" (S04).

S04 inferred that s/he liked the prototype QAS because of its function to identify and count the number of mistakes made. Attaching importance to statistical data like these, without considering them in the context of feedback and its relationship to the student's work as a whole, carries, however, an inherent risk. By associating the *number* of mistakes with language *competence*, students may fail (and teachers and administrators might not have the opportunity) to consider that the number of mistakes could reflect the complexity of the language used in the homework. A student who creates short, simple sentences is likely to make fewer mistakes than a student who is ambitious and attempts new sentence structures and complex grammar. However, it is the latter student who may well make the most progress, trying new things and being unafraid of making mistakes. Communication and pedagogical methods must ensure that students relate feedback on mistakes to learning and improvement, and not to erroneously-perceived teacher dissatisfaction and of student inability. The relevance of this for the QAS is that the software must facilitate the

insertion of a) praise when a student attempts to use complex structures (whether used correctly or not), and b) concluding comments at the end of the work to display the teacher's satisfaction with the effort a student has made. While the QAS drop-down menu provides such a facility (as discussed later in this section), the issue also raises the opportunity to consider a design improvement to allow the weighting of feedback items, as discussed in Section 12.5.

To foster and sustain the learning process, students must have rapid access to the QAS database that store these feedback data. In this way, students are not obliged to keep paper copies of what they have done, and are likely to find it easier locating specific feedback relating to specific topics. Teacher T02 thought this functionality, provided by a QAS report, would be very useful:

R: "And if a student wanted access to this information - do you think it would help a student to see this information? P: Yeah, oh my goodness, yes. Definitely, because it's very specific to the task that he was doing and the writing that he's done. It may not give a teacher the general strength and ability of the student, but in relation to this piece of writing, yes it does" (T02).

To test students' ability to interpret data in a report, I asked student participants to identify from all the work submitted which type of grammatical mistake recurred frequently and was therefore significant, and which type occurred infrequently and was insignificant. The aim of this was to establish the effectiveness of the report, and the efficiency with which it could convey the information to the student reading it:

R: "How many pieces of homework have you done in the selected period? P: Three. R: Which correction code indicates there is a problem for the student? P: This one, 21. R: Which one is a small problem? P: This one and this one. R: This is the information from the teacher. Does this help you? P: Yes. R: Why? P: It's a good system. Good system" (S07).

The participant identified immediately from the QAS report which type of mistake had been made most often and which types of mistakes had been made least often. Such information is useful for students in determining where to focus future efforts, and it is useful for teachers to aid lesson-

planning. For administrators, it is also a valuable tool as it constitutes evidence of performance of the student and evidence of work allocated by teachers, and can be used for evaluation purposes, quality control and complaint resolution.

The QAS reports also provide students with the allocation and submission dates of all homework. This was feasible due to the design of the QAS (QAS-WP and QAS-Grid), which ensured handwritten and word-processed work could be processed and archived. Students believed this would make it easier for them to find their work.

P: "If the school can provide a way of storing our homework, it would be easier to find our work in the future" (S11).

This indicated the students did not have a good system for storing work and would benefit from the use of technology.

Some students had different teachers during the same week, or term, with homework allocated by each teacher, all to be done in the same period. This created confusion amongst the students, and made it difficult to maintain continuity and to learn from their mistakes.

P: "I have four teachers and each teacher asks me to do homework, so I'm not sure which ones...I'm always confused, which one asked me to do what" (S12).

This frustration would be alleviated to some extent by the functions of the QAS reports. However, the current design of the reports is insufficient to resolve the issue expressed by student, S12, that *different* teachers assign homework to the *same* class, and in the *same* week. This therefore constitutes an opportunity to revise the QAS design (see Section 12.17) to include details of the attributing teacher.

The QAS reports also display an "E-mail" button to allow users to e-mail the information in the form. This function exists to accelerate the provision of feedback to students. While not all student participants liked using computers, as discussed above, all students did use e-mail, and student S12 believed this was of significant value:

P: "I really hope that the QAS is introduced - it will be easier for the teachers and for me. I hope it's really successful. It is easy to send by e-mail. Much easier" (S12).

Finally, the above report was designed to display to students the action taken by teachers to address the problems experienced by students completing their homework. In this way, the information about the approach taken by teachers to assist students is shared between the two parties and can also be seen by administrators. While it was not anticipated that administrators would raise during interview the issues of “power balance” and “ownership of data”, this function of the QAS report does address to some extent the fears (discussed in Section 10.3) expressed by the administrators. With this form, students can see how their teacher is thinking in terms of remedial action, and students have the information necessary to question teachers about such action. Research into the sharing of data gathered by a faculty about its students is beyond the scope of this project, but could prove an interesting direction to follow in the light of the technology revolution and the use of computers to mediate the feedback process.

10.3 Effective Use of Feedback Reports

The QAS reports discussed with teacher participants were viewed with enthusiasm (see Table 10: Participant reactions to viewing QAS reports), regardless of the degree of enthusiasm the participants had for computers themselves. However, for effective use of the reports, users must input at least some data. Aware of the time and effort involved in inputting data, some questions were directed towards investigating the issue of effort required versus benefit gained. The report that required the most input was QAS Assignment Details, so interview questions used reactions to this report as a baseline. If teachers believed the input required for this form was worthwhile because of the usefulness of the output, it seemed logical to assume teachers would be at least as satisfied with the other reports, as less input was required.

At the research site, it was customary for teachers to draw up their lesson plans on paper; I asked teacher T02 for their reactions to the QAS Assignment Details report:

P: “I don’t know how much more useful it [the report] is with the sort of lesson planning that the teacher does. It might be seen as extra work if the teacher has made a lesson plan and has put in place all these things. The teacher would have made sure, if he or she is going to be getting the students to write this essay and wanting them to look at all these references, it

would have been given to the students. I guess she would cut down her time if the students accessed this through intranet or something and students can get into all this...but then this is a newspaper anyway. I don't know, it might be looked at like extra paperwork for the teacher: getting into the computer and typing it all up. R: And if they [teachers] use a computer already? P: If they do use a computer, then this would be useful. But then it's still as quick writing down that link on the whiteboard and the student entering it, or just sending an email: 'go to this website'" (T02).

This response highlighted the opportunity to add a function to the design of the QAS to allow lesson plans to be written within the QAS. Details of lessons could be inserted in fields shown in a panel and identified by a tab, added to the four existing tabs at the top of the Administration Form (see Figure 74). In this way, the QAS could cross-reference feedback items and homework instructions to the lesson plan. It would also obviate the need for teachers to use pen and paper to plan their lessons, while potentially using the QAS to administer feedback.

Figure 70: Adding a lesson-planning tab

The screenshot shows a web-based 'Administration' form. At the top, there is a 'logo' placeholder and the title 'Administration'. Below the title is a row of four tabs: 'Assignment details', 'Student details', 'User details', and 'Course & semester details'. A blue arrow points to the space between the 'User details' and 'Course & semester details' tabs, with the text 'New tab could be added here' next to it. The 'Assignment details' tab is active. It contains several sections: 'Assignment ref.' with the text 'HG/T1 Task 2'; 'Instructions' with a text area containing 'Write a 200-word essay on: "Learning English in New Zealand.' and 'Use the plan prepared in class. Look at the resource material below.'; 'Type' with a dropdown menu showing 'New assignment'; 'Submission deadline' with a date field showing '12th August'; 'Auto e-mail reminder' with radio buttons for 'Enable' (selected) and 'Disable', and a 'Grace period (days)' field with the value '3'; 'Assignment category (optional)' with a 'Category' dropdown showing 'Select or add'; 'Key words (separate with c' with a text field; and 'Tutor check list (optional)' with a checked box for 'Assignment details pro'.

Teacher T02's response also highlighted one of the strengths of the existing Assignment Details form, in that the form provides fields for detailing resource information as well as homework instructions for students. The majority of teachers currently dictated such information, or wrote it on the whiteboard. This method exposes students to the risk of failing to copy the

details correctly and compromising access to online resources. The method also consumes valuable teaching time. Furthermore, if the instructions are misplaced, the respective party may be put at considerable disadvantage when wanting to complete the work (students), or when wanting to provide consistent feedback (teachers).

The effectiveness of the QAS form is emphasised as the homework and resource details are kept online when the QAS is used. This was a valuable function, according to teacher T05:

R: "So, it's an assignment, or task, for the whole class that you have. You write it once and then can access it at any time, anywhere. P: Hah, I think it's a good idea, eh? Interesting one" (T05).

In addition to effectiveness, respondents indicated the QAS forms and reports were efficient: they would save teachers time – a recurring theme throughout the interviews. Teacher T03 appreciated the speed of using the QAS Assignment Analysis form: "It was there instantly for me available" (T03).

Figure 71: Corrections and comments tabs

The figure displays two side-by-side screenshots of the QAS (Quality Assurance System) interface, specifically the 'Corrections' and 'Comments' tabs for 'HG/T1 Task 2'.

Left Screenshot (Corrections Tab):

- Assignment details:** HG/T1 Task 2
- Instructions:** Write a 200-word essay on: "Learning English in New Zealand". Use the plan prepared in class. Look at the resource material.
- Corrections Table:**

Correction	Occurrences	Page ref.	Context
SP	75	n/a	Unexpectedly high number
WO	15	n/a	Only the most glaring instances
P	93	n/a	Punctuation has not been
LOG	10	n/a	Logic - Check if this is
TAU	5	n/a	This may be an L1 problem

Right Screenshot (Comments Tab):

- Assignment details:** HG/T1 Task 2
- Instructions:** Write a 200-word essay on: "Learning English in New Zealand". Use the plan prepared in class. Look at the resource material.
- Comments Table:**

+/-	Occurrences	Comment
+/-	2	Some valid points, but the text lacks cohesion. See essay
+	1	A good introduction; it tells the reader clearly what to
-	3	Your opinions lack support. Try to explain why you hold
-	3	The essay wanders off topic. Try to focus on argumen

Teacher T02 also highlighted the speed of using the QAS to obtain an overview of the student's progress:

P: "It's a very quick, so you get this sort of view, I suppose, for want of a better word, of a student's progress, right there instead of having to go through masses of paper and comments" (T02).

But is speed so important? How does the speed of displaying quantities of feedback items actually aid teachers? Teacher T06 responded that such information provided an efficient method of identifying automatically common mistakes that any individual student or class has, and that the teacher can therefore prepare for subsequent classes using this information:

R: "So you're able, from this quick report, to differentiate big from small problems? P: Definitely. ... It would have been useful for me to know before I gave them their work that it had been a common error" (T06).

Teacher T06 thus identified how the QAS feedback system could help him/her prepare better for future classes. This is a significant issue, as current feedback methods have been reported as *looking back* at what was done in relation to a past instruction and/or lesson item:

"Feedback looks back into the assignment the student has recently completed. Comments about the gaps that assignment exhibited and how to close them are enlightening, but may never be of use again to the student. On the other hand, comments that anticipate future gaps and help the student to see how they might close them, are very valuable indeed. Comments of this type are sometimes called 'feedforward' comments" (Walker 2006, p.9).

Teacher T06 infers that QAS feedback can be used to look *forward*, maintaining the progressive aspect of teaching. This view was supported by teacher T03:

P: "It's quite impressive, it tells me everything I need to know in order to carry on that theme / topic / task, and I can even say, 'well, we talked about it on Monday', I can bring it up, yep" (T03).

Teacher T02 perceived this data as valuable, not only for continuity from lesson to lesson, but also from term to term, and also if an alternative teacher had to stand in:

P: "This [form] is good if the class is carrying on to the next term, and for some reason, I knew tutor has to come in; this would be excellent" (T02).

Having easily-accessible data to plan ahead facilitates continuity of teaching: students can build on what they have completed, rather than attempting a new skill or function based on a staccato presentation of course-book chapters, or on a prescribed syllabus that unavoidably fails to respond to the human elements of learning.

Human elements affecting learning may include motivation, student-teacher interaction, general well-being, nationality and others. This project does not analyse these factors, but the QAS reports do facilitate the recording of personal data that teachers believe may have an impact on teaching and feedback. Teacher T06 pointed out, for example, how valuable it was to know more than a student's level, and details of language abilities:

P: "Nationality, I think, is always good - students appreciate knowing where they [other students] come from. It's useful. A student's interests, yes, because when you're looking for readings or things like that—when you find something like netball. Then 'Ah, yes, [name of student], you're interested in that, aren't you?' Students appreciate that, so yeah, I think that's good" (T06).

The student details tab of the Administration Report has fields to record a student's nationality, language, interests, and English language abilities:

Figure 72: Non-academic data display

The screenshot shows a web-based form titled "Administration" with a date field set to "1st Aug 2011". Below the title, there are tabs for "tails" and "Course & semester details". The form contains several input fields and dropdown menus:

- Address:** 22, New St, Nelson.
- Tel (home):** 03 123 1234
- Tel (alt):** (empty field)
- Email:** (empty field)
- Nationality:** Polish
- Language:** Polish/Russian
- Notes:** Interests: Politics, cooking, netball.
- Papers:** (empty dropdown menu)
- Level:** Pre-Int
- Strengths & weaknesses:** Good listening. Poor speaking. Overconfident; needs to slow down.

The relevance of such data for feedback, is that the choice of topic for the lesson and/or the homework can be based on the interests of the students. In view of the data in Figure, for example, it may be more politic to discuss Polish culture rather than Russian culture, or to suggest homework that

relates to netball, rather than football. Such sensitivity to students' needs conveys a feeling of personal care and interest. This, in turn, contributes to student motivation to discuss/write about the things that are important to them. Motivated students will normally work better and contribute more. Furthermore, the literature underlines that motivation (Section 11.2) is a key factor in student learning. The responses from participants indicate that the QAS may help optimise the homework allocation process and engage the students in the homework, while also recording the feedback provided by the teachers.

This recording of feedback is essential if teaching methods are not to rely on human memory to recall the varying abilities of students, and the personal details referred to above. While I have already discussed the role of memory in relation to non-QAS feedback at the research site (see Section 9.5.3.5), this section looks at the responses of participants to questions relating to memory following an introduction to the prototype QAS forms and reports.

Teacher T02 identified one of the values of the QAS as being the fact that it would remove the need for teachers to remember everything. T02 went on to explain that teachers at the research site were expected to remember the abilities of their students, or to keep detailed notes in their planning books. T02 knew of only one teacher who maintained such a book. The QAS, on the other hand, recorded (and displayed) the feedback items of students' homework automatically:

P: "Okay, so this is just comments about follow-up work, I suppose, in relation to the student's progress. R: So to what extent would this be helpful? P: Oh, I think the beauty of this is the fact that you don't, you won't forget anything, it's all there. You don't have to try and recall" (T02).

T03 also considered valuable the QAS feedback reporting function:

R: "So if the QAS could provide you with that kind of report it would help your work? P: Yes, it would reinforce what is already going through my head and I have to keep that kind of information for each student in my head all the time" (T03).

The current importance to remember previous marking, feedback items, is made even more important when a teacher finds it necessary to highlight particularly good performances which are to be used for appraisal at the end of term to determine advancement:

R: "Does that mean you have to try to remember the change in performance? P: Yes. I would highlight one or two extremely outstanding performances. You know, at the beginning of the semester the student was a reluctant speaker but by the end he has become more confident in speaking. I would highlight the biggest achievement. There's no way I could remember unless I kept a log of each student" (T03).

Participant responses were unanimous in their approval of the QAS' feedback recording and reporting functions. I maintain that the efficiency of such a system can reduce the strain on teachers of administrative work, allowing them to focus on their primary duty of teaching, while enhancing the student experience of learning by increasing motivation and engagement.

I acknowledge, however, that effective use of the QAS feedback reports requires consistent and competent use of the QAS, and for this, users must feel confident using computers on a daily basis. Such a situation may not always be present, as inferred by teacher T02:

R: "Any last comments or questions? P: No, no. I think it's just fantastic. I see the benefit of the teacher doing this, but I see the benefit more if we are more technology savvy, you know" (T02)."

To be more technologically savvy, teachers need training, support, and the time for these activities. In the next section, I present and analyse participant responses to questions relating to IT support and motivation – the two factors highlighted by participants as critical factors that could affect the acceptance and use of the QAS.

Chapter 11: Critical Factors Affecting the Acceptance and Use of the QAS

11.1 ICT Training and Support

During my interviews with teacher participants, teacher T03 was enthusiastic about the QAS reports (see Table 10: Participant reactions to viewing QAS reports), but stated the feedback tool would be abandoned if insufficient training was given, and if users were unwilling to spend time becoming competent with it:

P: "If appropriate training is not provided initially, both to students and the tutors, the tool is likely to be abandoned. If the tutors and the learners are not willing to invest the time and experiment with the tool, then the tool is likely to be abandoned" (T03).

This requirement for training, and the time to do it, constituted a recurring theme in the fieldwork data. Do institutions have a system in place to provide training, or are they willing and able to take teachers off other duties to do so? If existing workloads cannot be reduced to allow for the addition of ICT training, the decision to implement a program such as the QAS could cause resentment as the training that might be deemed necessary would have to be provided as an addition to the teachers' workload:

R: "And you find there's enough support for you in those matters you wish to have support? P: Well, no, because often they have their sessions at lunchtime, and I'm sorry, I need to have a break at lunchtime" (T04).

The fact that training in computing matters may not have been built into the teachers' timetable can also raise an issue of conscience for those teachers who have the competence, but not the time, to assist:

P: "I don't know if it's a role, I don't think there's been any official allocation... I have to make a decision, do I go and do my marking and leave the teacher [with a computer problem] all stranded, or do I help her out? And all of us at some stage drop marking or lesson preparation in order to help each other so without that

kind of collegiality I think the whole institution would collapse" (T03).

The respondent perceived the lack of time allocated to training and support as an indication that the faculty might be relying on collegiality to resolve the problems of colleagues. The activity of "helping each other out" is perhaps a characteristic of human nature. However, if there arises an expectation that such help *must* be offered, and only in lunch breaks or after work hours, both the person able to offer the help and the person needing it may lose interest in resolving the issue, or, in relation to this project, in learning to use the QAS, and this may detriment all stakeholders.

In contrast to T02's perceptions of time allocation for ICT training, teacher T03 pointed out that the faculty allocated teachers five weeks of discretionary leave¹⁸ per year. Teacher T03 believed this leave was to offset the overtime invested by teachers throughout the academic term, but might also be intended for use by teachers to pursue self-development courses, such as ICT training.

Administrator A01 summed up the anxieties of administrators and teachers alike with respect to the introduction of new activities – that would also include training in the use of new computer programs such as the QAS:

R: "And what if, for example, a feedback system were introduced. P: Well... Anything that's additional to the core work code that becomes an issue for tutors is questioned... The buy-in from the teachers is actually really essential. So one thing at the moment, it's a concrete example, is we've got individual learning plans being rolled out through the institute and the TEU [Tertiary Education Union] is asking: "Did anybody analyse what an addition to the workload this is going to be and how it's being factored into people's jobs?" Then of course they refer back to the terms of the employment contract and they collectively negotiate a contract stating that teachers work 32 hours a week - a full-time teacher would work 32 hours a week. Nobody works 32 hours a week. That's the thing. They would try to hold things to

¹⁸ "Leave... which can be used by that employee at their discretion subject to agreed parameters" Faculty's website. Retrieved 26th March, 2011.

the contract even though the contract isn't held to in the first place" (A01).

I interpret the responses of teachers and administrators, and the concerns of the TEU, as a strong indication that the introduction of any change in methods practised must exploit existing knowledge, employ no more time than that already employed by the existing activity, and must have proven benefits. These are critical factors affecting the acceptance and use of the QAS. To this end, the QAS must be intuitive and efficient:

P: "It [the QAS] just needs to be intuitive. It's as simple as that" (A03).

P: "It [use of computers] is a question of efficiency. Time efficiency" (T01).

If the QAS could meet these requirements, the need for ICT training and support would be minimised. Responses to questions put to participants during the QAS experiment revealed the prototype QAS met these criteria (see Section 9.6.1). Despite the generally favourable response of participants, however, I acknowledge that the project researches how participants perceive the QAS feedback system, not how they would use it. For users to use a new or modified system, they must be motivated, as discussed below.

11.2 Motivation

I have analysed, above, the responses of participants relating to the factors considered necessary to facilitate acceptance of the QAS. However, for users to continue using a new technology over the long-term, they must be motivated. Teachers must have a reason for wanting to use it, and students must have a reason for accepting the feedback administered by it.

Teacher T01 highlighted the importance of student motivation for resubmitting work:

P: "It depends on the motivation; if they're really interested in improving their writing, they will look. They will go back and have another look" (T01).

and teacher T04 expressed confidence in student motivation:

P: "Most of the students are pretty motivated. They're paying for their education themselves so they motivated to learn so they want to do homework" (T04).

If the students are motivated to submit and resubmit their work, this constitutes a significant reason for teachers to provide good feedback. And if teachers do not provide feedback, teacher T03 states that students will lose the incentive to submit work at all:

P: "If I don't give them feedback or I don't join the forum discussion, they simply say what's the point? The teacher's not reading my work. The teacher is not participating in the forums. She is just making us do all the work. Other students are not going to correct my grammar. So what am I doing this for?" (T03).

Participant responses indicated, therefore, that students had the motivation to use feedback to resubmit their work, and interviews (see Section 9.6.2) established that the QAS would meet their feedback expectations, and in some respects exceed them.

The principal factor that student participants expressed as being a motivational factor for using QAS feedback was the clarity of feedback. The use of word-processed comments and corrections, even on handwritten work, allowed students to consult dictionaries and other resources, granting them greater autonomy of learning, and allowing them to focus on content, rather than on deciphering teachers' handwriting.

The second most important factor that would provide the motivation for students to use QAS feedback was the availability of homework analysis reports. With the facility to look back over past work, students expressed how this would allow them to focus on their weaknesses in future assignments.

In respect of teachers, the paramount motivational factor identified was the saving of time.

P: "if anything can reduce the workload, then I want to know about it!" (T03).

The motivation to continue using the QAS would therefore be the continuing perception of having more time as a result of using it. Teachers stated that they could mark work more quickly with the QAS, and that they could return the work to students more quickly. Perhaps, if this time saved were allocated to activities (free time, or occupational time) that had not been possible before adoption of the QAS, the new activity would provide a measuring stick by which users would remain aware of the time saved by

using the new technology. This then might constitute the motivation for teachers to continue using the software over the long-term:

P: "I haven't had the chance to fully utilise it [the QAS] but I can see its potential. I'm willing to give it a go. If in the long run, it saves me time, and makes the students happy and involved in their tasks, then it can only be a worthwhile investment" (T03).

With respect to administrators, the motivation to use the QAS over the long-term is the availability of information. If feedback is on the computer, it is rapidly available, visible and can be shared.

P: "So one of the keys to the system I think would be how we can share our feedback with one another and how we carry out the feedback with one another. For administrative purposes, a more standardised approach to feedback would be useful because then of course I can self-assess to say that we have a robust process of feedback which is standard across the areas... It would allow me to check if... somebody comes to me and says I don't like this bit of feedback, then I have access to that instantly, and then I wouldn't have to chase around people looking for files... centralised things are much better as anybody can access them because otherwise paper-based stuff gets a bit...even with the best systems in the world... it's still risky" (A01).

Administrator A01 would be motivated to use the QAS because it would save time locating and sharing information, and would provide a robust and standardised administrative system for feedback. This was a long-term perspective, providing insight into how a key decision-maker in the faculty perceived the potential benefits of the QAS from an administrative viewpoint.

Long-term use of any software implies that users become more knowledgeable about the software's functions. While this chapter has hitherto looked at participants' responses to questions relating to such functions of the QAS, the next section discusses the QAS' design revisions needed and the opportunities for improvement that the fieldwork has identified.

Chapter 12: Design Revisions and Opportunities

The fieldwork highlighted a number of issues that identify a) the need to improve the existing functionality of the initial QAS design, and b) opportunities to add functionality to it. As these issues were not known at the time the fieldwork was started, analysis was not feasible and there is therefore little or no discussion of the issues in the main body of the chapter. This section summarises those issues as an indication of potential development of the prototype QAS.

12.1 Multiple Submissions

As discussed in Section 3.6, the resubmission of tasks is well documented in the literature, and, as has been elucidated in the aforementioned section, the QAS administers, and fosters feedback on, resubmitted work. Where the QAS has a limitation, however, is in its lack of flexibility in handling multiple resubmissions. There will be conscientious students who may want to continue refining their homework until there are no improvements to make, and this might require three or more submissions of the same task. The current prototype design of the QAS makes this impossible to record effectively. There is therefore an opportunity to revise the design to allow for multiple submissions

In its current form, the QAS remains simple and easy-to-use. The addition of more complex displays and options may therefore detract from these features and, ultimately, from its acceptability. The benefit of the additional function of handling multiple submissions (which, in this fieldwork, did not appear to take place) would therefore have to be carefully weighed up against the disadvantage of adding complexity.

12.2 Graded Comments

Student S02 pointed out that teachers' comments were not always understandable. They suggested the comments be written in simpler English. This prompted the design idea of grading the feedback comments stored in the QAS database. Comments could range, for example, from "Good" for the Elementary level to "Your work shows significant improvement" at Intermediate level. In more grammatical terms, the expression "Practise verbs" could be used for Elementary students, and "Focus on your phrasal verbs" for Intermediate. The categorised feedback comments could then be called up by the teacher to suit the level of the student(s) whose work was being marked.

Teacher T03 indicated that, from a human perspective, use of comments categorised by academic level would help reduce the risk of patronising students by using over-simplified wording added manually, and would also reduce the risk of the database of comments ballooning out of control:

P: "Well... the danger of creating a huge database is that the teacher will sit there going through wondering 'which one should I choose? Ah, I can't say that because they are beginners. Oh, I don't want to patronise them because they are upper intermediate.' So, the teacher will have to do that thinking, but if the system allows for that, it's already somehow decided by a teacher to put appropriate comments into appropriate categories, then you have taken yet another step away from teachers combining all these vague ideas" (T03).

While adding an additional level of complexity to the use of the QAS menu, the time taken to access a new submenu would be insignificant, so from the technological perspective, the function suggested by T03 would be feasible and easy to use.

12.3 Graded Correction Codes

In much the same way as comments could be graded, teacher T03 pointed out that correction codes might also be graded. In this way, the list could be reduced to match the level of the students. Rather than displaying codes including "TAU" for tautology, or "PLA" for plagiarism, the QAS correction code may display a shorter list excluding "TAU" and "PLA", but including key grammatical and lexical items such as "SP" for spelling, and "VF" for verb form, when used with students at Elementary level.

This additional functionality would be simple to design and include in the existing QAS design, and use of a shorter correction code list may further speed up the marking process. It is difficult to see any immediate drawbacks with this idea, although further research would be useful to ascertain user perceptions. As long as quality and consistency are safeguarded, this design opportunity also appears to be a strong candidate for inclusion in the final version of the QAS.

12.4 Pop-up Code Explanations

The fieldwork interviews triggered a further opportunity for a new feature in the form of pop-up explanations of the correction codes. While most

teachers may have the same understanding of what each correction code means, such a pop-up would ensure greater consistency of this understanding. It may be feasible also to have the students' homework include these pop-ups in the form of MS Word smart tags (that can be saved with the text, and are therefore not lost when a document is e-mailed). The smart tags could also include URLs to online resource material to help students correct the mistakes identified by the QAS correction code. However, newer versions of MS Word have different ways of conveying the information that MS Word 2003 performed with smart tags, so research would be needed to determine compatibility between versions, and how such compatibility might affect such a function if programmed into the QAS.

12.5 Weighting Feedback

The QAS does not distinguish significant errors from insignificant errors. That is, a spelling mistake is considered no differently from a word-order mistake, for example. QAS reports identify only that two mistakes have been made. Likewise, there is no difference in the value of commendations inserted through the comments drop-down menu.

For purposes of evaluating a student's ability and for comparing the ability of different students in the same class, it would be advantageous if a method could be found to differentiate significant feedback items from insignificant feedback items. This issue surfaced as a result of my reflections on teacher responses during interviews.

Adding functionality of this type to a computer program may not be difficult, but when considering that the operation and use of the QAS are intended to be simple and fast, the balance between the advantage of new functions and the disadvantage of imposing additional learning on users must be carefully considered.

12.6 Micromarking and Macromarking

These terms are defined in Section 9.5.3.3. I have coined these terms to distinguish between correction codes already accessible in the QAS and intended to represent one- or two-word feedback items (e.g. spelling, verb form), and correction codes that identify longer expressions of feedback such as those numbered 1-9 in the upper section of Figure 60.

The use of macromarking items raises the opportunity to consider a further function in the design of the QAS: the addition of a new rubric entitled "Macromarking" in the QAS drop-down menu. This would constitute the third

type of insertion type, giving: corrections, comments, and macromarking. For consistency, this may be altered to comments, micromarking, macromarking. However useful this function might prove, the differentiation of correction types (especially if considered in addition to correction and comment categories, described earlier in this section) may nonetheless be one step too far in the provision of options. By asking users to remember the content of the rubrics, one of the tenets of the QAS design, that of speed of use, is compromised. While research would be required to analyse users' perceptions of an additional menu item and rubric, I believe abbreviations necessary to insert macromarking items might best be included in the existing, customisable QAS correction code.

12.7 Insertion Field

From the interviews, I ascertained that teachers felt some errors in students' work could not be corrected by the students themselves. Teacher T02 felt, for example, that errors such as use of the wrong word were particularly difficult for the students to correct. This teacher therefore inserted the correct word for the student:

P: "If it's a wrong word and I suspect that the student may not be aware of that word. Then no point asking the student to correct it. He wouldn't know, so I offer it to the student" (T02).

However, there is no QAS correction code for inserting a word, and a single word insertion does not correspond to a QAS comment: the feedback falls between two forms.

12.8 E-mail Notification of Work Received

Teacher T06 raised an issue relating to communication between teachers and students on the work submitted by e-mail. Would it be possible for a teacher to know a student had received and his/her e-mail and read it? And would it be possible for a student to know whether a teacher had received the student's homework and/or read the homework, and even marked it? These functions are not built in to the QAS. There is therefore the risk that teachers would get repeated e-mails from their students asking as to the status of their work. The introduction of the QAS has the potential to exacerbate this problem, as expectations would increase regarding speed of return of marked work. An opportunity therefore exists to add a function to

the QAS that provides users with the option to check the status of the work at any time without exchanging e-mails:

P: "it would at least be good for them to know that I've got it...

... Well again, it's probably more disadvantageous for the teachers than the students, because the students are going to be, 'well, I sent it to you an hour ago, did you get it?' You know, that kind of e-mail flying in and out. So there is always the expectation that if something is done immediately, it will be replied to immediately and it's not always convenient" (T06).

There needs to be a balance: students should be encouraged to communicate with teachers, but this communication should be to discuss issues that cannot be resolved by the students simply consulting the QAS database.

While it is possible for some e-mail programs to communicate whether an e-mail has been received and/or read, this functionality can be controlled by the system administrator and may not be made accessible to QAS users. I consider the issue raised by teacher T06 to merit further research with a view to determining how the QAS can display the confirmation of e-mail delivery and reading. If it is feasible to achieve this, I consider it an attractive additional function of the QAS, especially as it requires no user interaction.

12.9 Date Submitted

An interesting participant observation regarding the QAS Assignment Details Report was that the expression "Date submitted" should be used in place of "Submission date". The latter could be interpreted to mean the date on which the assignment was submitted, rather than the date by which it had to be submitted - an astute observation which shows how important it is to have different people test the software before implementation. The teacher was correct, and this revision will be implemented.

12.10 Highlighter Function

Teacher T01 expressed an interest in having a highlighter function added to the QAS:

P: "I think I would highlight and then go back at the end and comment at the end" (T01).

The teacher believed the QAS needed some kind of highlighting function that would allow teachers to shade a word or phrase, then return to it after considering what feedback to provide. Such a function would not be difficult to achieve programmatically. Microsoft Word offers this function already, but there may be some speed advantage in having the function inserted as an item on the QAS drop-down menu(s). On the other hand, in the interest of keeping the QAS as simple as possible, it is arguable that the existing MS Word function should not be duplicated in the QAS.

12.11 Function to Compare Documents

One of the essential characteristics of feedback administered by a CAAS such as the QAS is comparability. Students and teachers can compare current feedback with earlier feedback, and Submission 1 feedback with Submission 2 feedback. For these users to compare documents, they must currently open two documents and a) use Microsoft Word's "View side by side" function, b) alternately minimise and maximise the document they want in focus, or c) or print the documents. A function to simplify and/or enhance the Microsoft function to facilitate the comparison of data using just one report on the same screen therefore presents an interesting opportunity for development of the QAS.

12.12 Opt-in Function

Administrator A02 suggested the QAS might benefit from having an opt-in function to give students the authority to determine who may see the feedback data on their homework. Such a function could perhaps be programmed into the QAS, or it could be a printed document that students complete at the beginning of their course. By considering students and their data in this way, students may be more willing to engage in use of the system.

12.13 Categorisation of Feedback

When discussing with teacher T02 the use of comments in the prototype QAS, I became aware of a development opportunity comprising the categorisation of feedback comments. In order to avoid the customisable comments database growing too large, the contents might be categorised by a) teacher, and b) level. In this way, the QAS could be programmed to display for selection only those comments that the teacher had inserted into

the QAS database, or only those comments in the database that related to the level of the students whose work s/he was marking. This function could be handled in a way that is consistent with the idea of classifying QAS correction codes.

12.14 Access to Template Worksheets

Teacher T02 stated s/he was “always preparing worksheets” for the students. An opportunity to speed up the teachers’ preparation of lessons and homework would be to store such worksheets in the QAS database. To facilitate sharing and re-use, these might then be re-used, or shared with other teachers, and could be made accessible from any Internet-connected computer.

12.15 Colour of Feedback Reports

Student S12 pointed out how the feedback reports might be more usable if they contained colour. Such a development opportunity would be simple to implement and might enhance usability of the reports.

12.16 Distinction of Forms and Reports

In performing the experiment to simulate use of the prototype QAS, I became aware of the need to ensure a clearer distinction between a) forms that collect data and b) reports that present data, and to ensure that the reports print well.

12.17 Incremental Log-in Counter

As mentioned in Section 10.2, there is an opportunity to design a) a pedagogical solution and b) a technological solution to encourage students to look at the feedback reports that could be created by the QAS. Firstly, teachers could make the reflection on feedback presented in the Student Progress Report an item of classwork, or of homework. The former permits both teacher-student and student-student interaction, while the latter hints at the possibility of summary/report writing. A technological solution could be to find a method that identifies when a student views a report, allowing teachers to observe the number of times each student has logged in to the respective report. In this way, teachers could see quickly which students were viewing the forms, and which students were not, and take appropriate action.

12.18 Identification of Multiple Feedback Providers

Student S12 stated during interview that different teachers assigned homework to the same class, and in the same week (see Section 10.2). The current design of the prototype QAS reports would not be able to display the tasks and feedback categorised by teachers sharing the same class.

An opportunity therefore exists to add further functionality to the QAS design, facilitating the display of two fields: comments made, and the name of the teacher who wrote the comments.

12.19 Lesson-plan Creation, Storage and Access

In Section 10.3, I identified the opportunity to add a function to the design of the QAS to allow lesson plans to be written within the QAS. The method chosen to address this issue would have to consider the facility to allow the use of rich text formatting that teachers may be acquainted with in MS Word.

12.20 Summary Comments

The fieldwork analysed in this chapter has made it clear that the participants place great value on feedback, not only because it facilitates academic progress, but also because it shows the teachers care about their students:

P: "The whole thing about feedback... just being listened to is such a joy" (A01).

Feedback was considered even more valuable when it was consistent and customised to the needs of the students. Responses from teachers show that the QAS could facilitate this.

With the necessity and desire for feedback unequivocally established, fieldwork sought to ascertain whether the provision of such feedback administered through the QAS satisfied the criteria stipulated in the introduction to this section: it had to be simple, fast, and equipped with a database for information retrieval.

Teachers found the simulated drop-down menus easy; the insertion of correction codes was fast. They could add their own codes simply and use these immediately. The comments were found to be useful and promoted consistency. One teacher thought they would save time by using the pre-defined comments, while another teacher thought use of the comments would speed up their marking the more they used the QAS. Teachers found the QAS marking process simple and fast, and added the attributes of

consistent and clear. Students were very satisfied the QAS would allow them to continue doing their homework using unchanged methods, whether submitting their work as a handwritten document, or as a word-processed document. Students found the QAS feedback clear, emphasising that being able to read the teachers' word-processed comments gave them greater autonomy in researching how to respond to feedback. Administrators most valued the robustness and standardisation of QAS feedback, expressing enthusiasm for its potential to reduce paper work, to pre-empt time-consuming issues of locating documents, and to simplify communication on feedback matters with teachers and students.

The QAS reports were considered highly valuable as they helped sustain progressive learning by providing analyses of the varying abilities of students demonstrated in past work side-by-side with teacher recommendations for development and changes in performance. Students and teachers would no longer need to remember what was allocated, said, written, assessed, and students would no longer risk losing face by asking teachers to repeat and/or clarify instructions: the QAS would empower students to take greater control of their own learning.

Not all responses were uniformly positive, however, and the use of a computer to administer feedback input by teachers was perceived by some student participants as an indication of "coldness".

Furthermore, one teacher was ambivalent about use of the QAS task analysis form, expressing the concern that the form's completion might take too much time.

The use of colours was generally a valued characteristic of feedback administered by the QAS, but one student said they felt confused by the number of colours.

These negative reactions are of particular importance in refining the software with the aim of accommodating the maximum number of user preferences. However, it is unlikely that any feedback method, whether computer-mediated, or manual, will satisfy the personal wishes of everyone concerned.

Negative reactions also guide software developers in their work to revise functions, remove bugs, and add functionality. Participants made a number of comments that I found useful for considering improvements to the QAS.

These opportunities to revise the software are mentioned as they arise in the analysis, and in Chapter 12: Design Revisions and Opportunities.

Furthermore, the degree of satisfaction with the QAS may change over time.

With long-term use of a program, opinions will mature and vary.

Perceptions may also change if the factors affecting use of the software change: upgrading of an operating system and/or applications, access to computers, or alterations in the type of feedback required. Overall, however, the majority of participants were enthusiastic about QAS feedback methods, and one of the final questions I raised was whether participants would use the QAS if they had the option.

Three students responded as follows:

R: "Do you think the QAS would be good for you? P: Yes. R: Do you think it would be good for all the students in your class? P: Yes, I think so. R: Is there anything you'd like to tell me about this - do you have any comments? P: Is this your project? R: Yes. P: I think it's good, better" (S07).

R: "Have you anything more to talk to me about? P: I think the computer program is a very good idea for the students and teachers. It helps them organise their work and the comments from the teachers. That's very good. Did you make this program? R: Yes" (S11).

R: "If you could use this document [Assignment Analysis Report] on your computer at home, would you use it? P: Yes, even though I don't like bringing my homework home. But for me this is extremely useful and I will use it. It's really interesting and I hope really we will see it soon before I finish my course" (S12).

Teachers responded in this way:

R: "Do you have the system now? P: No. R: Would you like the system? P: Yes. Yes, I would. R: Would you use the system? P: Yes, for me, I would" (T01).

P: "I need the QAS now and I'm running out of steam to invent ways of marking online or reinventing the wheel in order to mark online and it's tiring. If there is a system such as the QAS, give it to me now. Let me get on with my work and save time and concentrate on finding new resources to teach my students

rather than.. Oh, which system should I use to mark this piece of homework?" (T03).

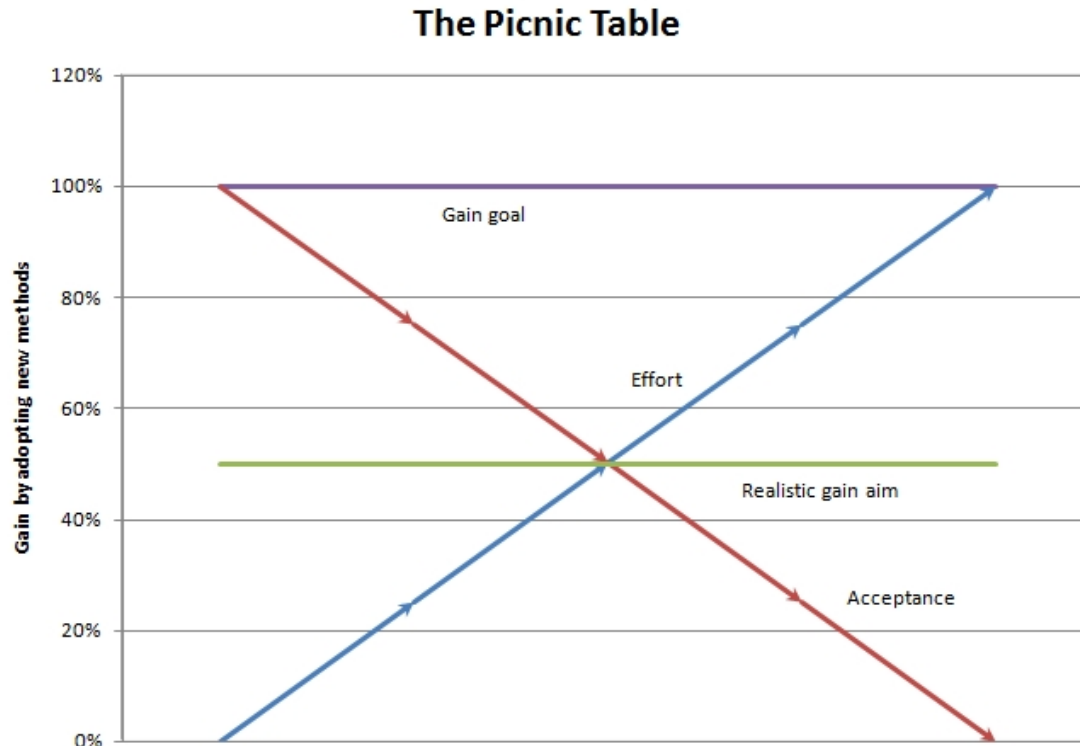
While administrators saw the benefits of the QAS from the perspective of organisation, consistency, system, time-savings, and responsibilities:

P: "So with the system [QAS], at least you can track it and they can track themselves, and if it's like [name of faculty] Online, it shows you what you've achieved and what you've not achieved. And if you can set it up that you have to do eight pieces of writing this term, and if you don't do them all, then you can't get signed off... So it's more like a control - they've got a bit more control - the students. And obviously the teachers have a better overview" (A01).

P: "That you could see a history of their term's work and you could look back over it. It would certainly be useful because often, particularly with that group of students, we do fly blind a bit when their English isn't that great and they come in with an issue. Getting all the pieces together, like usually it means, somebody comes...we say right, usually the first thing is they arrive and here's the story. So we're like, "Go away and come back with all the paperwork relevant to the issue" So, if they do that and we come back together and sit down with all the paperwork and look at their progress and the feedback they've been getting...Yeah, it would certainly be helpful. Just colouring in...it's all part of the picture" (A02).

Regardless of how good a new system is, however, it may be wise to assume that the greater the change it imposes on working methods, the greater the resistance it will generate, as illustrated in Figure 73.

Figure 73: The Picnic Table - resistance to change



This figure shows the break-even point for adopters of new software. As the effort involved in adapting to changes (brought about by the implementation of new software) increases (blue line), so the acceptance (red line) of users decreases. I maintain, therefore, that the maximum gain to which it remains beneficial to aspire equates to the point at which the two lines cross (50%). The effort involved in attempting to reach the maximum feasible gain goal (purple line) of 100% therefore risks a low level of acceptance that may even drop to 0%. For the party wishing to implement the change, and for the party needing to accept the change, a suitable compromise has to be found. This compromise is represented in the figure as the green line. I have coined the term "The Picnic Table" to emphasise the requirement for mutual satisfaction with the prospect and method of change.

In summary, the fieldwork identified the features of the prototype QAS that the participants found useful and those they stated they would not use. The participants identified functions that needed revision, and triggered ideas for additional functions. Overall, the fieldwork established that the majority

of participants were satisfied that the prototype QAS could render the feedback process more efficient and effective.

Chapter 13: Conclusions

13.1 Research Aims

This research was undertaken as a result of two powerful stimuli:

- 1) the desire to improve the feedback process as it relates to students, teachers and administrators in the field of ESOL, and
- 2) the interest shown by two New Zealand universities and two polytechnics in the prototype CCT and, subsequently, in the QAS design.

The former was not a selfless desire; I needed to make the provision of feedback quicker and less onerous, because I was putting so much time into marking, it was taking me away from what I perceived, in my early days of teaching in the 1980s, as my real work. What I believed that real work consisted of was something I never thought to define. It was only when I began to appreciate the change in student behaviour as a result of providing useful feedback that the crucial importance of feedback began to sink in. I became convinced that:

"Nothing that we do to, or for, our students is more important than our assessment of their work and the feedback we give them on it. The results of our assessment influence our students for the rest of their lives and careers – fine if we get it right, but unthinkable if we get it wrong" (Race, Brown et al. 2005).

This understanding, combined with the desire to reduce the time spent on the feedback process, led me to the realisation that only an ICT-based feedback system could accomplish my aims efficiently. This was the catalyst for the development of the CCT.

The interest shown by the above-mentioned institutions in the prototype provided evidence of the program's potential role. However, a hiatus in development temporarily halted progress. When personal circumstances allowed, I took up the project again.

As I worked on the development of the software, I began to see a range of additional functions that could be incorporated to increase its usefulness to students, teachers and administrators. By the time the design of the software was ready for demonstration, it had moved on from being a simple Word toolbar for inserting corrections into word-processed homework, and

had become a feedback administration system to insert feedback on word-processed *and* handwritten work, to store homework tasks and associated feedback, and to provide access to these data by all stakeholders. In the light of these advances in the design of the software, I renamed the program the Quality Assessment System (QAS).

At this point, I became very interested in finding out whether stakeholders found the QAS a suitable tool to address the issues discussed in Section 1.1. To accomplish this, I carried out observations, interviews and an experiment to simulate use of the software, as described in Chapter 7. I collected the data using a video- and/or audio recorder, and validated them using an intra-method approach: triangulation of methods, and triangulation of sources (see Section 7.10). The data were then analysed with the aid of CAQDAS software called nVivo.

The research approach proved sufficiently structured to convey to participants a sense of direction and my understanding of the capabilities of the QAS, yet sufficiently flexible to resolve practical problems such as:

- unavailability of participants
- changes of interview schedule;
- interview rooms being disturbed by external noise;
- participants who declined to be recorded on video.

The flexible approach to interviews also ensured that unanticipated interviews with two student association representatives (administrators) could be held. However, the short duration of the academic terms, and the unavailability of some participants beyond the end of these terms, had to be taken into consideration when planning the research. The main consequence of this unavailability was that a different group of students from that in Scenario 1 participated in the research for Scenario 2.

Having analysed the data collected from the observations, interviews, and experiment, I was able to establish the main findings.

13.2 Main Findings

The QAS provides a method of providing feedback that participants confirmed was very similar to the way they already worked – contrasting, therefore, with situations in which users must change their work methods to adapt to a new ICT. However, teacher participants identified the need for support and training – as with any ICT, and stated that the acceptance of a

new computer program would be compromised unless faculty could allow for such activity by replacing an existing duty, rather than by adding to the workload.

The research also found that, as a system for feedback provision, collection, storage and access, the QAS would foster consistency and clarity of feedback, though not all students said they would access the feedback database to view earlier feedback prior to completing later homework. An opportunity for further research thus arises in the need to establish the reasons why some students would choose to access, or not access, the feedback database.

Following research into alternatives to the QAS, it was found that the prototype QAS facilitates some feedback methods that have hitherto been unavailable. One such method is the provision of word-processed feedback on scanned, handwritten tasks using the QAS-Grid. This unique feedback method safeguards the desire of some students to continue writing their work by hand, and yet receive word-processed feedback that they confirmed was quick to identify and easy to read. It is possible that, over time, faculties will make it a requirement that students submit all their work in digital form. Until such time, however, the QAS-Grid satisfies a student requirement to continue working the way they choose. At the same time, teachers valued the functionality of the QAS-Grid, as, once the tasks had been scanned, feedback could be provided in approximately the same way as it was provided on work completed digitally. I noted, however, that some ambivalence was expressed by teachers in respect of the scanning process: Who would do the scanning? How would the scanned image be inserted into Word? Would the finished item be printed and returned to students by hand? This ambivalence and curiosity is an indication of the need to carry out further trials of the QAS and further research in this area.

The second unique feature of the QAS that participants stated would be useful was the handling of resubmitted tasks and the comparison of feedback on the first and second submissions (or any other pair of user-selected tasks). Student and teacher participants expressed satisfaction with this function that identified the change in student performance between tasks.

With feedback items being inserted digitally, some participants expressed the mistaken belief that the feedback comments were written, or generated, by a computer and not by a teacher. Allied to this belief was an emotional

attachment that some of the participants held for handwritten feedback comments. These factors drew my attention to the inherent risk of negatively affecting, or demotivating, students by the poorly considered application of method. It would be useful, therefore, to carry out further research to determine the extent to which the same feedback provided a) in handwritten form, and b) in digital form, affected students' propensity to read and respond to the feedback, and how it affected their motivation and the feeling that only handwritten feedback provides a personal bond with the teacher. This substantial issue made me aware of the requirement for potential adopters of the system to ensure transparency in implementation methods and feedback processes. Demonstrations of the software might have to be arranged to facilitate clarification of any such issues.

When designing software, there is always a trade-off between adding functionality (resulting in an increase in complexity) and keeping software simple and quick to use. The research identified this trade-off as a significant issue when I reviewed alternatives to the prototype QAS. It became clear that the alternatives provided access to far more grammatical explanations than was intended with the QAS. Further research would be necessary, therefore, to determine a) how teachers would react to the resource-rich feedback available in the alternatives, and to what extent, if at all, this feedback was at the detriment of speed of provision, and b) whether students found the resource-rich feedback more useful than simple, personalised QAS comments.

Overall, students found that the QAS could engage them more in the learning process by providing a) feedback that they were able to read, and b) reports displaying categorised historical feedback and frequency of recurrence that helped them identify areas requiring remedial work. However, students were divided as to whether they would use the historical feedback that the QAS could display in order to prepare for subsequent work.

Teachers stated that marking was quicker with the QAS. Opinions differed as to whether students would read the feedback more if it were administered by the QAS. However, the QAS function to withhold completion feedback until resubmission had taken place was acknowledged as a suitable tool to motivate students to respond to feedback on the first submission. All teachers expressed satisfaction with the QAS' function to record feedback in a database, and accepted that this would obviate the

need to rely on memory to recall the areas in which students would need to do remedial work, and the areas of competence.

Administrators stated the QAS would promote consistent feedback and that the QAS database of feedback would be useful for resolving student-teacher disputes, and as a tool to enhance the robustness of the quality self-assessment system the faculty adhered to.

Given the prototype status of the QAS software and the small population of research participants, I am aware of the need for caution in interpreting the fieldwork results. However, the generally positive perceptions and behaviours of the participants demonstrated significant uniformity of interest in the QAS, and places systemisation tools such as the QAS firmly on the agenda for closer investigation.

13.3 Summary

In summary, despite the requirement for revisions and the opportunities for improvements, the QAS was well received in its prototype form. The implications of its introduction were perceived by most stakeholders as being positive, especially with regard to its time-saving efficiency, simplicity, speed of use, its fostering of consistent feedback, promotion of student learning autonomy and its promotion of effective communication enhanced by the accessibility of archived feedback and associated homework documents.

Sufficient evidence was put forward by the participants to indicate that the QAS feedback system would be a valuable administration tool for ESOL courses at tertiary level. Moreover, if the faculty implementing the program established long-term adoption plans in the knowledge that new technology can take one-two years to become engrained in the mindset of its users, especially for non-technologically-minded staff, sufficient time would be available for non-intrusive, user-determined training that could build up confidence at the pace of the prospective user.

By recalling the benefits of seeking modest gains, as identified in Figure 73, faculties wishing to implement software such as the QAS can safeguard the interests of all potential users by considering the changes the software imposes, and granting an appropriate time for users to become acquainted with it.

Furthermore, as succinctly stated by teacher T03, successful adoption of the QAS may also depend on potential adopters expressing a need for

improvement. At one or more stages in their careers, teachers realise they need to change or develop their methods, and it is in such moments of realisation that the teachers are likely to be receptive to new methods. In other words, change has to come from within, and cannot easily be imposed by other parties.

If teachers complain that the provision of feedback takes too long, or if they clamour for a feedback tool that can reduce the effort involved in providing feedback, it is then, according to teacher T03, that implementation of the QAS, or similar software, is likely to be accepted. The realisation of a need, combined with the availability of a solution, provides a fertile ground for successful change, and bestows a form of responsibility and authority on the parties requesting that change.

While this research has ascertained the generally-positive perceptions of most stakeholders towards the use of the Quality Assessment System, it has also highlighted opportunities for further research. In summary, these are:

- 1) to investigate the trade-off between the speed of use and the scale of resource-rich feedback for teachers, and to determine the advantages to students of resource-rich feedback over simple, personalised comments,
- 2) to investigate further the extent to which the same feedback provided a) in handwritten form, and b) in digital form, affects the students' propensity to read and respond to the feedback,
- 3) to investigate teachers' behaviour in response to the need to scan students' work before using ICT tools to mediate feedback, and
- 4) to investigate students' behaviour in respect of the availability and use of a feedback database that could display earlier feedback.

To return to my opening paragraph, this project has shown there is still ample opportunity to research further the function of feedback for the benefit of all stakeholders.

Glossary

This analysis uses a number of terms relating to the QAS, as well as terms specific to the fieldwork, and to the institution at which the fieldwork was carried out. The most important and frequently-used terms are defined below. They are listed in alphabetical order.

Term	Definition
A01-A03	The code used to identify each of the three administrator participants.
Assessment	An expression used for two forms of evaluation: 1) end-of-term examination, and 2) end-of-term appraisal of selected items of work completed during the term. These selected items are chosen by the student (with or without the recommendation of the teacher). Both 1) and 2) are considered together by the administrator and teachers to determine whether a student should advance to the next academic level.
Comments	Comments are the written feedback provided by teachers in the form of phrases or longer sentences, usually at the end of a student's work, but sometimes also in the margins of the work, to provide praise and guidance.
Completion feedback	"Completion feedback" is a term I have adopted to indicate summative feedback and/or final formative feedback given by teachers to students as a conclusion to the respective task. It is term which is not common in feedback literature, though it has been used in ICT literature (Erickson 1995; Stephanidis, Paramythis et al. 1997)
Correction code	A list of abbreviations (1-3 characters) indicating textual errors in written homework. Teachers use the codes by identifying an error in a student's work, consulting the correction code list, and inserting the appropriate abbreviation in the work at the point of the error. The errors may be grammatical, stylistic, content, or structural.
ESOL	English for Speakers of Other Languages. This is a generally-accepted term used in the academic world for the teaching of English to students whose native language is not English.
Evidence of pass	Students are required to provide for end-of-term evaluation three pieces of writing, or documents, for each of the four skills of reading, writing, speaking and

	listening. The three items can be selected by the student at any stage of the term. If the student's teacher adjudges the items to have met the pass criteria for the student's level, the student is invited to store the items in their Rainbow Folder as Evidence of Pass.
Faculty	In the course of the research, the location within the research site at which the fieldwork was carried out changed name. It was officially called a Programme, but unofficially it was called a School, or a Department. More recently, it has become an Area. For consistency and to ensure correct interpretation of the term as the non-teaching, administrative function of the institution, the term 'faculty' is used. It is acknowledged that the research site does not officially have faculties, and use of the term is not intended to infer that the faculty has the scale, objectives and responsibilities of larger institutions where the term is commonly used.
Feedback item	A 'feedback item' is the object flagged by a teacher for correction or comment. I use this term to pre-empt the perception that feedback relates only to what a student did wrongly, and to avoid as far as possible use of the term "strengths and weaknesses" (which does not always convey the purpose of feedback).
Homework/Task	These two words are used synonymously in this project. The participants tended to use the word 'Homework', while 'Task' is the word most frequently used in the literature. Teacher T04 defined homework as: "work that they [students] do outside the classroom. It is sometimes set as a specific task, but sometimes it is something that they themselves want to work on. So generally, it is something that is set from the classroom that they are asked to do outside class time" (T04).
ICT	Information and Communications Technology
Level/Class	The terms 'level' and 'class' are commonly used for the same purpose: to identify the group of students who have completed a placement test and have been identified as being of the same ability in English. In this research, my interpretation of levels as observed is as follows. Elementary level: concepts of English; enough to survive in an English-speaking environment, but little/no conversation ability. Pre-intermediate level: able to communicate with considerable grammatical inaccuracy. Limited vocabulary and poor listening comprehension. Intermediate level: able to communicate comfortably in many social environments with a limited vocabulary. Upper-intermediate level: confident and communicative in English; still considerable grammatical inaccuracy but

	little that prevents comprehension.
Micro- /Macromarking	I have coined the expressions micro- and macromarking to differentiate feedback that identifies errors specific to a single word, collocation, or punctuation item, and errors of a more general nature such as structure, layout, formatting, cohesion, adherence to instructions, referencing.
Moodle	Free, open-source software "to help educators create online courses with a focus on interaction and collaborative construction of content" ¹⁹
Rainbow Folder	A student's personal study record, maintained by the student's teacher and usually kept in the administration office. It is used to store the student's best work from the respective 9-week term, as well as other assessed classwork and self-study work.
Resource person	Someone a student may turn to for assistance with homework. In this project, a resource person will usually be: a homestay parent, a peer, another teacher, a student representative, a library assistant.
S01-S13	The code to identify each of the thirteen student participants.
Smiley	A hand-drawn icon representing emotions (also called emoticons). In this research, smileys were used by teachers to convey praise or criticism with regard to student homework.
T01-T06	The code to identify each of the six teacher participants.

¹⁹ Definition from: <http://en.wikipedia.org/wiki/Moodle> 15 March, 2012.

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Appendix A

Ethics Information

Appendix A: Ethics Information

The information in the following ethics application was compiled prior to writing the thesis. Certain information will therefore have been superseded, such as the title of the thesis, which I modified during the research.

My ethics application consisted of the following:

- application for ethical approval
- 5 appendices
- sample, online, self-completion questionnaire
- information for teachers
- information for students
- sample interview questions
- consent form
- approval of ethics application
- confirmation of ethics approval from the research site

Appendix B

Application for Ethical Approval

University of Waikato
Department of Computer Science

Human Research Ethics Committee
Application for Ethical Approval

Howard M Gaukrodger
PhD Candidate
Department of Computer Science

Contact: howard@gaukrodger.com
Phone: [tel.no.]

September 2010

University of Waikato
Faculty of Computing and Mathematical Sciences
Human Research Ethics Committee
Application for Ethical Approval

1) Name of Researcher

- a) Howard M Gaukrodger

2) Department of Researcher

- a) Computer Science

3) Title of Research Project

- a) An Investigation into the Use of a Computer-assisted Assessment System (CAAS) for Two-way Formative Feedback on Learning Tasks

4) Status of Research Project

- a) PhD

5) Funding Source

- a) Bryant Trust Scholarship 2009 – 2011

6) Name of Supervisor(s)

- a) Assoc. Prof. Sally Jo Cunningham, Dr Masood Masoodian, Bill Rogers, Assoc. Prof. David Swain.

7) Description of Research Project

- a) Justification in Academic Terms
As a consequence of the rapid evolution of information and communications technology (ICT), the design of education methods involving a high degree of ICT changes quickly. Since the advent of computer-assisted assessment (CAA) at tertiary level in 1996, CAA has become a topical and commonly used concept in several countries. By contrast, the concept of a CAA *system*, CAAS, has not. My research will focus on CAA as part of such a *system*.

The literature on CAA appears to focus on the periodic, or scheduled, use of CAA exclusively for *summative* tasks. The value of my research lies, however, in its evaluation of CAA systemisation and the assessment of student responses to feedback, in relation to *resubmitted formative tasks*. I examine these issues in order to identify any change in performance of students and teachers in the education process.

My research into CAAS will examine the opportunities to adopt an integrated set of procedures promoting two-way processes. I investigate the still uncommon concept of two-way feedback from a new perspective: assessment of students' responses to teachers' feedback, where the students' responses constitute part of the performance criteria for achieving the learning outcomes – all within the framework of a CAAS.

I will also present an analysis of results obtained from online self-completion questionnaires and interviews carried out after the presentation of a prototype CAAS computer program that I designed for use with digitally-submitted tasks written in Microsoft Word. This program, called the Quality Assessment System (QAS) has reached a suitable stage of development to accomplish the aims of this project, but will not be installed on any computers of the institution.

As there currently appears to be almost no literature on such an integrated approach to computer-mediated, resubmitted formative tasks, the significance of the issues I examine,

involving topics that, individually, are highly topical within the circles of education research, HE management and the education ministry, constitutes good justification for my research.

b) Objectives

- i) The principal objectives of this research are to:
 - (1) identify and analyse the perceptions, beliefs and realities (henceforward termed "perceptions") of students and teachers in relation to the implementation of CAAS-mediated, two-way feedback (CMTF)
 - (2) identify, measure and analyse any changes in the performance and/or behaviour of students and teachers resulting from the introduction of CMTF

Particular focus is on whether technological innovation involving resubmission of tasks would improve the students' response to feedback and increase the achievement of learning goals. This response will be investigated to identify the nature, scale and significance of its constituent parts, and fieldwork will be carried out to determine how the proposed assessment model affects these parts and the achievement of learning goals.

I investigate how these perceptions change, if at all, in the light of presenting CAAS-mediated two-way feedback, seeking to identify emotions incited by innovative feedback methods, as well as personal interests and qualities that may affect technology acceptance, and attitudes towards learning and/or teaching. I investigate the perceptions of student and teacher research participants in respect of the value of feedback, their need and motivation to provide feedback, and a response to such feedback, and the relationship between feedback and task performance. The data collected will be used to construct my understanding of participants' perceptions of feedback and feedback methods, and will form the basis of comparative methods used subsequently to identify, measure and analyse changes in performance (Objective 2).

8) Methods Of Information Collection and Analysis

In the light of my mixed-method approach, I will collect both qualitative and quantitative data by means of observation and in-depth interviews. Online self-completion questionnaires will be used for data validation. Data collection will take place following presentation of the CAAS software specified above. For details of the data to be collected, please see "Procedures in which Participants Will Be Involved", below.

a) Observation

Observations will be carried out in all four scenarios:

- i) Feedback using current practice
- ii) Feedback using current practice plus resubmission
- iii) Feedback using CAAS and with resubmission
- iv) Feedback using CAAS without resubmission

Observations will be carried out to ensure I have a full understanding of the feedback process in all the above scenarios in order to provide a baseline for comparison between scenarios and to record:

- (1) what and how teachers inform students what it is they will be practising / testing
- (2) what actually happens during the allocation process
- (3) how work is collected, and participant behaviour / exchanges at the time
- (4) the appraisal process by sitting beside the respective teacher
- (5) student reactions/behaviour on receipt of appraised tasks.

b) In-depth Interviews

The approach I will follow for the collection and initial analysis of data from in-depth interviews is a modified form of analytic induction. This will involve data collection, then analysis, data collection then analysis, etc. Interviews will begin with introductory information sessions that should help put the interviewee (one student, or one teacher) at ease. I will then orientate discussion towards one particular topic, but allow the interviewee to digress within certain limits. I will concentrate on questions requiring

descriptive answers and seek to remain sufficiently flexible to follow the interviewee's train of thought in order to identify the natural feelings and attitudes of each interviewee.

To aid the process of recalling the content of the interviews, I will request permission to use a video camera or a voice recorder, reassuring the participants of confidentiality. A video camera (with microphone) will be of particular value, as it will capture the visible emotions and reactions of participants, as well as the tone and emphasis of responses, in a way that written notes cannot; namely, continuously, objectively and accurately. I appreciate that my interpretation of the camera's "objective" recording constitutes a subjective opinion. However, the recording itself will remain constant, and will thus allow me to revisit the interview at a later date to reaffirm, if necessary, my analysis. I consider such observations relevant in that verbal communication can be changed dramatically by modifying intonation and/or stress. My understanding and analysis of responses will thus be greatly aided by such recordings. I am also aware that video recording may affect the way participants behave, but I believe the technology of digital cameras is now sufficiently advanced that a very small and discreetly placed camera may have a smaller influence on participant behaviour than the proximity of a voice-recorder. I will discuss the options with the participants and find the most acceptable solution for each individual.

c) Online Self-completion Questionnaires for Data Validation

The data collected through observation and in-depth interviews will be validated using a mixed-method approach (see Methodology) within the said collection methods, and by online self-completion questionnaires. These questionnaires will be used following initial coding of field data, and may be triggered, inter alia, by a need for greater detail from participants to corroborate data and to drill down to optimise interpretation of responses. The questionnaires will be sent to those participants that took part in the interviews.

9) Procedure for Recruiting Participants and Obtaining Informed Consent for All Data Collection Methods (see attached information sheets and consent forms given to prospective participants)

I will be carrying out my data collection at [the research site]. Appropriate institutional approval was granted in June 2009 by the Director of Teaching and Learning. In applying for ethical approval, details of the anticipated data collection process were submitted in writing and discussion via e-mail was held with the Research Leader at [the research site].

For several reasons, I am acquainted with the teachers and administrative staff in the English Language Centre at [the research site] (see Conflict of Interest, 12e, below):

- My wife is a teacher at the [the research site], and I often meet one or two of her colleagues as I go to collect her from work on most days. I have also attended social events.
- I was employed by the Centre as a teacher approx. three years ago for one 10-week term.
- I have given two presentations: How to Teach Pronunciation, and the Quality Assessment System.

As a result of this acquaintance, I should like to distribute project information sheets personally in the staff room. These information sheets invite teachers to read a brief description of my project (supplied with a stamped, addressed envelope), and will request a response. My e-mail address will be supplied, should they wish to reply by e-mail. I will also try to recruit teacher participants by contacting them directly by e-mail / telephone / face-to-face to request time to present my project and invite them to participate.

Corresponding information sheets will invite students to read about my project, and I wish to distribute these sheets as the students leave their respective classes. These invitations will not be supplied with a stamped, addressed envelope, as I anticipate the students wishing to complete online questionnaires and participate in the CAAS project will already be motivated to respond by e-mail.

The above plan for recruiting participants seems feasible and appropriate considering both the data collection methods selected for the project and the small number of participants (max. 12 teachers and 50 students). I am seeking ethical approval for the above methods, and with the said number of participants.

The information sheets I will distribute emphasise the complete voluntary character of participation. In respect of students, I will also emphasise that non-participation, or the answers they provide, will not in any way influence their grades for the course.

If recipients of the information sheet wish to participate in the project, they will need to sign the informed consent form attached to the information sheet.

10) Procedures in which Participants Will Be Involved, and Content of Data to Be Collected

a) Observation

Observations will be carried out in all four scenarios. I will observe (and video-record) the processes of task allocation and collection to ascertain method, interaction, behaviour, and any changes in these variables that may take place between scenarios.

I will observe the classes of all six full-time teachers during the period in which the task (homework) is allocated and/or collected. There will be no direct contact between the researcher and the participants. The digital video recorder will be set up before the lesson, and the respective teacher will be asked to call me in before allocating the task, or handing back marked work.

I will also observe teachers marking student tasks in each of the four scenarios with a view to ascertaining the precise marking method and the character (variables) of the marking, identifying any changes that take place between observations.

Data content will take the form of handwritten notes and video recordings, and where possible photocopies of marked work.

b) In-depth Interview Questions and Interview Process

As the approach to my project encompasses two large and fast evolving areas of education research (ICT integration (CAAS) and feedback), it is not feasible within the scope of this project to provide an in-depth analysis of both areas for large samples. I will therefore pursue in-depth analysis of small samples, limited to the ESOL tasks that students are allocated during the week for a period of six to eight weeks²⁰.

As indicated by the method of analytic induction, mentioned above in In-depth Interviews, I will start my interviews, which will last approx. one hour, with just one participant (teacher or student). I will ask this first participant whether he/she can suggest a second participant for the following interview. This process will continue until I have completed my in-depth interviews in one of the following ways:

- i) all teachers have been interviewed, and,
- ii) regarding student interviews, either:
 - (1) all variables of responses appear to have been identified and consequently repeat and initial categorisation shows that all categories I wished to investigate have been covered, or
 - (2) all students have been interviewed.

²⁰ The research site operates with 10-week terms. Excluding induction week and end-of-term exam week, there are eight weeks in which tasks may be allocated.

I wish to hold the interviews in a location in which the participants feel most comfortable, and least self-conscious. Participants may therefore inform me where this is, or, if they cannot think of a suitable place, I will suggest one, e.g. classroom, tutorial room, library, etc. The participants may set the time for the interview. I will advise against holding interviews in noisy environments such as cafes.

Due to the inductive character of my in-depth interviews, it is not feasible to provide a copy of questionnaires, as participants may digress from the precise focus of the original topic/question, and may extend the interviews at their choice. However, a guideline of the topics and sub-topics I wish to research is attached and will help ensure the issues I initially considered critical to the research are covered during the course of the interviews as a whole.

The form of the questions will adhere to the interpretive framework described in the chapter "Conceptual and Theoretical Framework". This framework seems appropriate for my project, as, according to Sarker and Nicholson: "Such an approach can contribute to a holistic and deeper comprehension of the "socially constructed" reality" (2005. p.61). Sample questions are given in Appendix 4, and are intended to reveal participants' perceptions and understanding of issues relating to my research topics.

Personal characteristics observed will be limited to those that my research indicates influence the participants' answers to the questions:

- i) self-confidence / self-consciousness
- ii) tiredness
- iii) eloquence / foreign language interference
- iv) happiness / sadness
- v) understanding (of questions)
- vi) cultural background, gender and age.

c) Online Self-completion Questionnaires

I will use different forms of questions, depending on the purpose of the data to be collected. List questions will be used to collect information about the participants, e.g. their education backgrounds, age and gender. Category questions will be used to supplement list questions and facilitate the collection of data on quantitative factors, e.g. ranges of hours that participants spend on responding to teacher feedback (students), or providing feedback (teachers). Grid questions will be used to obtain data which cross-references different variables: for specified topics assessed, student participants may be asked how many hours they spent on completing each assessment task, and on revising the resubmitted task. An online questionnaire is shown in Appendix 1.

Self-completion questionnaires may mix qualitative and quantitative questions (as explained in the Methodology chapter), depending on the information to be gathered. The topics of the former will focus on participants' attitudes, reactions and perceptions to feedback, resubmission of work, and ICT in education, while topics of the latter will focus on numerical data, e.g. time spent on a given assessment task, number of students in a class, etc. Sample questions are given in Appendix 4.

The online, 10-question questionnaires will be piloted to ensure participants can complete them within ten minutes and that all questions are unambiguous. Instructions will be checked for clarity and completeness. The entire questionnaire process remains confidential. A participant will receive an e-mail with a link to the respective questionnaire and only this participant can access this page. Results remain confidential and only the participant and I can view the completed questions.

Issues of confidentiality will be explained, and the participants will be assured of anonymity (see Information Sheets, below). The responses provided by participants will be sorted and stored in nVivo (see Computer-assisted Analysis, below) for subsequent analysis.

To ensure the questions in the questionnaires are functional, accurate, fair and appropriate, I will seek the opinions of teaching staff and students, and, following presentation of my project and the specific aims of each test, will invite them to comment on the questions.

11) Procedures and Time Frame for Storing Personal Information and Other Data, and Maintaining Confidentiality of Personal Information

The distribution of my invitations / information sheets will make the respective course students and teachers aware of my project. I anticipate that some students and teachers may confer as to who the participants are and what they will be asked to do / are doing. In this respect, I do not seek to impose any confidentiality. Where I feel confidentiality is required is in the processes of submission, analysis, presentation and storage of responses. A number of measures will be in place to safeguard this confidentiality and to ensure there is no leak of information relating to student views on teacher feedback or the task process (and vice versa). These measures include the following:

- All data will be stored on a password-protected computer using nVivo software at my home. Any information stored on my home computer that may be used to identify participants (if any exists) will be destroyed no later than two weeks after the end of the project.
- No third party will be sure of knowing who submitted a given response as responses will be recorded from more than one participant. I do not view it as compromising confidentiality if a non-participant sees that a colleague is being interviewed. I believe it is realistic to expect that participation will become known.
- The self-completion questionnaires will be designed and completed online using a sophisticated program called LimeSurvey. This program has built-in privacy and confidentiality at its core. Results of the questionnaires are automatically sent by the software to my private e-mail client. Participants cannot access others' questionnaires or results.

I am aware that the overall number of participants will be small. However, I am also aware that it is possible that participants will confer on the responses given to my questionnaires and/or provided at interviews, but I will discuss this matter at information meetings before participants sign their consent forms, and I will suggest to them that they should maintain confidentiality.

Non-identifying data will be stored for 10 years to facilitate publication, academic examination, challenge, and peer review, as stated in the University's Human Research Ethics Regulations (Section 4.1). After this date, the data will be destroyed.

12) Ethical and Legal Issues

a) Access to Participants

Access will be arranged through meetings with the participants.

b) Informed Consent

A consent form seeking the informed consent of participants is attached (see Appendix 5). Introductory meetings will be held, and information sheets and informed consent forms will be given to all participants, before any involvement of participants in my research. Completion of the questionnaire will be taken as consent.

c) Potential Risk to Participants

Without measures to maximise confidentiality, there is a potential risk that personal views on feedback and the feedback process become known to other participants and/or third parties. To eliminate such a risk in this project, I therefore make every effort to safeguard the strictest confidentiality. All participants' views will be stored securely on my password-protected home computer. All self-completion questionnaires will be completed confidentially online, with no access to other participants' data. Results are e-mailed automatically with no user input and no way of being read by third parties. The researcher will not pass on in any way the information obtained from participants to other people.

No topics or questions will be of an intimate or personal nature.

d) Publication of Findings

The findings will be form part of my PhD thesis and if acceptable may be published in an appropriate academic journal and used at conferences.

e) Conflict of Interest

As indicated in Section 9, above, I am acquainted with the staff at [the research site]. This acquaintance is based almost exclusively on social interaction at [the research site]. The short course I taught was held in the evening and there was almost no contact with other staff. The presentations I made put me in contact, however, with nearly all the staff in the Centre. Through these presentations, the staff will have learnt more of my capacities both in the ESOL field and in the field of ICT in education.

I cannot discount that some participants may be more inhibited in their responses as a consequence of my spouse being their colleague. In order to minimise any such inhibitions, I shall endeavour to put participants at ease by underlining at the beginning of interviews that my spouse will not be privy to the data collected, that all data will remain confidential, and that the data will, in no way or at any time, have any repercussions for the participants.

It is also possible that participants who remember my interest in ICT in education may be influenced in their responses. They may respond more favourably than they might otherwise have done to questions relating to ICT implementation and acceptance (in order, for example, to say what they believe will please the interviewer), or less favourably in order, for example, to take a stand against someone they see as a proponent of a method they dislike.

By being aware of, and elucidating through discussion with participants, any potential conflict of interest, it is my intention to remain sensitive to potential issues, and to include these in my research to maximise transparency and validity of data collected.

Further general terms of data collection are given in the information sheets distributed to all participants.

f) Intellectual and Other Property Rights

All intellectual and other property rights for the final published material will be held by the researcher unless otherwise stated.

g) Intention to Pay Participants

There is no intention to pay any of the participants in this research.

h) Any Other Ethical or Legal Issues

There are no other legal or ethical issues involved in this research.

i) The Treaty of Waitangi

This research will, where relevant, be designed and carried out in a manner consistent with the principles of the Treaty of Waitangi. There are no issues around this research of particular relevance to Treaty principles

13) Ethical Statement

The researcher will follow the ethical principles of the Sociological Association of Aotearoa (New Zealand) and The University of Waikato Ethical Conduct in Research Guidelines (Human Research). These ethical principles will be maintained with integrity throughout all stages of the research project. If any unanticipated ethical issues arise, the researcher will bring these issues back to supervisors and the Department of Computer Science Ethics Committee (Human Research).

Applicant

Approval of supervisor/s if applicable.

Online Self-completion Questionnaires

The image below is a sample questionnaire I have designed for collecting research data from participants. Following receipt of a confidential, e-mailed invitation, the selected participant will be granted exclusive access to the relevant questionnaire. The questionnaire remains confidential throughout the project. The respective interviewee may request the deletion of the data at any time up to one week after its collection. All data will be kept encrypted on my website at <https://gaukrodger.com>.

(Please use the Zoom function in the Word / View menu to expand the image for reading)

Computer Usage	
This is an introductory survey to help me understand the way you use computers.	
Computer Usage	
Survey to learn more about the way you use computers.	
003: How many hours do you spend at the computer per week?	
Please give an average over one month. If you haven't completed a semester, then how long you expect to spend at the computer.	Please choose the appropriate response for each item.
Mon-Fri	☐ 0-1 ☐ 1-5 ☐ 6-10 ☐ 11-20 ☐ 21-30 ☐ > 30
Sat-Sun	☐ ☐ ☐ ☐ ☐ ☐ ☐
Semester break	☐ ☐ ☐ ☐ ☐ ☐ ☐
001: How often do you use an Apple Macintosh (Mac) computer for work and/or leisure activities?	
Please choose "only one" of the following.	
☐ Never	
☐ 0-5 hours/week	
☐ 6-10 hours/week	
☐ 11-20 hours/week	
☐ More than 20 hours/week	
002: How often do you use a Microsoft Windows-based computer for work and/or leisure activities?	
Please choose "only one" of the following.	
☐ Never	
☐ 0-5 hours/week	
☐ 6-10 hours/week	
☐ 11-20 hours/week	
☐ More than 20 hours/week	
004: How do you receive your assignment details and instructions from your teacher?	
An assignment is, here, the work that the teacher asks you to complete in your own time before the next lecture, lesson, tutorial, or exam.	Please choose "only one" of the following.
	☐ The teacher tells us.
	☐ The teacher tells us and gives us written instructions.
	☐ The teacher gives us a hand-out with written instructions.
	☐ The teacher e-mails us.
	☐ The teacher tells us where on the website to find the instructions.
	☐ None of the above.
	☐ Differs from assignment to assignment.
005: How do you submit your assignments?	
The teacher is the judge as to your comments. One of the boxes is optional. Please add anything you believe may make your answer more accurate.	Please choose all that apply and provide a comment.
	☐ Hand-deliver
	☐ E-mail
	☐ Upload to the website.
	☐ The assignment may not require written submission.
006: Are you a touch-typist?	
Do you write your assignments on the computer without looking at the keyboard?	Please choose "only one" of the following.
	☐ Yes
	☐ No
007: How do you rate your typing speed?	
Use all the comments that is optional. While how typing you believe may add to the accuracy of your answer.	Please choose "only one" of the following.
	☐ Very fast (more than 40 words per minute)
	☐ Fast (30-40 words per minute)
	☐ Average (20-29 words per minute)
	☐ Slow (less than 20 words per minute)
	☐ Don't know, but faster than I can write.
	☐ Don't know, but never slowly than I can write.
	Make a comment on your choice here.
Submit Your Survey.	
Thank you for completing this survey.	

Information Sheet - Staff

Fellow Scholars,

I am currently doing a PhD on computer-mediated feedback – a subject of major significance for current education research and policy all over the world.

The title is:

“An Investigation into the Use of a Computer-assisted Assessment System (CAAS) for Two-way Feedback on Learning Tasks”

Put another way... I've designed a piece of software called the Quality Assessment System (QAS). This has won several awards and has piqued the interest of three universities in NZ as well as the English Language Centre and eLearning Centre at [the research site]. It provides teachers with a simple way of adding corrections and comments to students' formative and summative tasks, reduces duplication of effort, and provides a number of other useful reporting and time-saving functions. However, its *raison d'être* is to improve the performance of students and to ensure quality of feedback from teachers. The QAS is an example of a computer-assisted assessment system mentioned above in the PhD title. More details will be given at the forthcoming seminar.

For my research, I need to investigate the task process: how teachers allocate tasks, mark the work, and give back the work, and how students respond to feedback. To do this, I'll be inviting all full-time teachers to participate. The four scenarios in which participation is sought are:

- i) Current feedback practice
- ii) Current feedback practice plus resubmission (i.e. students are *required* to respond to feedback)
- iii) Current feedback practice plus resubmission and use of the QAS
- iv) Current feedback practice and use of the QAS, but without resubmission

In each of the four scenarios, I'd like to observe the class during the task allocation and collection phase. (Please note, I am not requesting to observe your lessons, but would like to come into the classroom when the task is allocated and/or collected). A discreet video recorder may be used to record behaviour and interaction during this phase; this will allow the researcher to reflect efficiently on participant responses, and is important for this research.

I will subsequently hold an interview with you (at a time and place you may decide) to discuss my observations, ensure you believe they are fair and accurate, and to ask you a few further questions relating to feedback and/or use of the QAS. Each interview will last approx. one hour.

Once I have collated all the information, I shall invite you to complete approx. five self-completion questionnaires of ten questions each. These questionnaires may be completed confidentially online, and each questionnaire will take approx. 10 minutes to complete. The principal aim of the questionnaires is to validate the data, i.e. to check the data already collected is true and fair, to give you the opportunity to reconsider, or add to, information you have provided, and to provide me with the opportunity to ask more in-depth questions. Invitations to participate in the questionnaires will be sent to you by e-mail. A link in the e-mail takes you to the confidential questionnaire on my website at www.gaukrodger.com.

Corresponding interviews and self-completion questionnaires will also be arranged for student participants. The views of all participants will remain confidential.

The context for the research comprises the disincentives experienced by teachers that limit the provision of effective feedback together with the challenge of inducing students to *read and use* the feedback. Having been a teacher/lecturer at various secondary and tertiary institutions, including [the research site], I'm very aware of the pressure many staff work under, and of the priorities of students often being different from those of the teachers. This environment and the requirement to meet quality assurance standards form the context of my project.

If you have any questions, please e-mail me at howard@gaukrodger.com. Alternatively, if you'd like to confirm your participation immediately, please sign the attached consent form to indicate your agreement to participate, and return the form to me in the attached stamped, addressed envelope. All correspondence with me will remain confidential, and responses to questions will remain anonymous.

If you decide to participate, please remember that your participation is voluntary. You may withdraw your consent at any time up to two weeks after participation. You may refuse to answer any particular questions, and all information you provide will be treated confidentially (stored encrypted on my private computer at home until completion of the project). Nothing will be used to identify you. If you would like a summary of the data I collect from you, this can be supplied. You may contact me at any time by e-mail: howard@gaukrodger.com, or phone: [tel. no.]. The Human Research Ethics Committee of the Faculty of Arts and Social Sciences, University of Waikato, has approved this project. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee at fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

My research won the Bryant Doctoral Scholarship in 2008, and this has helped finance the project.

The publications that may arise from this research include: conference papers, journal articles, and the thesis itself, which may be made available online.

Thank you for taking the time to consider my request. Your participation may contribute to enduring benefits for students, teachers, faculty and management.

Kind regards,

Howard M Gaukrodger
PhD Candidate
Dept of Computer Science
The University of Waikato

Information Sheet - Students

Hello, Fellow Students,

My name is Howard M Gaukrodger. I am a PhD student at the Department of Computer Science at the University of Waikato, undertaking a study entitled:

“An Investigation into the Use of a Computer-assisted Assessment System (CAAS) for Two-way Formative Feedback on Learning Tasks”

For both students and staff, this is a highly significant topic, as researchers and education policy-makers are currently involved in examining these issues in Europe, America and Australasia.

For my research, I need to investigate the task (homework) process: how students get their tasks, how students complete them and give them to the teacher for marking, and how students respond to the feedback given by the teachers. To do this, I'll be inviting up to 50 students to participate.

The four scenarios in which participation is sought are:

- v) Current practice
- vi) Current practice plus the need to resubmit work having considered teacher feedback
- vii) Current practice plus resubmission and with the use of a software program designed to improve the quality of feedback (the Quality Assessment System (QAS))
- viii) Current practice plus use of the QAS, but without resubmission

In each of the four scenarios, I'd like to observe the class when the teacher gives you the task and when you hand it in. A discreet video recorder will be used to record behaviour and interaction during this phase. This will allow the researcher to reflect efficiently on participant responses, and is very important for the research. The work handed in and the feedback provided by the teachers will be copied for my analysis.

I will subsequently hold an interview with you (at a time and place you may decide) to discuss my observations, ensure you believe my comments are fair and accurate, and to ask you a few further questions relating to feedback and/or use of the QAS. Each interview (one for each scenario) will last approx. one hour.

Once I have collated all the information, I shall invite you to complete approx. five self-completion questionnaires of ten questions each. These questionnaires may be completed confidentially online and each questionnaire will take approx. 10 minutes to complete. To answer the questions, you just need to click the mouse, or sometimes to write a few words (the English doesn't have to be perfect!). I will send you an e-mail containing a link. The link takes you to the confidential questionnaire on my website at www.gaukrodger.com. The principal aim of the questionnaires is to validate the data, i.e. to check the data already collected is true and fair, to give you the opportunity to reconsider, or add to, information you have provided, and to provide me with the opportunity to ask more in-depth questions. Invitations to participate in the questionnaires will take the form of a link sent to you by e-mail. The link takes you to the confidential questionnaire on my website at www.gaukrodger.com. If you'd like more information, or would like to confirm your participation, please e-mail me at howard@gaukrodger.com, or sign the attached consent form to indicate your agreement to participate, and return the form to me in the attached stamped, addressed envelope. If you're not interested in participating, please pass on this letter to a fellow student.

Corresponding interviews and self-completion questionnaires will also be arranged for teacher participants.

The views of all participants will remain confidential. No information you give will be passed on to teachers. No information you give will affect your grades.

Participation is voluntary. You can withdraw your consent at any time up to two weeks after participation. You may refuse to answer any particular questions, and all information is confidential (stored encrypted on my private computer at home until completion of the project).

Nothing will be used to identify you. If you would like a summary of the data I collect from you, please ask me. You may contact me at any time by e-mail: howard@gaukrodger.com. The Human Research Ethics Committee of the Faculty of Arts and Social Sciences, University of Waikato, has approved this project. Any questions about the ethical conduct of this research may be sent to the Secretary of the Committee at fass-ethics@waikato.ac.nz, postal address, Faculty of Arts and Social Sciences, Te Kura Kete Aronui, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

My research won the Bryant Doctoral Scholarship in 2008, and this is helping me to finance my studies.

The publications that may arise from this research include: conference papers, journal articles, and the thesis itself, which may be available online.

Thank you for your time!

Howard M Gaukrodger
PhD Candidate
Department of Computer Science
The University of Waikato

Sample Interview Questions

Questions for teachers

- 1) How would you describe your written feedback to students?
- 2) How would you describe the response of students to your written feedback?
- 3) Do you like using computers – and do you allocate and submit work by e-mail?
- 4) Is the institution's QA system effective in ensuring the quality of your task instructions and content?

Questions for students

- 1) How would you describe the teachers' written feedback to you on your homework?
- 2) Do you always consider the earlier feedback of teachers before handing in your work?
- 3) Would you like to do your homework in MS Word or Moodle and hand it in using an online system or e-mail?
- 4) How is learning in New Zealand different from learning in your country?

Questions following presentation and detailed discussion of the QAS (CAAS).

- 1) (Students) Would there be any changes in the task instructions and the aims of the tasks following implementation of a CAAS? How would this affect your performance?
- 2) (Students) How would feedback change if it were provided using the QAS?
- 3) (Teachers) How would the implementation of a CAAS such as the QAS affect student responsibility for their learning?
- 4) (Teachers) What advantages/disadvantages would arise if you were obliged to use a computer system for administering formative tasks?

Consent Form

This consent form relates to the doctoral research being carried out by Howard M Gaukrodger, Dept. of Computer Science, University of Waikato (tel. [tel. no.], howard@gaukrodger.com). Chief Supervisor for this research is Assoc. Prof. Sally Jo Cunningham, Dept. of Computer Science (07 856 2889, sallyjo@waikato.ac.nz).

Name: _____

Date: _____

I understand that by agreeing to take part in this research, I have the following rights:

- b) To refuse to answer any particular question.
- c) To ask any further questions about the interview or research project that occurs to me, either during the interview or at any other time.
- d) To remain anonymous, should I so choose (anything that might identify me will not be included in conference papers, academic articles or any other report about the findings of the research).
- e) To withdraw my consent at any time up to two weeks after participation.
- f) To take any enquiries I have about the research fieldwork or the research project to the University's Faculty of Arts and Social Sciences' Human Research Ethics Committee (University of Waikato, Private Bag 3105, Hamilton 3240, or you can email its secretary at fass-ethics@waikato.ac.nz).

I have read and understood the information sheet explaining this research project. I understand that I may withdraw my consent at any time up to two weeks after participation without penalty and without an explanation being required. I consent to participate in this research project investigating the use of a computer-assisted assessment system (CAAS) for two-way feedback on learning tasks.

I understand the use of a video recorder to record behaviour and interaction, and to allow the researcher to reflect efficiently on participant responses, is instrumental to this research

I consent to my participation being recorded by a video camera used during the researcher's interviews and/or observations:	YES	NO	Please circle your choice
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I wish to receive a summary of the data collected from me:	YES	NO	Please circle your choice
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Signed:

Contact Details: Phone
 Mobile
 E-mail

Name of
Interviewer:
Date:

I accept the researcher requirements as outlined in this Information Sheet and Consent form

Signed (Interviewer):

This form is to be completed in duplicate. Each party is to sign both copies and to keep one copy.

Approval of Ethics Application

The application was approved by the Chair of the FASS Human Research Ethics Committee on 14th October, 2010 (see below).

Howard / MediaNet

From: John Paterson [johnp@waikato.ac.nz]
Sent: Thursday, 14 October 2010 15:05
To: howard@gaukrodger.com
Cc: Sally Jo Cunningham; dswain@paradise.net.nz; Diane Kenning
Subject: Research Ethics Approval FS2010-45
Categories: PhD
Howard Gaukrodger
Assoc Prof Sally Jo Cunningham
Assoc Prof David Swain

14 October 2010

Dear Howard

Application for Ethical Approval FS2010-45: An Investigation into the Use of a Computer-Assisted Assessment System (CAAS) for Two-Way Formative Feedback on Learning Tasks

Thank you for submitting a revised Application for Ethical Approval in response to my letter of 22 September. Your revisions were received on 29 September. I apologise for the delay in this response, caused by a bout of illness as well as the end-of-semester workload.

I have gone through the revisions you have made and can see that you have been thorough and meticulous in dealing with the issues raised by the Committee. I thank you for the time and thought you have put into this.

This letter is to confirm formal ethical approval for your project.

With best wishes,

John Paterson
Chair
FASS Human Research Ethics Committee

Confirmation of Ethics Approval from the Research Site

(received in July 2009)

Mr. Howard Gaukrodger

32 Sowman Street

Nelson 7040

Dear Mr. Gaukrodger

Re: Ethical Approval Confirmation at [research site]

Thank you for submitting an application to conduct a student survey at the [1. research site] [2. Name of staff member] Research Coordinator and member of the [1.] Research & Ethics Committee presented your application to the R&E Committee and we are happy to approve of this research survey.

We have received a copy of your University of Waikato Ethical Application approval which will be kept on file. You may now proceed with your survey. Please provide [2.] with a copy or online link to your survey for our records as well.

We will look forward to receiving feedback on the results of your survey and wish you the best for a successful outcome. We would welcome your call or email should you have any questions or if we may be of further assistance to you.

Sincerely,



^U
Director of Teaching & Learning