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An investigation into the use of e-assessment to support student learning

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An investigation into the use of e-assessment to support student learning

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Abstract
Interactive computer-marked assessment has been incorporated into a range of science courses at the UK Open University. Different question types have been used, but all allow students multiple attempts so as to enable them to act on the feedback provided. An investigation is exploring the effectiveness of different question types and the impact of the way in which computer based assessment sits within the course's assessment strategy and whether it has summative, purely formative or diagnostic function. Qualitative and quantitative research methodologies include an analysis of data captured when students attempt the online questions. Characteristically different signatures of use have been identified for summative and purely formative interactive computer marked assignments. However there have been some surprises, indicating that student behaviour can be strongly influenced by their interpretation of advice given within a course and illustrating the need for further work in this area.

Background: one University, wider implications?
Throughout the 40-year history of the UK Open University (OU), there has been some blurring of the summative ('for measuring') and formative ('for learning') roles of assessment. OU undergraduate students are typically (though no longer exclusively) adults, studying part-time alongside other commitments and they have a wide range of entry qualifications from previous higher education qualifications to, literally, none. Many have not studied for many years and so they may be particularly lacking in confidence. The students study at a distance, but the OU's model of supported distance education means that they are usually supported by a tutor. This tutor will provide occasional tutorials (face to face or using a range of synchronous and asynchronous electronic communication technologies) and be available to support student learning by telephone or email; however a substantial part of the tutor's contracted time will be spent in grading and providing feedback on 'tutor-marked assignments' (TMAs). The fact that this task is described as 'correspondence tuition' reflects the importance that is placed on the feedback provided by tutors to their students in this way; this is particularly important in a distance-learning organisation, where many students never meet their tutor and opportunities for informal feedback are extremely limited. However TMA scores usually contribute substantially to students' overall course grades.

The use of e-assessment also has a long history at the Open University. TMAs have long been supplemented by computer-marked assignments (CMAs), initially comprising solely multiple choice questions, with students' responses entered on machine-readable

forms and submitted by post. Now, in many OU Science Faculty courses, and some in other faculties, students complete online interactive computer-marked assignments (iCMAs) from their own computers at home. This paper describes the early stages of an investigation into different models of iCMA use and their impact on student learning.

Why e-assessment, or why not?
It is widely recognised that rapidly received feedback on assessment tasks has an important part to play in underpinning student learning, encouraging engagement and promoting retention (see for example Rust, Donovan and Price, 2005, Yorke, 2001). Online assessment provides an opportunity to give virtually instantaneous feedback and (of particular importance in a distance learning environment) it can been seen as providing 'a tutor at the student's elbow' (Ross, Jordan and Butcher, 2006). For high-population modules and programmes, e-assessment can also deliver savings of cost and effort. Finally, e-assessment is the natural partner to the growth industry of e-learning. However opinions of e-assessment are mixed and evidence for its effectiveness is inconclusive; indeed e-assessment is sometimes perceived as having a negative effect on learning (Gibbs, 2006). Murphy (2008) reports that high stakes multiple-choice tests of writing can lead to actual writing beginning to disappear from the curriculum; she also reports that 'the curriculum begins to take the form of the test'. There are more widely voiced concerns that e-assessment tasks (predominantly but not exclusively multiple-choice) can encourage memorisation and factual recall and lead to surface-learning, far removed from the tasks that will be required of the learners in the real world (Scouller and Prosser, 1994).

Thus when e-assessment is used, careful evaluation is required to ensure that it is being used to optimum effect and having a positive not a detrimental effect on student learning. There are a number of related questions, for example:
- What sorts of e-assessment tasks have the best potential to support student learning?
- What mode of use is most effective: summative, formative, thresholded etc.
- What sort of feedback on e-assessment tasks is most useful?
- Does the fact that the feedback is generated by a computer rather than by tutors, peers or the students themselves matter?

E-assessment at the Open University
The iCMAs included in the current evaluation all use the 'OpenMark' web-based assessment system (Butcher, 2006) within the Moodle virtual learning environment (Butcher, 2008). Question types include those requiring free text entry of numbers, letters, words and sentences in addition to more conventional drag and drop, multiple choice, multiple response and hotspot questions. Students are allowed three attempts at each question, with increasingly detailed and tailored prompts allowing them to act on the feedback whilst it is still fresh in their minds and so to learn from it (Sadler,1989; Gibbs and Simpson, 2004), as illustrated in the simple question shown in Figure 1. The hints frequently refer students back to relevant course material (which might be a book, a video sequence or an interactive activity). Feedback can also be provided on the student's demonstration of learning outcomes developed in the preceding period of study.

OpenMark has good accessibility features and wherever possible, questions exist in several variants. In summative use this enables different students to receive different assignments, whilst in formative-only use, the different questions provide extra opportunities to practise.

Figure 1 **A simple numerical OpenMark question, with increasing feedback given at each attempt.**

Within the Open University Science Faculty, iCMAs are embedded in courses' assessment strategies in a wide variety of ways, for example:
Case 1: A single summative OpenMark end of course assignment (available to students for 5 weeks) with instantaneous feedback given to students on individual questions. The students are not told their mark. A similar practice assessment (Case 1 PA) is available for the duration of the course.
Case 2: Two very short tutor marked assignments and two very short summative but low stakes iCMAs (Case 2 SA) plus a purely formative iCMA (Case 2 PA) available for the duration of the course.
Case 3: Nine summative but low stakes iCMAs, eight tutor marked assignments and an end of course assignment.
Case 4: Regular purely formative iCMAs, clearly embedded within the online course calendar, alongside tutor-marked assignments and an examination.

Case 5: Regular formative iCMAs, clearly embedded within the course alongside tutor-marked assignments. Students are told that there will be similar questions to those in the iCMAs in the final examination.

Case 6: A move towards 'formative only' continuous assessment on level 3 physics and astronomy courses. 'Formative only' here is something of a misnomer – both iCMAs and tutor marked assignments will be thresholded, but students will not be told their score and the score will not 'count' in any way other than to enable students to pass the threshold. The courses will retain their end of course examinations.

Case 7: iCMAs used for diagnostic purposes in a series of 'Are you ready for?' quizzes, designed to help students to decide whether or not they are sufficiently prepared to study a particular course.

Case 8: A set of questions accompanies the 'Maths Skills ebook', provided as an optional resource on a range of courses, including the one described as Case 3 above.

The Moodle Gradebook enables students to monitor their own progress, encouraging sustainable self-assessment practices (Boud, 2000), and the tutor's view of the Moodle Gradebook encourages discussion between students and tutors. Several of the courses described above also assess student contributions to online forum discussions and require them to complete reflective journals. The assessment for learning capabilities of ePortfolios, wikis and blogs (Chesney and Ginty, 2007) are also beginning to be explored.

Previous evaluation
Evaluation methodologies have included surveys of student opinion, observation of students in a usability laboratory, a 'success case method' approach (Hunter, 2008) and a comparison of accuracy of computer and human marking (Jordan and Mitchell, 2009). The systems have been found to be robust and accurate in marking and most students report enjoying the iCMAs and finding them useful. However there are some anomalies. For example, whilst more than 90% of students report finding the feedback provided useful and, when observed in a usability laboratory, some students were seen to read the feedback and then to adjust their answer in a sensible way, others do not make use of the feedback in the way that iCMA authors would hope.

The current work
As a precursor to further qualitative investigation into the use that students make of iCMAs on a range of courses, the current project is seeking to 'observe' student behaviour remotely, by means of a quantitative and anonymised analysis of the data captured when students attempt iCMAs. Tools have been produced to extract summary information from the databases. It should be noted that the student populations of the courses in question are large, e.g. the course identified as 'Case 3' above has two presentations each year with around 1500 students per presentation.

How many students attempt each question?
Not surprisingly, when iCMAs are summative (even if low stakes), students are highly motivated to attempt all the questions, as shown in Figure 2 below.
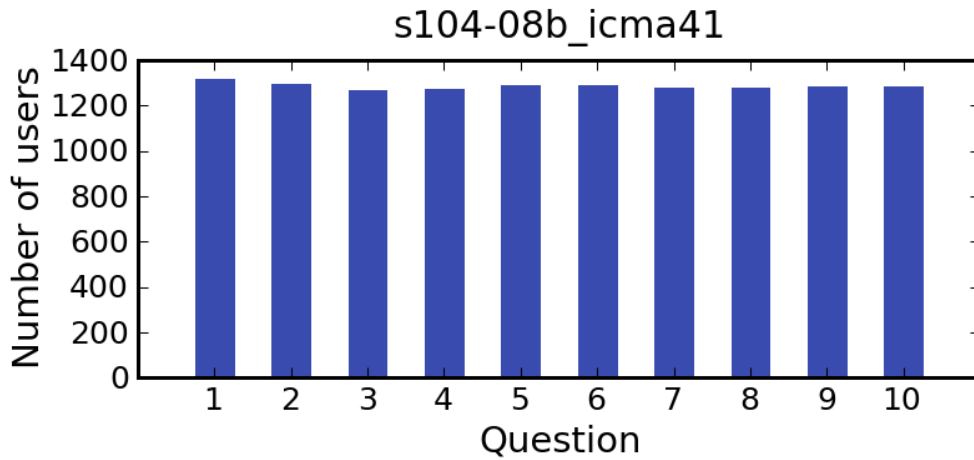
Figure 2 **The number of students attempting each question in a summative but low-stakes iCMA (Case 3).**

However, when the iCMA is formative-only, usage drops off in a characteristic way, as shown in Figure 3.
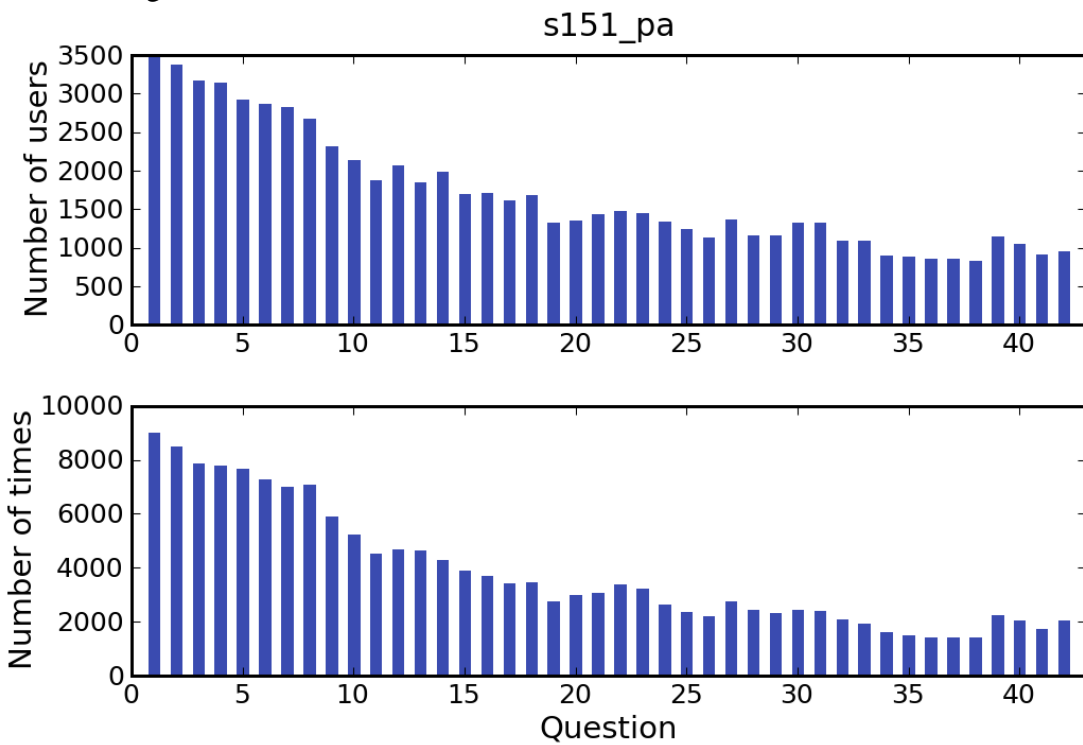

Figure 3 The number of students attempting each question in a formative-only iCMA (Case 1 PA)

The top bar-chart in Figure 3 shows the number of students who attempted each question; the lower bar-chart shows the number of separate uses of each question (so each user attempted each question an average of three times). Note that this particular iCMA includes forty-two questions; usage drops off less for iCMAs with fewer questions,

however if there are then several separate iCMAs spread over the duration of the course, there is then a drop in use from iCMA to iCMA, resulting in a similar drop in use from the first question in the first iCMA to the final question in the final iCMA. Typically, the number of users has dropped to around half by half-way through the iCMA or course and to around a quarter by the end. In addition, some students view the questions in the iCMA but never attempt any; for the iCMA illustrated in Figure 3 and over the same time-scale, the iCMA was viewed by around 4500 students.

There appear to be particular aspects of iCMA design that can contribute to a marked decline in use (which is not recovered in subsequent questions); this is often linked to questions that are deemed to be complicated (perhaps with multiple boxes to complete) or time-consuming (though not necessarily difficult) or which require the student to access a piece of multi-media or even perhaps just to use their calculator (as illustrated in the example shown in Figure 4 below, which is question 19 in the iCMA under consideration in Figure 3). However use can be encouraged by linking questions to the appropriate section of the course (as shown in the navigation panel to the left hand side of Figure 4); Figure 3 shows that students who had not attempted previous questions were nevertheless sufficiently motivated to attempt the questions linked to Chapter 7 (starting with question 27) and Chapter 10 (starting with question 39). Linking questions to sections of the course (and reminding students to attempt them at appropriate times, by notes in the course texts or website) is now considered to be good iCMA design, although it is not practical in all situations, for instance when iCMA questions have a deliberately synoptic role.

S151 Practice Assessment
Question 19 (of 42)   Display options   Help
                                           Your answers   End test

Info Info

Chapter 1
Info 1 2 3 4 5

Chapter 2
Info 6 7 8

Chapter 3
Info 9 10 11 12 13

Chapter 4
Info 14 15 16 17
18 **19**

Chapter 5
Info 20 21 22 23

Chapter 6
Info 24 25 26

Chapter 7
Info 27 28 29

Chapter 8
Info 30 31 32 33

Chapter 9
Info Info 34 35 36
37 38

Chapter 10
Info 39 40 41 42

A ball is thrown straight up into the air with a speed of 9.6 m s^{-1}. Assuming that all of the ball's initial kinetic energy is converted into gravitational potential energy, find the maximum height reached by the ball. You should use the equations given in Box 4.6 and assume $g = 9.81$ m s^{-2}.

You should give your answer to the correct number of significant figures and with the correct SI units.

height = 4.7 m
☐ Superscript (↑)

Check

Your answer is correct.

Assuming that all of the ball's kinetic energy is converted into gravitational potential energy we can say that

$E_g = mg\Delta h$ and $E_k = \frac{1}{2}mv^2$

are equal so $mg\Delta h = \frac{1}{2}mv^2$

Dividing both sides by m gives

$g\Delta h = \frac{1}{2}v^2$

Dividing both sides by g gives

$\Delta h = \frac{v^2}{2g}$

Now $g = 9.81$ m s^{-2} and $v = 9.6$ m s^{-1} so

$\Delta h = \frac{(9.6 \text{ m s}^{-1})^2}{2 \times 9.81 \text{ m s}^{-2}} = 4.7$ m

to two significant figures.

Next

Figure 4   The iCMA under consideration in Figure 3, showing Question 19 and the navigation panel.

When do students attempt the questions?

Summative iCMAs are usually made available to students for a period of several weeks and within that time scale students are allowed to spend as long as they would like to on the questions; if a student closes their browser and returns to an iCMA at a later stage, the system will remember where they were up to. However most summative iCMAs have a 'hard' cut-off date; this is a deliberate policy, designed to encourage OU students (who frequently have many competing demands on their time) to keep up to date in their studies. In Case 3, the cut of date for each iCMA is a few days after students are scheduled to have completed their study of the relevant course material. Figure 5 shows that the cut-off date is clearly effective in encouraging students to attempt the iCMA but most complete the questions in the few days immediately before the cut-off date. The three graphs in Figure 5 are for an early question (Question 1), a late question (Question 9) and the combined usage of all 10 questions in the iCMA; thus the behaviour is similar for all questions.
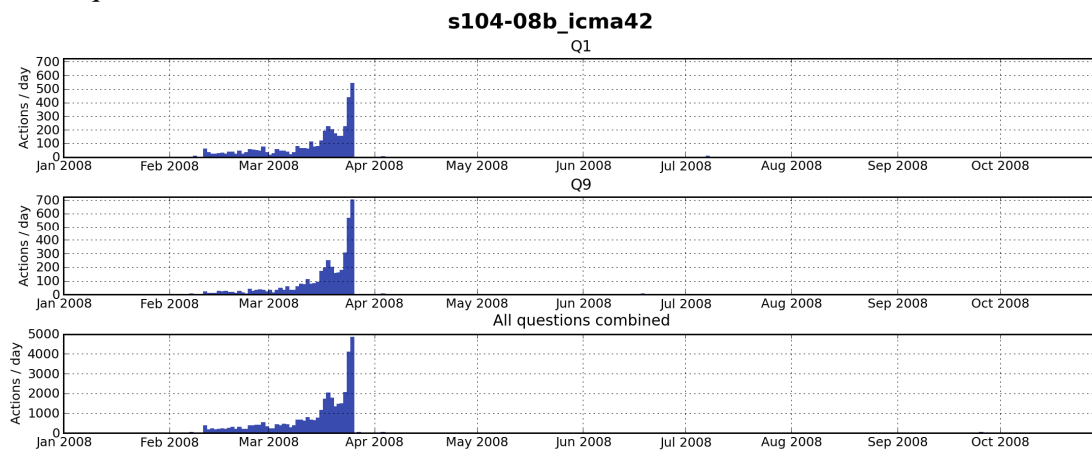

Figure 5   Number of actions on iCMA questions per day, for a summative iCMA with a hard cut-off date (Case 3)

The situation for Case 2 is rather different. The purely formative practice iCMA has 88 questions and is available to students throughout the course's 10-week duration. Figure 6 shows the number of actions per day for an early question (Question 2), a question around half-way through the iCMA (Question 40), a late question (Question 88) and all the questions combined. The relatively uniform overall usage appears to be attributable to the fact that students are attempting different questions at different times. This iCMA, like the one shown in Figure 4, has questions linked to different chapters of the course, and students are reminded after each chapter to try the relevant questions.
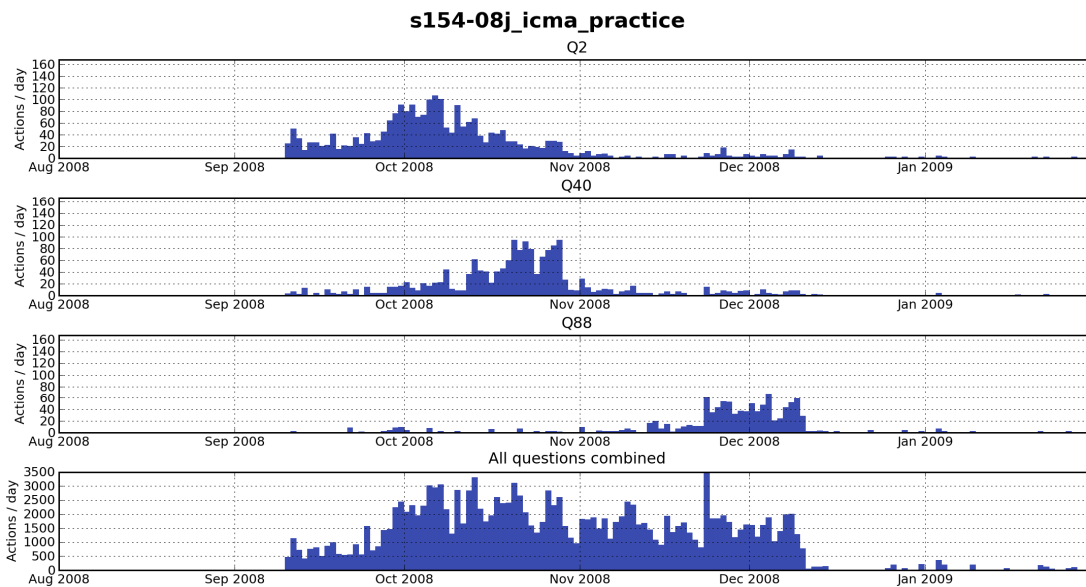
Figure 6   Number of actions on iCMA questions per day, for a formative-only iCMA (Case 2 PA)

Figure 7 shows the number of actions per day for the summative iCMA for the same course (Case 2 SA), for an early question (Question 1) a late question (Question 9) and all the questions combined. The course teams who produced the courses in Case 2 and Case 3 had designed the summative iCMAs of the two courses (which are linked; Case 2 is a precursor to Case 3) to be similar; the iCMAs have similar weightings, both have 10 questions, they both have hard cut-off dates and they are available to students for a similar length of time. So it is surprising that Figure 5 is rather different from Figure 7; in the latter case students again appear to be attempting different questions at different times. One possible explanation of this is purely that this is what students are advised to do; the questions in the first summative iCMA assess three chapters of the course; on completing Chapter 2, students are advised to attempt the relevant formative and summative questions, and similarly for Chapters 3 and 4.
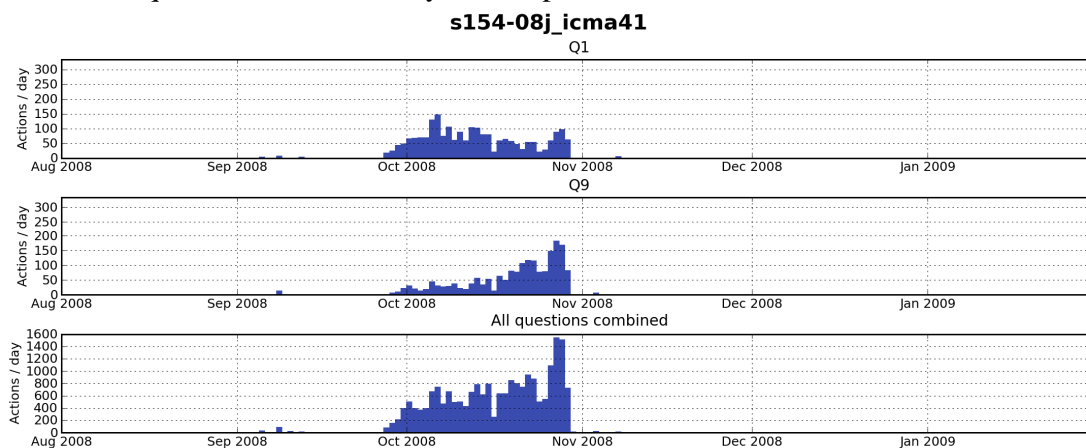

Figure 7   Number of actions on iCMA questions per day, for a summative iCMA with a hard cut-off date (Case 2 SA)

Most of the courses included in the study have a final assessed component that is completed in the student's own home and with access to course material; Case 4 however ends with an open book examination (at an exam centre). It is clear from Figure 8 that students are making extensive use of the iCMA questions for revision; further evaluation will investigate this use in greater depth. Another option to encouraging student use of iCMAs may be simply to say that the practice and feedback will be useful for the examination, as in Case 5. This course's examination does not take place until October 2009, but it seems likely that there will be another burst of activity as shown for Case 4 (Figure 8). Other aspects of iCMA usage on this course are being monitored carefully.
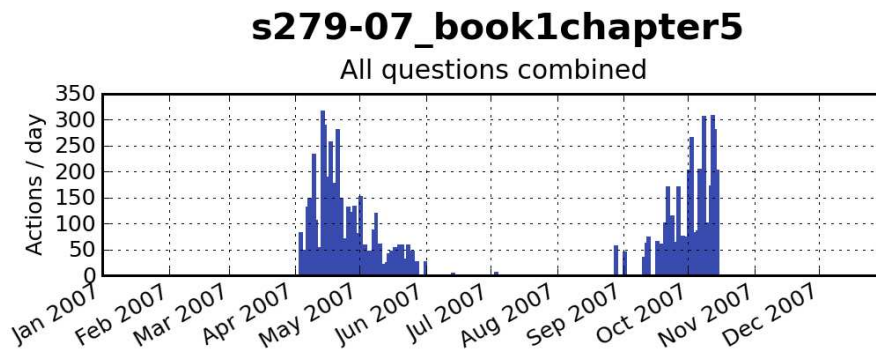

Figure 8 **Number of actions on iCMA questions per day, for a formative-only iCMA on a course with a final exam (Case 4)**

When do individual students attempt the iCMA?
In addition to looking at all actions on a particular iCMA question, it is possible to inspect the way in which individual students progress through the iCMA, and three typical student behaviours are shown in Figures 9, 10 and 11 (all for Case 2 SA). Figures 9 and 11 are typical for all summative uses: many students attempt all 10 questions on the very last day is iCMA was open (Figure 9) whilst some attempt a question, then attempt another, then return to the first question etc. in an apparently chaotic fashion, sometimes with a period of several days between consecutive uses of the same question (Figure 10). However graphs such as Figure 11 were observed frequently for Case 2 SA but never for Case 3, and this is another illustration of the behaviour shown in Figure 7. This student has attempted the 4 questions that assess Chapter 2, then presumably worked through Chapter 3 and attempted that chapter's questions, then similarly for Chapter 4.
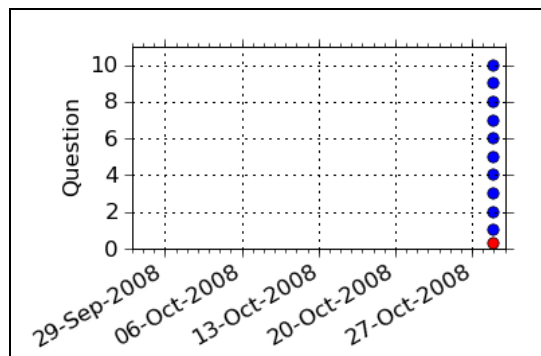

Figure 9 **Days on which a student made attempts at the questions on an iCMA (Case 2 SA, but typical of all summative use)**
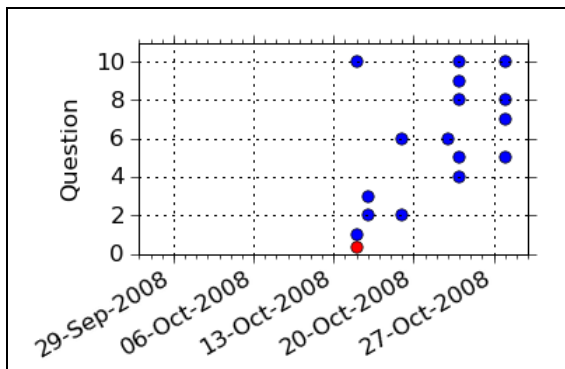
Figure 10 **Days on which a student made attempts at the questions on an iCMA (Case 2 SA, but typical of all summative use)**
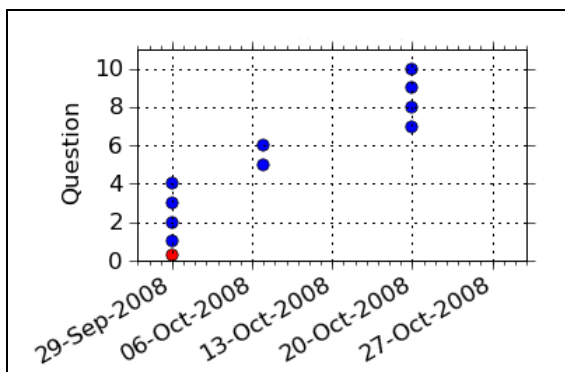

Figure 11 **Days on which a student made attempts at questions on an iCMA (Case 2 SA)**

How long do students spend on iCMA questions?
There is a variation in the time spent on each iCMA question which appears to depend on the type of question (i.e. whether it is free text entry, drag and drop, multiple choice, multiple response and hotspot questions), on detail of the question (i.e. how difficult it is) and on its mode of use (formative, summative or diagnostic etc.), and how the iCMAs are linked to other components of the course.

Early findings appear to indicate that the detail of the question is a stronger predictor of the time spent than is the mode of use. Different variants of some questions are in use in each of Case 2 PA, Case 2 SA, Case 7 and Case 8 and figures 12-15 illustrate distributions of time spent on variants of the question shown in Figure 1 (in which students are required to add or subtract two fractions). It had been expected that students would spend longer on questions in summative use (and this may be the case for more complex questions) but for this question it appears that, in all uses, the peak time spent is around one minute. This appears to show that many of the students attempting this question, in whichever mode, are able to do it easily; a finding that is out of line with tutor perception of students at this level. So perhaps students are only attempting this question in the diagnostic quiz if they are confident that they can do it.
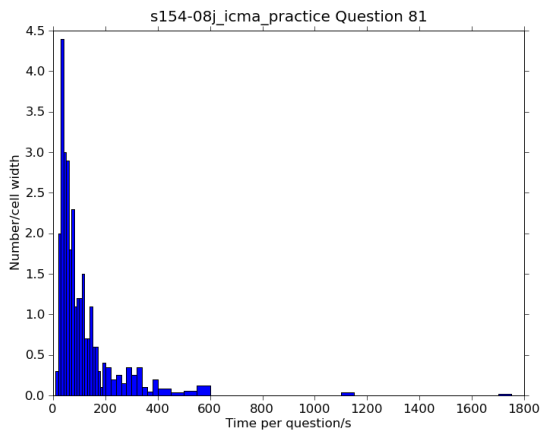
10

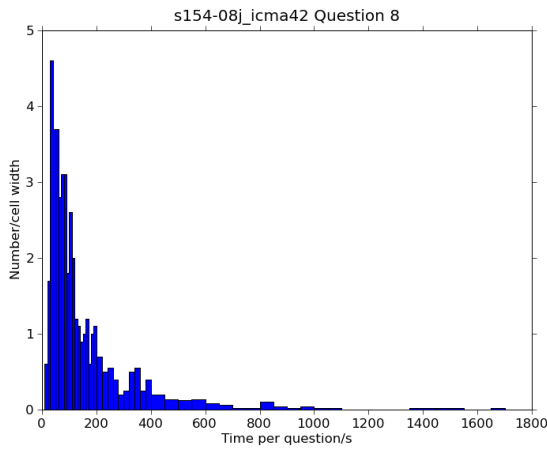**Figure 12** **Time spent on the question shown in Figure 1 in formative-only use (Case 2 PA)**

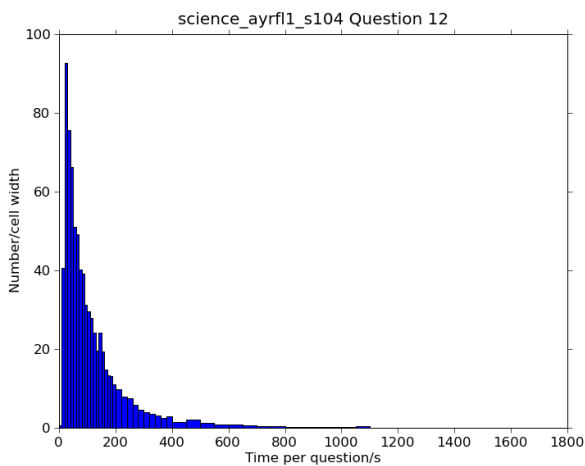**Figure 13** **Time spent on the question shown in Figure 1 in summative use (Case 2 SA)**

Figure 14 **Time spent on the question shown in Figure 1 in diagnostic use (Case 7)**
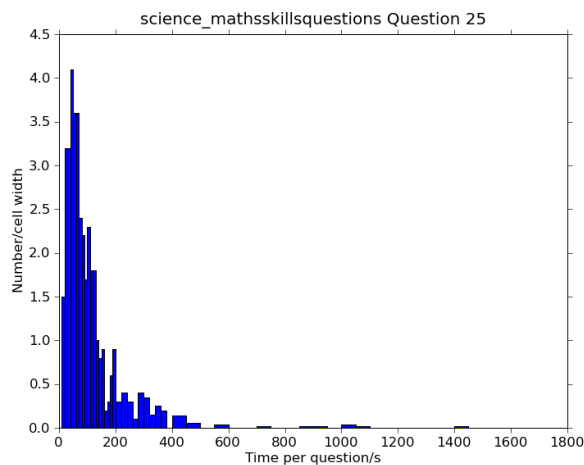
11

Figure 15   Time spent on the question shown in Figure 1 in an iCMA accompanying an optional resource (Case 8)

The fact that students are spending around the same amount of time on the question, or perhaps slightly longer, on the iCMA accompanying the Maths Skills ebook is pleasing, indicating that students are engaging seriously with this resource.

The surprising finding that the time spent on the question shown in Figure 1 (and two other questions with a similarly wide-ranging mode of use) is relatively independent of mode of use is one of several unexpected findings emerging from the data analysis. These findings are emphasizing the importance of this work but also pointing towards the need for further investigation into the causes of these effects.

Order of viewing and attempting the questions
One of the analysis tools can be used to identify the order in which students attempt questions, whether they view questions before attempting any and, if so, the order in which the viewing takes place.

An early analysis of some of the resultant data shows another unexpected difference between Case 3 and Case 2 SA; students in Case 3 are considerably more likely to have viewed all the questions before attempting any, and this is linked to a tendency to attempt the questions out of order (in particular to start with the last question). Closer investigation has revealed that the behaviour of looking at all the questions before attempting any appears to have developed during the first presentation of the course in question (figures 16 and 17 compare the number of questions inspected before any are attempted for iCMA41 and iCMA46 of this presentation; the graphs for all iCMAs in Case 2 are similar to iCMA41 for Case 3) . The cause may simply be that, in an attempt to encourage students to engage with the iCMA ahead of the cut-off date, much emphasis has been placed on the importance of looking at the iCMA early, even if students do not attempt any questions at this stage.
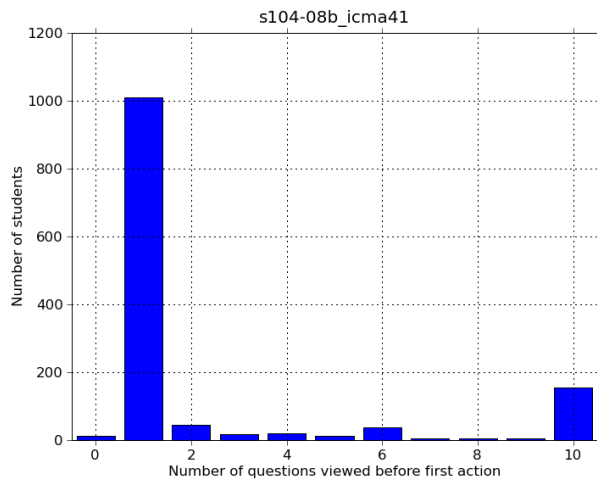
12

Figure 16   Number of questions viewed before first action for the first iCMA in Case 3
(Note that the peak at 1 question viewed before first action is attributable to students who look at the first question and answer that before looking at any other questions)
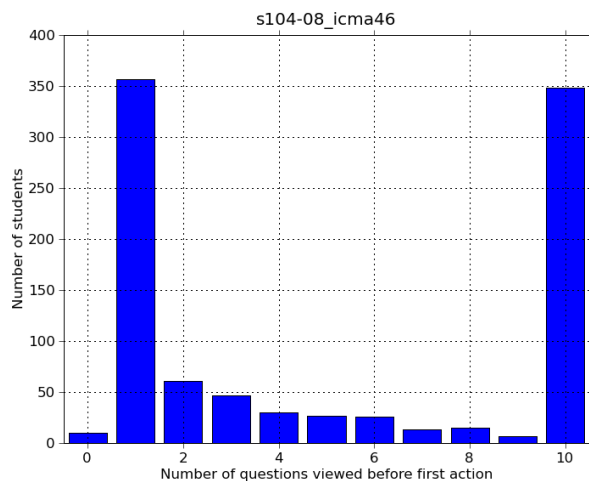

Figure 17   Number of questions viewed before first action for the sixth iCMA in Case 3

Closer inspection of student responses to questions
Inspection of the actual responses entered by students, in particular to free-text responses in summative use, has been used to learn about common student misconceptions (Jordan, 2007). Student responses can also provide valuable insights into more general factors concerning the use of iCMAs by students.

Closer inspection of student responses to questions: (a) the length of free-text answers
A previous project, funded by the Centre for Open Learning of Mathematics, Computing, Science and Technology, has investigated the use of questions with free-text responses of up to a sentence or two in length (Jordan and Mitchell, 2009; Jordan, 2009). The answer

matching for these questions was developed using student responses to purely formative versions (offered as an optional extra to a previous course); they are now in use in several courses including summatively in the course described in Case 3. Student responses in summative use have generally been found to be

- more likely to be correct
- more likely to be expressed as sentences (as requested in the course guide and the introductory screen in Case 3)
- longer

than the responses to the developmental formative-only responses to the questions. Figures 18 and 19 compare the length of responses to the question 'A snow flake falls vertically with constant speed. What does this tell you about the forces acting on the snow flake?'
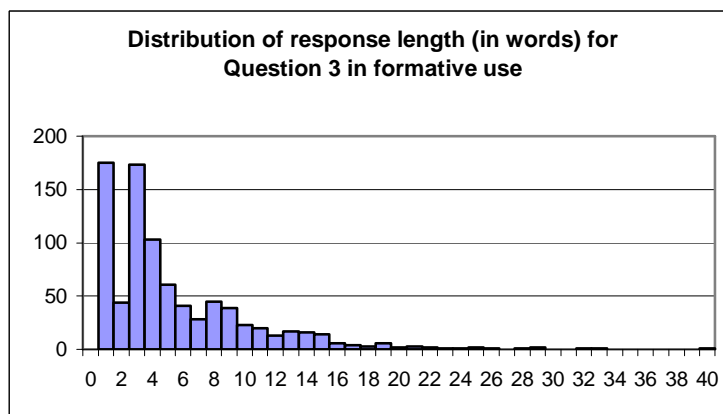

Figure 18   **Distribution of length of 888 responses to a question in formative use**
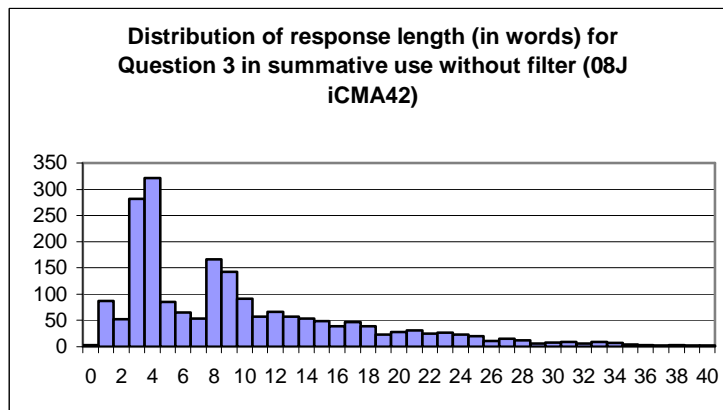

Figure 19   **Distribution of length of 2057 responses to a question in summative use (Case 3) without filter or additional wording on the question**

Some excessively long responses have been received (up to several hundred words) and these frequently contain a correct response within an incorrect one, so are more difficult to match than shorter responses. For this reason, from February 2009, a filter has been introduced to limit the length of responses to 20 words. This filter was initially accompanied by the text:

You should give your answer as a short phrase or sentence. Answers of more than 20 words will not be accepted.

The introduction of the filter and explanatory text has reduced the number of students who are adding text to previous answers without thought to the sense of the response so produced. It has also dealt with the excessively long responses that were difficult to mark, and increased the number of students giving their responses as sentences. However, for all questions, addition of the filter and explanatory text has resulted in an overall *increase* in median response length (see the distribution shown in Figure 20).
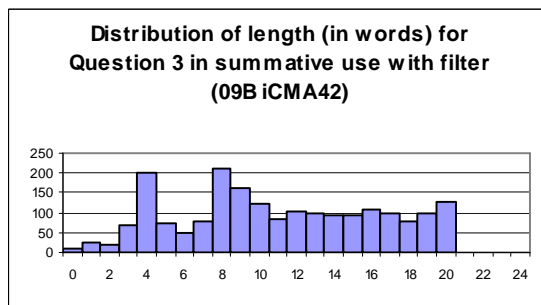
Distribution of length (in words) for Question 3 in summative use with filter (09B iCMA42)

Figure 20   Distribution of length of 1991 responses to a question in summative use (Case 3) with filter and additional wording on the question

A possible explanation of this effect is that more students are heeding the advice to give their answer as a sentence, now that this advice is given in the question itself rather than just in the course guide or the front screen of the iCMA. Another possible explanation of the change in word length distribution is that students are interpreting the advice to use no more than 20 words as indicating that they should be writing almost twenty words. Further work is needed to investigate this and also to find out whether the longer but not excessively long responses are more or less likely to be correct than the shorter ones and more or less likely to be accurately marked by automatic marking systems. From July 2009 the filter will remain, but the advice will change to simply:
*You should give your answer as a **short** phrase or sentence.*

Closer inspection of student responses to questions: (b) use of feedback
One of the anomalies of previous evaluation of iCMAs is that the vast majority of students report finding the feedback provided on iCMA questions useful, but yet some are observed to make no use of it. In a first attempt to interpret evidence of actual behaviour, graphs have been plotted to show the number of incorrect responses that were unchanged at second and third attempt. Figure 21 illustrates the number of repeated responses for one iCMA in Case 4 (green shading indicates correct responses; red, orange or yellow shading indicates incorrect responses; an identical colour from first to second attempt or from second to third attempt indicates an unchanged response). Thus is can be seen that a proportion of responses (up to around a third) are unchanged at subsequent attempts. The proportion of responses that are repeated varies considerably with question type; students are more likely to repeat responses when they cannot guess the answer (in a multiple choice or drag and drop question). It is possible that students are deliberately repeating responses in order to receive the feedback provided at a later stage.
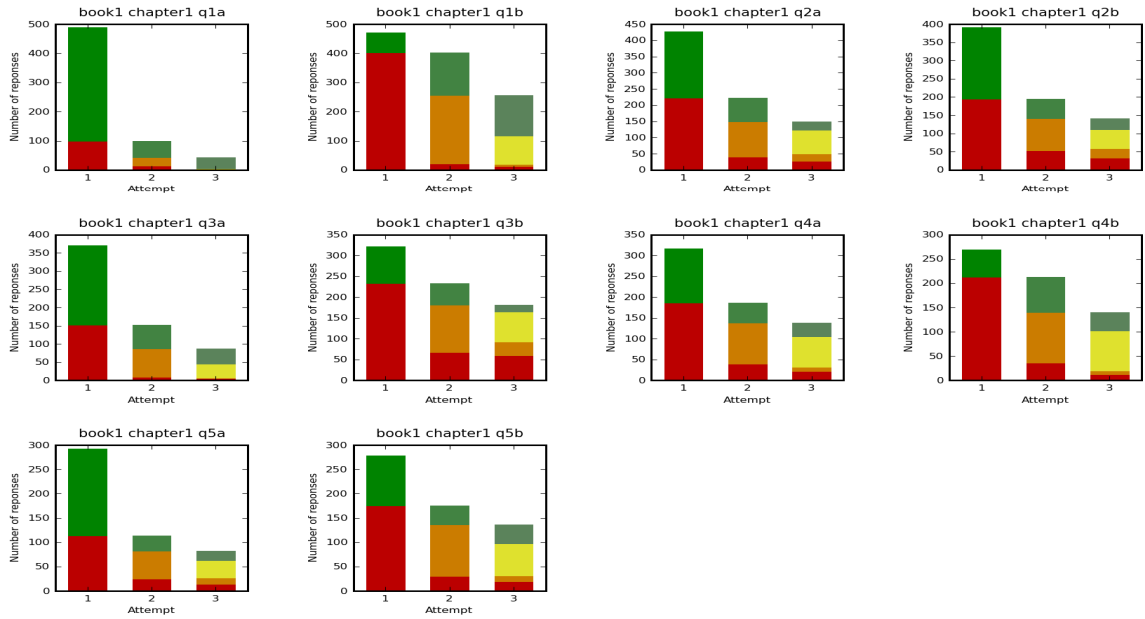
Figure 21 Repeating of responses for the questions in a formative-only iCMA (Case 4)

When the iCMA has a summative function, incorrect responses are less likely to be repeated (Figure 22). However there is again considerable variation between questions of different types.
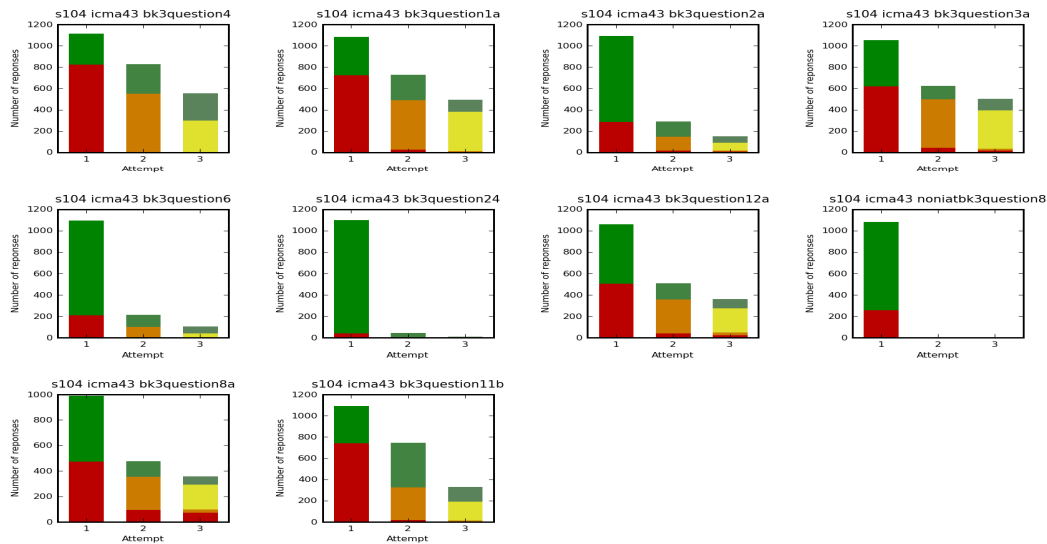

Figure 22 Repeating of responses for the questions in a summative iCMA (Case 3)

The first iCMA in Case 5 (which has formative-only iCMAs but offers considerable encouragement to students to complete them, and the 'carrot' that there will be similar

questions in the end of course examination), initially appeared to illustrate student behaviour similar to that exhibited in Case 3 (summative use). However over time the signature of use appears to be returning to that of formative-only, as illustrated in Figure 23 for use of feedback. It is to be hoped that the students will use the feedback provided in a more meaningful way when using the iCMAs in the run up to the examination.
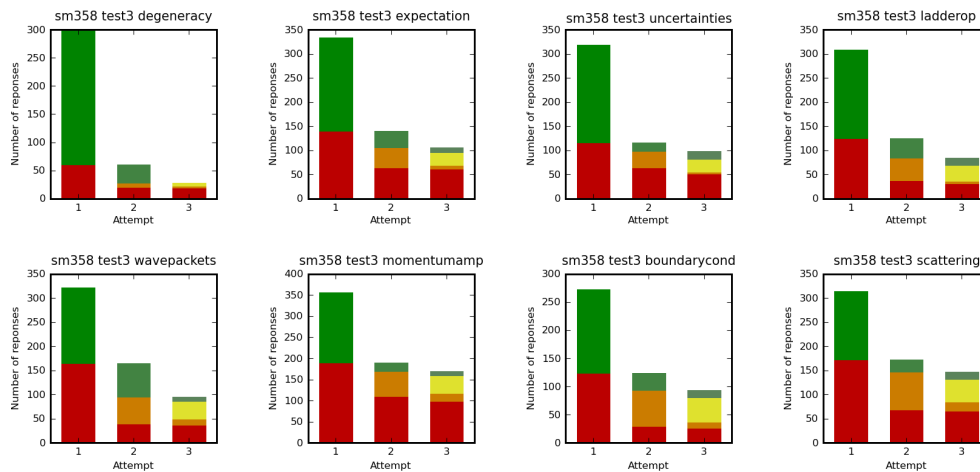
sm358-09b-icma53

Figure 23 Repeating of responses for the questions in the third formative only iCMA on a course with an examination on which similar questions have been promised (Case 5)

Conclusions

In general terms, students appear to engage with iCMAs in a deeper way when the questions carry some summative weight. However, in summative use, students become obsessed with the minutiae of the grading, as witnessed by many emails from students who believe – usually wrongly – that 'the computer has marked them incorrectly'. The use of thresholding or a 'carrot' (e.g. having similar questions in an unseen exam) may provide an alterative mechanism for encouraging students to engage with iCMA questions and so to learn from the feedback provided. However, early evaluation of Case 5 (which is a course that will have purely formative TMAs and iCMAs from 2010) points towards a need for caution.

Things aren't always as simple as you think they are. At face value, use of the iCMAs in Case 3 and Case 2 SA should be similar – but it isn't. The differences appear to be entirely attributable to students' interpretation of what they have been told to do (in Case 2 SA they have been told to do the questions after studying the relevant part of the course; in Case 3 emphasis has been put on the importance of checking access to the iCMA in plenty of time, even if the student doesn't attempt any of the questions). Similarly, the increase in average length of responses to free text questions in response to the instruction that responses should be no more than 20 words in length, points towards a student interpretation that 'no more than 20 words' means 'nearly 20 words'. The fact that responses were more likely to be in complete sentences points suggests that students may be more likely to read instructions when they are provided with the question, rather than hidden away in an introductory screen or in the course guide.

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Future work
Ongoing work will complete the various analyses described in this paper.

In addition, the effect of various factors e.g.
- start date
- finish date
- elapsed time
- active time

on performance will be investigated. Do students who engage with iCMAs in different ways perform differently? e.g. are early and later completers of iCMA equally successful?

Linked to this will be further investigation into whether students behave differently in different situations? e.g. do students exhibit similar behaviour when revising as they do when attempting an iCMA for the first time?

A comparison of iCMA scores, TMA scores and overall course performance will investigate whether iCMAs are a good predictor of success in other areas.

Considerable further work (in particular observation and interviews) is required to attempt to identify why students behave in the ways that the data analysis has shown that they do.

For further information on this project, and updates, see
http://www.open.ac.uk/colmsct/projects/sejordan

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