**M257**

**Assessment Strategy**

# An investigation of the results of introducing iCMAs into the formative assessment of M257 from the 10J presentation

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## 1. Introduction

Continuous assessment for M257, putting Java to Work, up to and including the 2010B presentation consisted of 3 summative TMAs with weightings of respectively 35%, 35% and 30%. For 2010J a new assessment strategy was introduced which replaced TMA01 with a formative TMA and added 5 summative iCMAs covering units 1-5, each with a weighting of 7% . The intention in doing this was to encourage students to engage more actively with the first 5 units of the module with the aim of increased submission and success rates for the remaining TMAs and the exam. This report looks at evidence from the 2010J and 2011B presentations to see whether these aims are being achieved and whether the scores being achieved by students on continual assessment are significantly different from those on previous presentations.

## 2. Forum Activity Generated By iCMAS

The introduction of iCMAs generated a significant amount of forum activity. Some of this was due to the introduction of a type of assessment that the students had not seen before and for the 10J cohort there were a significant number of criticisms both of the marking system and the questions themselves. Additional help in checking the wording of questions together with increased expertise on the part of the module team themselves meant that there was less of a problem for the 11B presentation.

Excluding discussions whose intent was criticism of the questions 24% of all postings to the forums for the 10J presentation were iCMA related and for the 11B presentation the figure was 15%.

## 3. Comparison of Forum Activity by Student

Initial observations were that the amount of activity on the M257 student module forums for the period up to the submission of TMA01 was vastly increased for a similar number of students, suggesting a possible correlation between the engagement of students due to the replacement of the summative TMA01 by 5 iCMAs together with a formative TMA01. Prior to this change there had been no formative or summative assessment until half-way through the module since a previous change for the 2008B presentation had combined TMA01 and TMA02 (both part TMAs) into one, with the combined TMA submission date at the end of unit 5. When analysed by student it can be seen that although twice as many students made between 1 and 10 contributions to the forums as in the previous J presentation (93 students compared with 46), overall the increase was mainly because of a very few students making a large number of postings as shown in figure 1. A considerable number of these were related to problems with the introduction of iCMAs, as explained in the previous section.

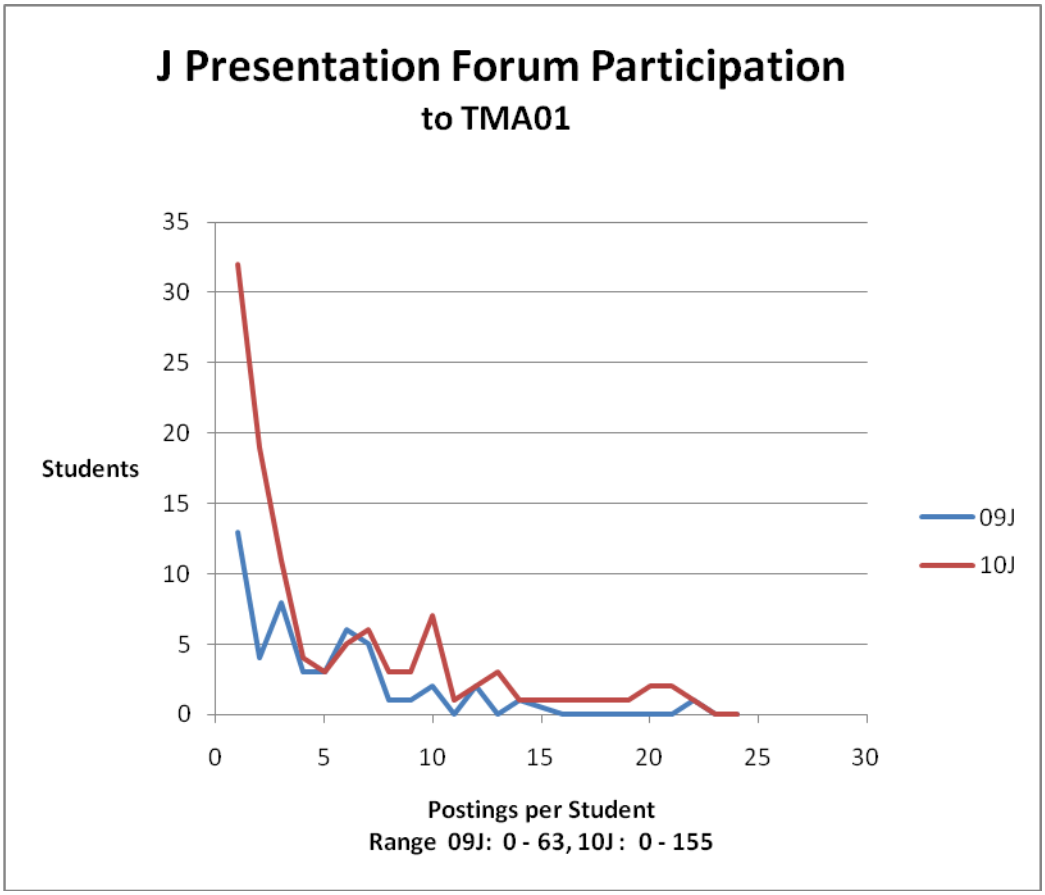


**Figure 1**

The percentage of individual students contributing to the module related forums in the period however nearly doubled to 22.9% as can be seen by the figures in table 1.

| Presentation | 09J | 10B | 10J | 11B |
|---|---|---|---|---|
| **Total Number of Students** | 463 | 325 | 542 | 246 |
| **Students Making 1-10 postings** | 46 (9.9%) | 48(14.8%) | 93 (17.2%) | 46 (18.7%) |
| **Total Student Contributors** | 54 (11.6%) | 51(15.7%) | 124 (22.9%) | 52 (21.1%) |

**Table 1**

Comparing data for the 10B and 11B presentation, there were similar levels of overall participation as can be seen in figure 2 but this was for a smaller cohort of students.

48 students made between 1 and 10 postings for the 10B presentation compared with 46 for 11B, which in percentage terms represents an increase of 3.9%. The overall number of contributors increased by 5.4%. It can be seen from figure 2 that the participation rates in both presentations since the introduction of iCMAs are very similar.

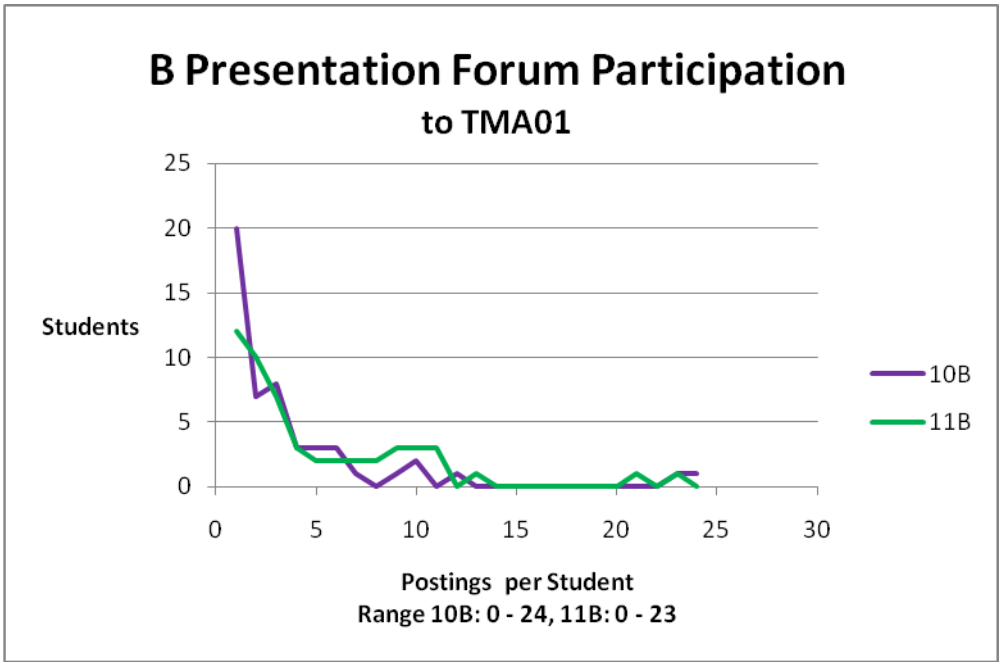


**Figure 2**

## *4. Continuous Assessment Scores*

Students have not found the iCMAs particularly easy. These have been set to coincide with reaching the end of each of the first 5 units and are designed to ensure that students are ready to begin the more demanding work from unit 6 onwards as well as improving retention.

The strategy that accompanied the introduction of iCMAs was to weight the five iCMAs as together comprising 35% of the continuous assessment score; the same weight as the formerly summative TMA01. This means that each iCMA is worth 7% of a student's OCAS score.

Combined scores for the 5 iCMAs have fallen below previous figures for the summative TMA01, as shown in figure 3.

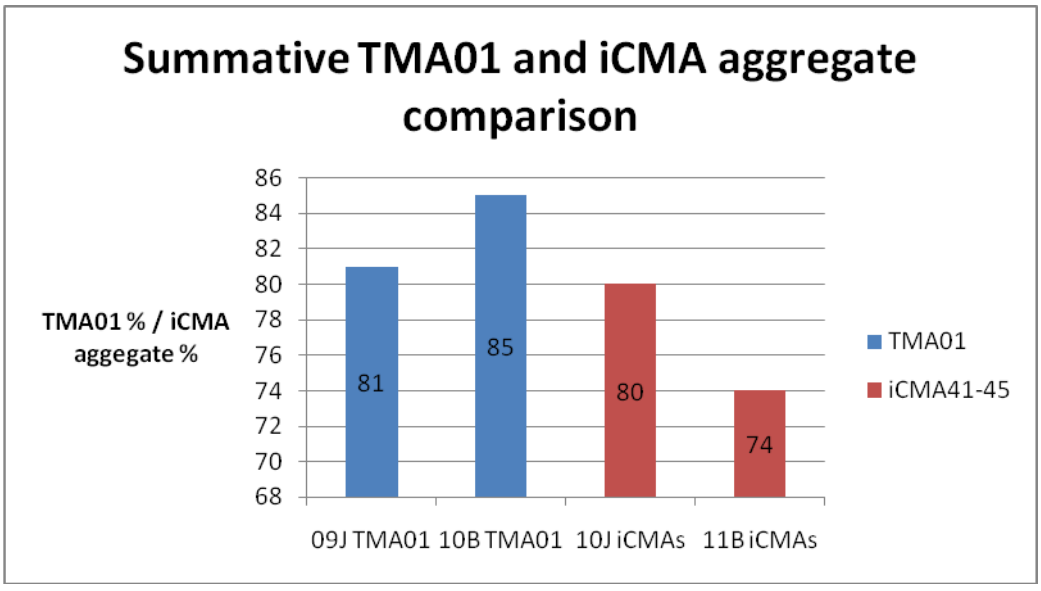


**Figure 3**

This could be explained by the level of in depth knowledge required to answer the iCMA questions and the fact that they assess a far greater proportion of the materials in units 1-5 than was possible with a single TMA. It is also easier for a competent programmer to arrive at the correct answer with a TMA because programs are being developed for this in an integrated development environment which is very supportive. It could also be argued that a less competent programmer will have a much better knowledge of the subject matter of the early units by the time they are ready to begin later TMAs and will therefore find these easier. This was demonstrated in the 10J presentation by the higher average TMA02 score achieved by students of 87% compared with the 86% and 85% respectively achieved for the 09J and 10B presentations, as shown in figure 4.

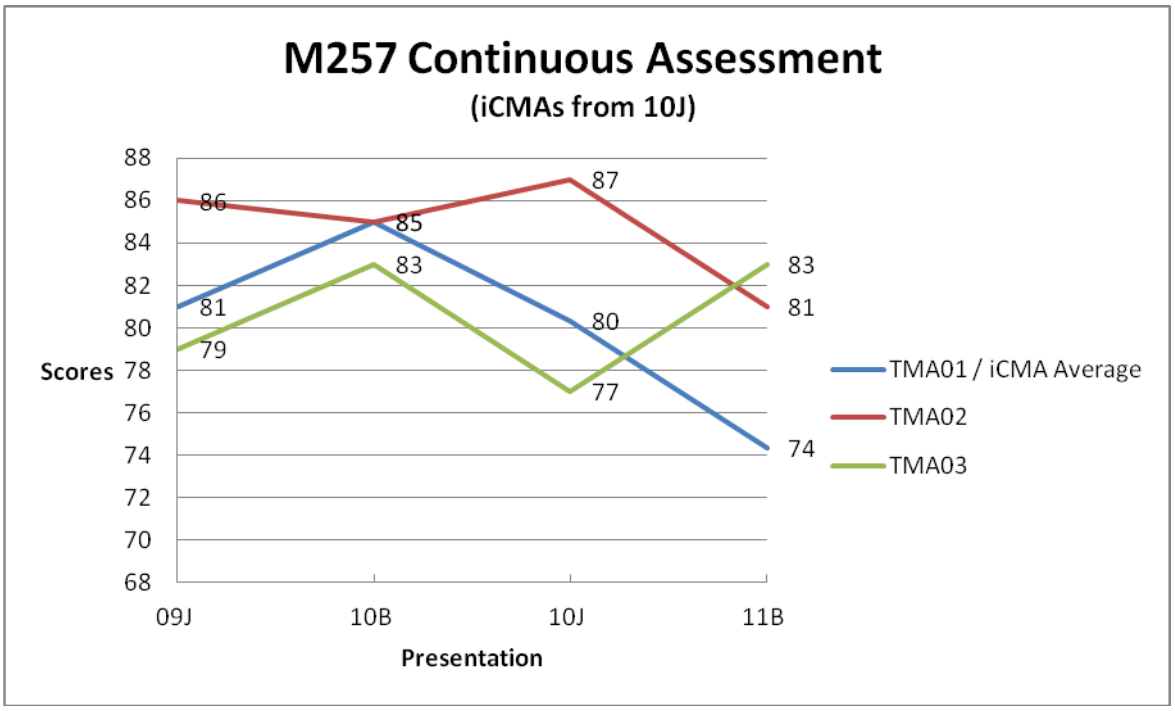


**Figure 4**

This trend did not continue into the 11B presentation however where scores for TMA02 fell by 6% to 81%, the same percentage fall as for the iCMAs. It is also worth noting that submission rates for the formative TMA01 fell sharply for this presentation from 62% to 47%, as can be seen in figure 6, so students' lack of practice in tackling TMAs at this level may have contributed to the problems they encountered at TMA02.

The scores for the final TMA on the 11B presentation however improved to the levels seen before iCMAs were introduced. The overall figures for OCAS for the 10J and 11B presentations fell to 82% and 79% respectively as can be seen from table 2 where the iCMA and TMA scores contributing to this are shown.

| Presentation | iCMA41 | iCMA42 | iCMA43 | iCMA44 | iCMA45 | TMA01 / iCMA Average | TMA02 | TMA03 | OCAS |
|---|---|---|---|---|---|---|---|---|---|
| **09J** | | | | | | 81 | 86 | 79 | 83 |
| **10B** | | | | | | 85 | 85 | 83 | 83 |
| **10J** | 87 | 73 | 80 | 78 | 84 | 80 | 87 | 77 | 82 |
| **11B** | 81 | 77 | 68 | 76 | 69 | 74 | 81 | 83 | 79 |

**Table 2**

## 5. Retention

Retention levels since the introduction of iCMAs have shown a drop in students submitting the formative TMA01. This is, as noted in section 4, particularly marked for the 11B presentation. The percentage submitting the replacement iCMAs is however much higher than before as can be seen in figures 5 and 6.

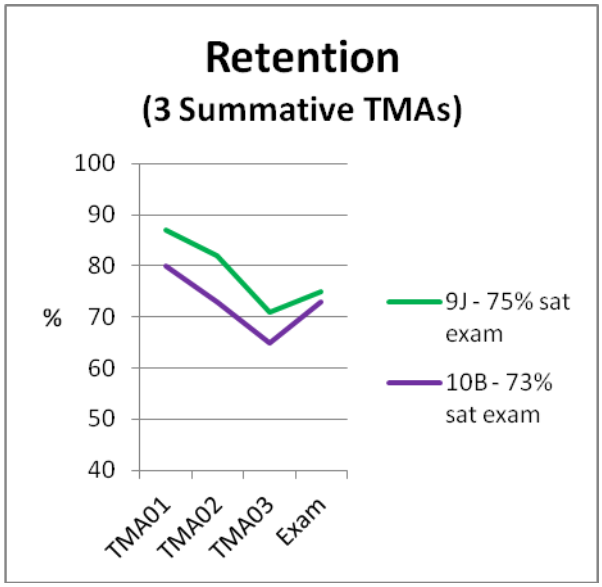


**Figure 5**

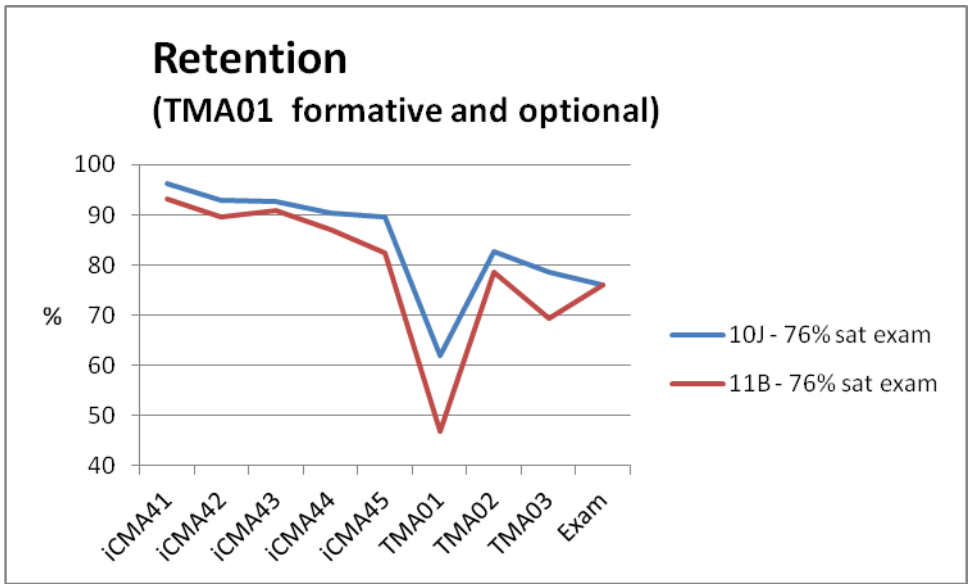


**Figure 6**

Submission rates for the remaining TMAs are higher though, particularly for TMA03 and the percentage sitting the exam rose slightly to 76% for both 10J and 11B presentations as can be seen in table 3.

| Retention | 09J | 10B | 10J | 11B |
|---|---|---|---|---|
| **TMA01** | 87% | 80% | between 90% and 96% for each iCMA | between 83% and 93% for each iCMA |
| **TMA02** | 82% | 73% | 83% | 79% |
| **TMA03** | 71% | 65% | 79% | 69% |
| **Exam** | 75% | 73% | 76% | 76% |

**Table 3:** ***Submissions/ exam attendance as a percentage of population at start of presentation***

## *6. Conclusion*

Since iCMAs were introduced retention has been marginally improved and a slightly higher percentage of students are now sitting the exam. Learning outcomes for the early parts of the module are being better tested but in such a way that continuous assessment scores have fallen slightly as lower scores are being achieved on iCMAs than in the previous summative TMA01s. It was hoped that ensuring that students focused on earlier units at the start of the module would lead to higher scores on TMA02 and for the 10J presentation this appeared to be the case but for the 11J presentation the effects were not seen until TMA03 and OCAS fell by 4% from pre iCMA levels. This may have to be taken into consideration when assessing results for students at grade boundaries in order to ensure that students' results are comparable year on year.