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An electronic feedback tool for distance education students called "MarkIt"

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Abstract

The purpose of this paper is to describe operational characteristics of "MarkIt", a PC-based application that provides feedback on assessment items. The application was developed to meet the need to mark a large number of assignments submitted by distance education students, and the need to coordinate and standardise the activities of several subject markers. The resultant software package incorporates features that provide students with information on the performance of their peers, plus the capacity for markers to enter detailed feedback at all stages of the marking process.

It has been developed as a stand-alone application to provide maximum functionality and flexibility to users to give quick feedback to the students. Key features of the package are modules that permit generation of e-mail feedback, use of key comments across different units, retention of feedback on each student's assessment, and a marking module.

[1]
Summary

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[1] Design and information technology techniques of 'MarkIt' were originated by:
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'MarkIt' is a software package that has four primary focus points:

- assisting markers in the assessment process by providing more equitable and detailed feedback to students.
- reducing marking time through streamlining the process of allocating feedback to student's assessment items
- providing feedback that enables students to assess their performance against that of their peers
- to give students timely feed-back by email

The package was developed at Southern Cross University with seed funding from the University of Western Sydney Hawkesbury. During the entire development of the software there was a focus on improving learning outcomes, producing better efficiencies in the assessment process and providing more detailed and standardised feedback. To meet these objectives, constant feedback was sought from students and academic staff. The current version has many enhanced components, which enable students to assess their performance relative to that of their peers and it has more versatility in the features and delivery of reports.

The essential characteristics of the system are that all students receive copies of all comments related to the assessment item, with all comments relevant to a student's private individual assessment appearing in a highlighted format on the final assessment report which is not accessible to other students. Apart from producing hard-copy reports, 'MarkIt' has an email facility so that reports can be generated and sent instantly to students in local or remote areas. All comments are annotated by the percentage of the total number of times the comment has been allocated to assessments. These characteristics provide students with an overview of peer performance, plus an indication of how the assessor, be it one lecturer or a team of tutors, expected students to perform. The system provides markers with a consistent model on which to assess; automatic calculation of comment frequencies, and efficiencies by minimising the time-consuming annotation of the same or similar comments on students' assignments.

Introduction

Distance education is a major tertiary education delivery mode worldwide. Support systems for distance education are increasingly essential in order to provide quality service in learning outcomes. Owing to an emphasis on written submitted assessment in distance education, learners rely primarily on the feedback they receive on assignments. Arguably, aside from course materials, phone and Web support, assessment feedback may be their major interaction with academic staff. In addition, considerable restrictions are placed upon learners' interactions due to the limitations of time owing to the fact that distance learners generally study part-time and are mainly in full-time employment.

Students expect meaningful comments on their assignments and projects, and are disappointed when their efforts are not rewarded by constructive feedback or their assignments are marked inconsistently (Ramsden, [9], 1992). With distance and on-line education being major tertiary, and increasingly secondary, education delivery modes, it is essential that support systems such as MarkIt are developed to assist in providing quality and standardised feedback to ensure that the best possible learning outcomes are achieved.

Students require timely feedback on their submitted assessment items to allow them to take appropriate measures to reinforce areas identified by their feedback before they sit exams or submit other assessments. While it is reasonable to expect detailed, individual feedback in subjects with a small number of students, meaningful individualised feedback and comment in subjects/units/courses with large numbers of students is time-consuming for academics, repetitive and can lead to inconsistencies, particularly if a number of markers are involved.

'MarkIt' is a software package with a focus on providing feedback that assists in improving learning outcomes, producing better efficiencies in the assessment process and providing more detailed and standardised feedback to distance education students. Aside from the technical development of 'MarkIt' the intended learning and other outcomes are:

- Consistency in assessment procedures, especially if more than one marker is involved in marking the assessment items.
- Enhanced levels of feedback provided on student assessments.
- Provision of information enabling students to assess their performance relative to that of their peers.
- Productivity improvement and efficiencies owing to the reduced duplication of effort enabling assessors to focus on the content and quality of feedback through a consistent model.

The development of 'MarkIt' has been an ongoing project, originating with a manual feedback proto-type, EXPRES, trialed over a two-year period. Students were surveyed regarding their views on the effectiveness of the manual feedback mechanism during this trial period with favourable comments on most aspects of the approach. The survey instrument comprised quantitative Likert scale items as well as open-ended questions. A sizeable amount of qualitative feedback from the survey led to the development of enhancements to the system, which have subsequently been built into the automated version.

'MarkIt' is in its final beta-testing phase and will soon be considered to be in a commercially viable form. It has been used in its current form to facilitate feedback for a number of units (subjects) at Southern Cross University (Coffs Harbour Campus) and the University of Western Sydney (Hawkesbury Campus), but the interface is still under development. A marking and grading feature has just recently been incorporated and a templates module is under development.

Prior to 1999 Beta (test only) versions were sent to University of Southern Queensland (Faculty of Business), Central Queensland University (Faculty of Business), University of Sydney (Faculty of The Built Environment), and the University of Queensland (Faculty of Health Sciences) for evaluation and comment. All were enthusiastic regarding the possibilities for the system and would like to adopt it primarily to support their distance education activities.

Preliminary surveys of students who received feedback from 'Expres', which was central to 'MarkIt''s implementation and development, indicated that students see the

approach as important and believe it should be more widely adopted (Armstrong, Cook, 1995; Armstrong, Cimino & Dingsdag, 1998).

An outline of the system and development

The educational philosophy underpinning the development of the system is that external or distance mode students don't have the benefit of regular interaction with their peers nor face-to-face learning environments involving their lecturers. This lack of collegial interaction is increasingly evident with the growth of Web-based and other more conventional distance education methods. Pedagogically regular interaction between students and between students and academics and is essential. When they are not part of the learning process feedback from assessment items may be the only form of interaction distance students have with academic staff whose annotations on exam papers and submitted assessments become all the more essential. While it is impossible to overcome this distance education dilemma entirely it is possible to provide students studying in distance modes with a complete list of general comments related to assessment items.

The literature and other data bases relevant to electronic feedback indicate that system development in the area has reached a level that provides feedback as an adjunct to individual assessment items, but provides little or no relative peer indicators (LodgeIT, 1996; http://www.utexas.edu/world/lecture, 1998; Boles, 1999). The literature and World Wide Web sites examined show that feedback is rarely consistent and students do not have access to the full set of comments provided on all assessment items, thereby receiving little information on their performance relative to that of their peers or expectations of the assessors (Kelly, 1993; Jones, Petre, 1993; Hara and Kling, 2000). In some cases sample solutions provide relative feedback based on the individual's comparison between their submission and the marked assessment, but there are no relative comments indicating the level of individuals' performance.

In addition, despite extensive examination of the Internet, other electronic databases and relevant literature, so far only two assessment approaches that provides reference points have been identified; Mindtrail, the only other known system that has similar technical application, does not have features as sophisticated nor as flexible as MarkIt's. The author of the only other known article on the use of email for assessment applications has also had difficulties in identifying previous use of email for assessment purposes (Boles, 1999)

Consequently, 'MarkIt' was developed with little guidance as to how the best learning principles could be incorporated technically. After a long period of maturation 'MarkIt' has been developed to enable markers or assessors to enter lists of comments related to assessment items. The lists can be arranged to suit the format and structure of individual assessment items whether they are submitted assignments or exams. When marking an assessment submission, examiners 'choose' those comments relevant to each individual assignment or exam with these comments being highlighted on the final assessment report (refer Figure 7).

The developers do not claim that the 'MarkIt' method of feedback is appropriate for all types of assessment items and nor is it intended to replace the need for individual comments and annotations on student assessment submissions. It is meant to complement the conventional feedback methods to provide a consistent set of

feedback for units/subjects with multiple assessors, to provide details of peer performance, and to integrate technology with a focus on educational outcomes rather than merely marking expediency. 'MarkIt' provides a facility for individualising comments to students in recognition of the importance of individual learning.
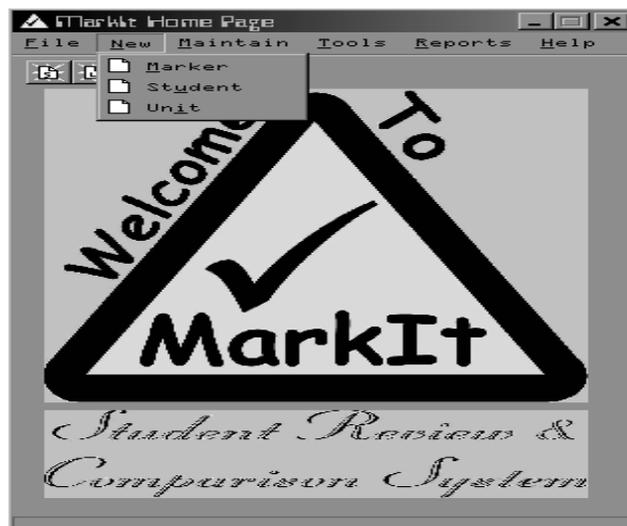
System operation and functions

'MarkIt' enables multiple units to be stored on the database. All comments for specific assignments in specific units are stored separately so there is no overlap of assessment for individual students in different units. All students entered on a database, either manually or with the aid of the import facility, are assessable for every assignment for a particular unit. Once students are stored on the database they can be assigned to a number of units. Student details can be imported directly from comma delimited files, directly into 'MarkIt'.

'MarkIt' has six drop-down menu components as shown in Figure 1. The components are:

- **File** – allows for the import of student records, the backing up and restoring of the database and exiting 'MarkIt'
- **New** - the establishment of new units/subjects, students and markers
- **Maintain** - the addition, maintenance or deletion of comments, assignments, assignment sections, units and student records
- **Tools** - access to wizards that assists with the creation of assignments and markers.
- **Reports** - facilitates the selection of various reports
- **Help** – access to 'MarkIt''s help and easily accessible suggestions about how to use functions

Figure 1 - New Entires Menu

The functions available under the 'Maintain' menu option as shown in Figure 2 below, enable the general maintenance of the operational data used in the system. These functions allow markers to enter and change individual student details, add comments,

allocate comments to students based on their assignment submissions, and to enter and change details of individual assignments for each unit.

Figure 2 - Maintenance Menu

A unit can be allocated any number of assessment items, limited only by the available memory and processing capacities of the hardware and operating system being used. An assessment contains one or more sections. The sections reflect the marking requirements of a particular assessment item and reflect the structure of the expected assessment submissions.

The screen shown in Figure 3 is the standard interface used to select particular assignments for specific units when entering comments or assigning comments to individual students' assessment submissions. This screen allows markers/assessors to select assessment information down to the level of individual sections in assessment items as entered.

Figure 3- Unit and Assignment Selection Screen
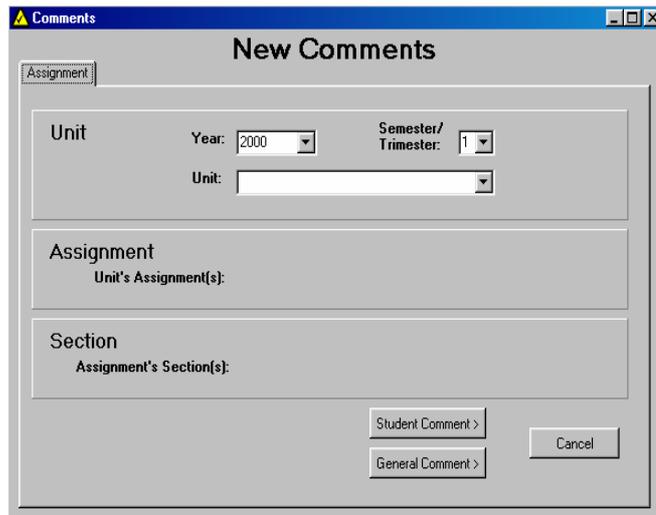
Using 'MarkIt', comments can be entered to a particular section at any stage of the marking process. The screen shown in Figure 4 is for entering comments to the various sections of assessment items as selected in the Unit and Assignment Selection Screen in Figure 3 above. As comments are added, they automatically become part of the assessment reports that are returned with marked student assessment submissions. Apart from student comments 'MarkIt' also has a feature that allows for general comments. This facility reflects the need for students to be informed of issues that are applicable to all students.

In comparison with a manual process, comment sheets were photocopied with individual comments marked using a highlighting pen. Any comments subsequently found and which should have been included were difficult to incorporate and/or resulted in additional photocopying and remarking.
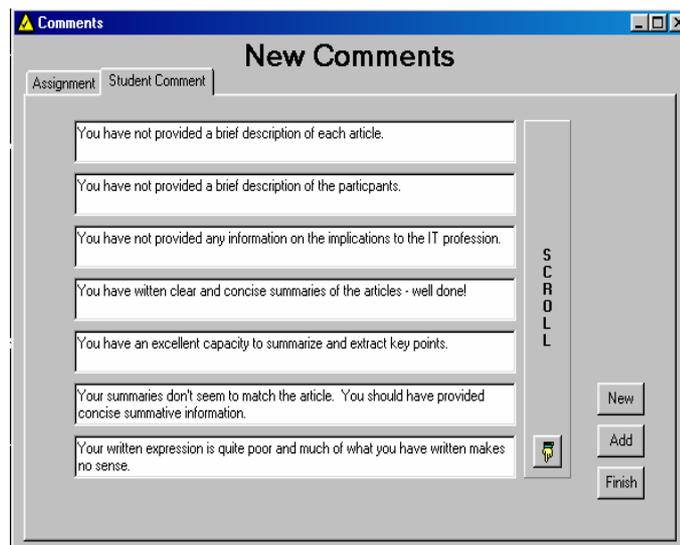
Figure 4 - Comments Data Entry Screen

Figure 5 shows the screen for allocating specific comments to individual student's assessment submissions. The comments to be 'marked' are selected by pressing the

left mouse button over the appropriate select box. Selected comments are marked with an 'X' in the right-hand column. Comments are 'unselected' using the same process as selection, with the 'X' disappearing from the right-hand column beside the comment.

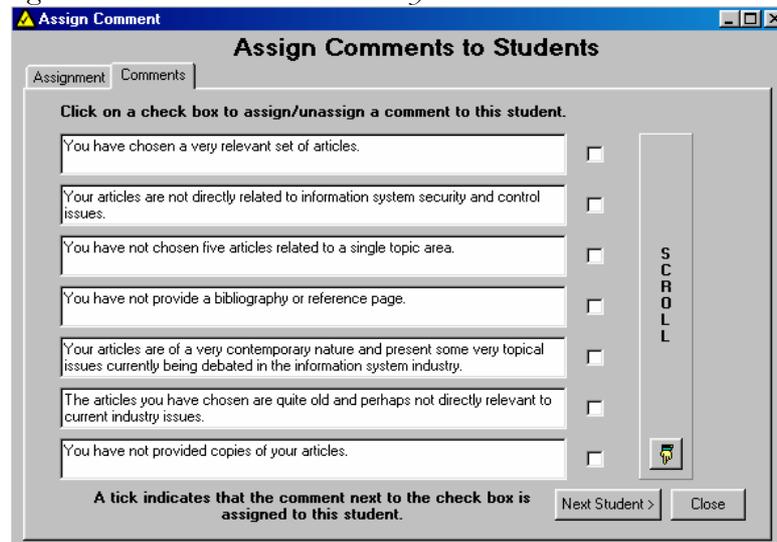*Figure 5 - Assigning Comments to Students Data Entry Screen*

Figure 6 below shows a sample of the assessment report produced for each student, after comments have been allocated to individuals' assessment submissions. The comments shown in bold, italic and slightly larger font are those relevant to the particular section of the assessment submission for the selected student.

Providing a complete list of all comments to all students allows them to see the general aspects of the assessment relative to markers'/assessors' expectations. The figure to the left of each comment shows the percentage of times this comment has been 'checked' or 'allocated' to students' assessments. It also indicates the relative performance of other students.

Any comment allocated 0% shows an aspect of performance expected by the marker/examiner but not realised in the actual assessment submissions. Depending on the nature of the comment not allocated, it could indicate that:

- the marker/assessor had unrealistic expectations and that the assessment item may need to be re-written;
- or that students performed well in an area the marker/assessor wasn't expecting;
- or that students didn't perform well in an area the marker/assessor expected them to.

The system also has the facility for the marker to include specific comments and general comments. Specific comments are assigned to a specific assignment for a student and they appear only on the feedback report for that student. General comments appear on all feedback reports but are not allocated to assignments as they ar general informative comments for all students. These comments do not have a percentage of times allocated.

Figure 6 - Sample Report Section
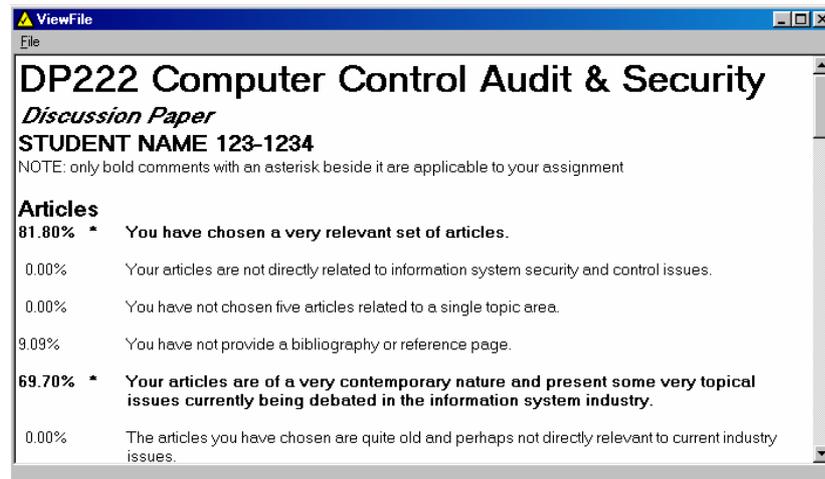
The end of each report is annotated with the percentage of student assessment submissions that have been marked at the point in time that the individual assessment report was printed. As assignments are marked, the percentages beside each comment and percentage of assessments marked are automatically updated. The marker/assessor can view reports for students on-screen at any stage of the marking process.

All comment reports generated by MarkIt are stored in a directory as RTF formatted files. This means the files can be altered using a word-processor and are also available for later reference should a student contract the examiner with a query.

Planned Development and Enhancements

A number of developments are still planned for the system to enable it to meet a full range of assessment needs of different educational sectors, not just the tertiary sector.

The development team is currently working with educationalists from the secondary, TAFE and university sectors to establish comments templates. This development will allow markers to insert standard comment sets when devising marking schemes for assessment items. This template feature will also be extended to allow users to develop and save their own comment templates.

A marking module has recently been incorporated into the package. This module enables the examiner to allocate a total mark to each section of the assessment and then allocate marks to each comment in a given section. The mark calculation works on a 'debit' system whereby the marks allocated to a comment are deducted from the total marks for a given section. This module is being trialled in a number of units over the coming semester. The marks module also includes a marks override facility to enable a marker to override the calculated mark. The marks for a unit can also be exported in a comma delimited spreadsheet format.

It is also planned to develop a secure web interface to enable students to interrogate the comments database and review the comments reports relative to their own assessment items. The development of routines to ensure the security and privacy of

feedback to individual students is already progressing under another project developing an on-line assignment submission system.

Conclusion

'MarkIt' is a system that has the capacity to increase the quality of feedback provided to external students through some very simple mechanisms. However, it should be used as a complementary marking system to current distance education arrangements and not as a replacement system, and does not eliminate the need to annotate specific comments on students' individual assessment submissions.

There is still a significant amount of development and trialing required until the system has all the planned features. It is specifically being developed on a standardised platform so it is suitable for use by a wide range of educational providers. However, the final development stage is implementation on the World Wide Web to integrate seamlessly with current assessment practices, yet providing high quality and consistent feedback to distance education students.

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