

# SUPPORTING LEARNING IN LAW: USING FORMATIVE MCQ ASSESSMENT IN CRIMINAL LAW CORE COURSES.

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## ABSTRACT

This article reports on an investigation undertaken by the authors on the verity of multiple choice questions (MCQs) as formative assessment in law courses within a law program. The investigation was conducted for several reasons, but primarily because of a perceived negativity associated with their use for assessment in legal education and, against this background, to inform their continued use within a framework of sustainable pedagogy.

The results of an analysis of student use of the MCQs in four criminal law courses correlated to their overall performance in the courses are presented, as are students' views regarding their value.

**Keywords:** Legal education; pedagogy; multiple choice questions; formative assessment

## INTRODUCTION

Multiple choice questions (MCQs) have been used with some success for both formative and continuous or final summative assessment in many disciplines. However, and although there appears to be a greater acceptance of MCQs in law schools in the US (Selby, Blazey & Quilter, 2008: 204) and by the American Bar Association and UK providers of the Bar Vocational Course (Higgins and Tatham, 2003: 2), there has been and still is a reluctance to accept and use MCQs in legal education in Australia except perhaps, and for practical reasons, when teaching larger enrolment law courses such as Business Law in other disciplines (Selby et al., 2008).

Despite common usage, there is a negativity associated with the use of MCQs in assessment in legal education, as there is generally (see Nicol, 2007: 53 for a discussion of MCQ limitations in higher education). This negativity stems primarily from the view that they encourage a surface approach to learning, (Selby et al., 2008: 207; Kvale 2007: 64; Hinett & Bone 2002: 72; and Allen 2008: 182). Kvale adds an interesting perspective stating, 'Examinations control what and how students learn. -- Today power exertion is rationalised through the micromanagement of multiple-choice tests. To many students, assessment is still experienced as a threat, rather than an enticement to further learning' (2007: 63). In the context of legal education Case and Donahue state they are viewed 'as less intellectually rigorous than essay questions and less realistic in their relationship to the actual practice of law' (2008: 372).

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Conversely, research into the use of MCQs also cautiously supports their considered use as an efficient form of formative assessment (see, for example, Selby et al., 2008; Nicol, 2007; Higgins and Tatham, 2003; Allen, 2008; Ramsden, 2003: 188; and Biggs and Tang 2008: 204). Their precise role has to be determined with reference to teaching and learning objectives (TLOs) within individual courses and within a program, and how best these can be achieved within the greater context of limited resources. As such, sustainability of assessment becomes a core consideration.

One of the authors has used MCQs for formative assessment in four semester long Criminal Law courses for several years. The scope of this article is to explore whether MCQs are a sustainable formative learning resource that can be used in law courses. This will entail a consideration of pedagogical issues. Whilst the article is focused on the use of MCQs in core law courses, and specifically Criminal Law, it draws on relevant pedagogy and literature that is both law specific and more broadly based and is also relevant for other disciplines.

The article will also consider and report on the results of an investigation, based on data available for the Criminal Law courses taught over two successive years in 2009 and 2010. This study analyses the correlation between student use of formative MCQs and their performance in summative assessment in the courses. Student opinions regarding the value of formative MCQs in these courses will also be canvassed. The results of this investigation give some insight into the efficacy of MCQ as a learning resource.

### **FORMATIVE MCQ ASSESSMENT: PEDAGOGY AND SUSTAINABILITY**

Several themes regarding the use of formative assessment are prevalent in literature. The overriding ones are that the formative assessment should be aligned to course TLOs and should be designed to optimise teaching and learning beyond a surface level. The learning occurs through the activity itself and through the provision of feedback, or feedforward (for example, in ways described by Hounsell, 2007: 105), and is as much about the learning itself and lifelong self-regulated learning. It is not only about maximizing longer term educational effect, but also about what formative method is adopted taking into account available resources. Ideally, the formative assessment should include a 'feedback loop' so that the learning value of the formative assessment can itself be assessed and, as Boud states, the challenge then becomes 'to find a balance between providing a wide range of new learning opportunities for students and enabling them to complete the feedback loop' (2000: 158).

Baroudi defines formative assessment as assessment consisting of 'activities used by the teacher to determine a student's level of knowledge and understanding for the purpose of providing the student with feedback and planning future instruction. The feedback and future instruction may be concerned with remediation or the provision of further learning opportunities' (2007: 39). Biggs and Tang, describing reasons for assessment, highlight that both summative and formative assessment 'are based on seeing how well students are doing or have recently done, which is what assessment is, but the purposes of the two forms of assessment are so different. In formative assessment, the results are used for feedback during learning—and to improve the teaching itself' (2008: 163).

Feedback is a critical component in informing the learning process and student progress (see, for example, Kvale 2007: 64; Hounsell 2007: Ch. 8; Ramsden 2003: 187; Boud 2000: 155). Formative assessment feedback tends to be non-threatening: Nicol uses the term 'low stake', and if scheduled appropriately (Nicol, 2007: 55 and 57) it has the potential to influence

learning including self-regulated lifelong learning (Nicol, 2007: 57; Boud, 2000: 155 and 159; Ibabe & Jauregizar, 2010: 255). The timing of feedback is crucial for as Ramsden states 'students find timely feedback more useful than delayed comment' (2003: 187) and Selby et al. report that research indicates that 'prompt feedback has a significant impact on increasing student learning, especially in helping students to self-identify and rectify under-performance' (2008: 209). The quality and phasing of feedback will also affect its value and, according to Hounsell, it is 'likely to have much greater longevity if ... assessment is imminently to be repeated, forms part of a linked chain of assessments within a module or course unit, or enhances students' grasp of a core component—of wider program of study' (2007: 104). Where feedback other than a grade is absent, Kvale asserts that it 'may foster an attitude of futility in learning' (2007: 65) and Ramsden that 'reporting results in this way ... is defrauding students' (2003: 187).

Whilst acknowledging difficulties with providing appropriate feedback in certain circumstances and on certain forms of assessment, Ramsden considers that MCQs provide 'an excellent opportunity to offer feedback in an efficient form' (2003: 188). Depending on the format and quality of formative assessment feedback, it can compensate for summative assessment feedback deficiencies resulting from factors such as the format of summative assessment, volume of marking, turnaround times, staffing levels to support the marking, and discrepancies in level of feedback between markers. These problems become more acute as enrolments in a course increase and marking is outsourced (Selby et al., 2008: 204). As such, quality feedback on summative assessment is often compromised and, in the case of exams, is often feedback devoid.

Despite the acknowledgment that MCQs can have a role to play in teaching and learning, there are concerns in the literature about their use, particularly regarding their use as a summative assessment method, in that they correlate negatively to deeper higher order learning (Allen, 2008: 182; Biggs & Tang, 2008: 197). Both authors refer to the published research of Scouller (see, for example, Scouller, 1997: 646). Whilst this may be the case, the deeper higher order learning objectives in Blooms taxonomy of the cognitive domain rest on foundations of knowledge and Biggs and Tang draw a distinction between declarative knowledge, 'knowing what', and functioning knowledge, putting 'declarative knowledge to work', stating that 'functioning knowledge requires a solid foundation of declarative knowledge' (2008: 72). Hinett and Bone, in discussing appropriate criteria for assessment in law, make the point that in assessment students have 'to make a judgment about the appropriateness and suitability of knowledge to purpose' (2002: 60).

Additionally, constructive and authentic learning and assessment are popular sound pedagogies that support deeper higher order learning outcomes. Constructive learning is based on the premise that active learners construct their own knowledge, based on their existing knowledge, needs and learning style (Biggs & Tang, 2008: 21), and arguably occurs best using authentic real world learning experiences and forms of assessment (Reeves & Okey, 1996: 192). According to Lombardi, authentic learning 'typically focuses on real-world, complex problems and their solutions, using role-playing exercises, problem-based activities, case studies, and participation in virtual communities of practice' (2007: 2). Constructive and authentic learning and assessment are mutually supportive and, unless the radical construction of knowledge is the goal, presuppose an existing knowledge base; they operate beyond the information given (Reeves & Okey, 1996: 192). The learning in

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constructive and authentic contexts, even assessable ones, will in itself aid the retention of and build the knowledge base, and deeper higher order learning is an outcome.

So all things considered, a minimum knowledge base is a prerequisite to deeper higher order learning or functioning knowledge however facilitated. The challenge then becomes designing efficient teaching and learning activities, including assessment (TLAAs) that can assist students to acquire that knowledge base at the appropriate time, and the question here is whether formative MCQs can have a legitimate role to play? Selby et al. assert that ‘Possessing knowledge is an important precursor to higher levels of learning and, therefore, it is still appropriate to ask knowledge-focused multiple-choice questions on an assessment’ (2008: 209), and Biggs and Tang acknowledge that computer assisted assessment in the form of MCQs can be used ‘for items that require rote learning such as terminology, rules and so on’ (2008: 238). In any event, MCQs can also be written to functioning levels of knowledge (Higgins & Tatham, 2003: 3). However, MCQs cannot be used in isolation and must be, using the terminology of Biggs and Tang, constructively ‘aligned’ with other TLAAs and TLOs of the course as an integrated whole (2008: Ch 4; and see also Biggs, 2007) and so ‘MCQs can be useful as a minor supplement to other forms of assessment and for quick quizzes’ (2008: 204).

Whilst current pedagogy inspires a reconsideration of teaching and assessment methods, tensions exist between what is desirable and what is contextually achievable, giving rise to questions regarding sustainability. Boud, paraphrasing the *Brundtland Report’s* (World Commission on Environment and Development, 1987: 43) definition of ‘sustainable development’ defines sustainable assessment as ‘assessment that meets the needs of the present without compromising the ability of students to meet their own future learning needs’ (2000: 151). In explaining this, Boud places an emphasis on formative assessment that aids learning and assessment that engenders lifelong learning, whilst at the same time acknowledging that summative assessment also performs the function of grading and that the two forms of assessment are ‘inextricably woven’ (2000: 155). Knapper and Cropley describe lifelong education as embracing ‘a set of guidelines for developing educational practice (education) in order to foster learning throughout life (‘lifelong’). Lifelong education thus defines a number of organizational, administrative, methodological and procedural measures which accept the importance of promoting lifelong learning’ (2000: 9). There is a strong correlation between formative self-assessment and improved performance and lifelong learning, as it relies heavily on student motivation and encourages self-regulated learning (Knapper & Cropley, 2000: 9 (see also Ibabe and Jauregizar, 2010: 255; and Nicol and MacFarlane-Dick, 2006). Generally, a desirable graduate attribute: “One of the most generic learning outcomes for legal education is for students to be ‘active’ or ‘independent learners’. These terms are used interchangeably to refer to students taking more responsibility for their own learning” (Hinett and Bone, 2002: 52).

Although Boud’s definition of sustainable assessment provides a broad theoretical foundation for assessment construction–assessment, be it formative or summative, is often constrained, and the format determined by contextual factors. These factors are both institutional, for example, funding and available resources, and professional, for example, minimum requirements for graduate competency which determine course TLOs. The influence of contextual factors is explicitly recognised in the Knapper and Cropley description of lifelong education (2000: 9) and more specifically, the effect of institutional constraints in the context of sustainable feedback on assessment by Hounsell who states that there is a ‘need to take due

account of localised constraints and opportunities, which influence what may be feasible and practicable in a given institutional setting' (2007: 108). What can be achieved is determined by many factors including course and program TLOs; student demographics, number and enrolment mode; staff and workload; and cost, as sound TLAs can be resource intensive (Collins, Brackin & Hart, 2010: 180 and generally). The definition also needs to recognise that program TLOs such as generic graduate attributes can be developed incrementally across courses within a program as a whole, if mapped appropriately. As such efficiencies and what can be realistically achieved by one piece of assessment within the greater contexts of all assessment in a course and across a program, needs to be taken into account.

In particular, student demographics, numbers and enrolment mode can add layers of complication to TLAs which require tailoring in order to accommodate diversity, including individual student learning preferences. These preferences are in turn influenced by a myriad of factors including family and work commitments and other time pressures. To accommodate diversity, courses should aim to provide a range of sustainable TLAs which are accessible to all students regardless of enrolment status. Also, in order to avoid assessment fatigue for both students and academics, formative assessment should not be so onerous so as to discourage its use.

Adequate staffing levels and workload calculations also influence what is done and what is capable of being done. It is an unfortunate reality within the tertiary sector that in the competition between teaching and learning, research and higher degree study, the former is often the sacrificial lamb, as both research and higher degree study are often perceived to be more important for meeting performance criteria for purposes of appraisal and advancement (Collins et al., 2010: 168). Excellence in teaching and assessment practices is rarely rewarded in the same way that research publications are. It is also unfortunate that there is a perception that 'the use of MCQs is usually driven by the need for teacher efficiencies and the provision of rapid feedback rather than robust pedagogical principles aimed at encouraging effective learning' (Nicol, 2007: 54) and where so driven adds fuel to its negative reputation. Where adequate funding to support pedagogically sound TLAs or appropriate recognition is absent, a culture of resistance can result and the easier, but not so pedagogical, road taken. As Collins, Brackin and Hart describe it, academics are very much caught between the 'rhetoric and the hard reality' (2010: 191).

The milieu is complex and the creation of efficient sustainable assessment can be difficult as these factors combined directly impinge on the ability to create feedback enriched deeper higher order learning formative assessment, let alone completing a 'feedback loop' which is not necessarily 'forgotten' (Boud, 2000: 158), but in many institutional settings and within individual courses within a program, this is not necessarily achievable and as such, unsustainable. Whatever the choice of format for formative assessment, the purpose is to give students an efficient and engaging TLA or resource to support and facilitate, but not grade, learning in alignment with the course summative assessment and more broadly course and program TLOs. So looking at individual courses, and at courses within a program as an integrated whole, MCQs can play a role in formative assessment as long as they fit into 'an overall assessment strategy' (Hinett and Bone, 2002: 72. See also Selby et al., 2008: 207).

## A CASE FOR USING MCQs AS FORMATIVE ASSESSMENT IN CRIMINAL LAW COURSES

With much of this in mind, one of the authors has used MCQs as part of the formative assessment in four Criminal Law courses for several years. The courses—Criminal Law A<sup>1</sup> and Criminal Law B,<sup>2</sup> and their two Juris Doctor iterations, Advanced Criminal Law A and Advanced Criminal Law B—are one semester core law program courses delivered in first, second or third year depending on student enrolment patterns. They are run in successive semesters and are delivered internally on campus and online for distance (or external) students.<sup>3</sup> Skills which are targeted for development in these courses include research, problem solving, writing and advocacy.

Other formative assessment activities in both of the courses include dedicated legal problem solving seminars. In Criminal Law B (and advanced) a suite of problem based advocacy exercises (mock court cases), are scheduled into the course after relevant modules of course content are covered. In preparation for these activities, students are encouraged to attempt the formative MCQs relevant to the seminars and advocacy exercises, and to attempt the problems prior to class where the problems are then resolved by the class as a whole. As such, the students receive feedback regarding their attempts at the problems.

To derive maximum benefit from these learning activities students are required to have knowledge of the substantive and procedural laws that support the resolution of the legal problems. The knowledge base authentic to law and its processes is the legislation and case law within a specialized area; substantive and procedural law. Legal problem solving at a foundation level involves the analysis and application of this knowledge base; you cannot identify the legal issues involved in a problem let alone conduct relevant research and resolve them without some knowledge base. A knowledge base is also critical to legal skill sets relevant to the problem context. The development of legal skills is only as good as the knowledge base that supports them and of concepts within the legal context in which the skill set is being used, for example criminal law advocacy.

As such, a minimum knowledge base is necessary to support any deeper higher order learning that occurs during legal problem solving, a quintessential learning objective of courses within a law program. The law is rules based and ‘factual recollection is a necessary skill in a good lawyer’ (Allen 2008: 184) as is attention to detail and interpretation skills. Well-constructed MCQs can provide the foundations for and facilitate the learning of the law and skills relevant

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<sup>1</sup> Criminal Law A is a foundation law course which takes students on a journey through the Queensland criminal justice system from arrest through to sentencing and appeal. The course covers a range of offences that would more commonly be encountered by criminal law practitioners in the Magistrate and District Courts, and introduces some excuses to criminal responsibility, general principles of sentencing and ethics in a criminal law context *USQ Programs and courses, Course synopses LAW2205: Criminal Law A* (2011) <<http://www.usq.edu.au/course/synopses/2010/LAW2205.html>> accessed 26<sup>th</sup> November, 2011.

<sup>2</sup> This course will build upon the understanding of the fundamental principles of criminal law and procedure acquired in Criminal Law A. Specifically the aim of the course will be to complete the criminal law picture by further exploring criminal law in Queensland. The course will focus on a range of indictable offences against the person that fall principally within the jurisdiction of the District and Supreme courts, and associated excuses and defences. The course will also cover: parties to offences; attempts; double jeopardy; the sentencing of serious violent offenders; and advocacy. *USQ Programs and courses, Course synopses LAW3423: Criminal Law B* (2011) <<http://www.usq.edu.au/course/synopses/2011/LAW3423.html>> accessed 26<sup>th</sup> November, 2011.

<sup>3</sup> The enrolment status of students involved in Criminal Law B in 2009 were 43% on campus and 57% external for the undergraduate degree program, and 3% on campus and 97% external for the postgraduate degree program.

to law. They can be used to assist with the learning of and to test declarative knowledge, and when used in tandem with, for example, feedback enriched legal problem solving formative assessment which is itself designed to develop and test declarative and functioning knowledge, a synergy is created leading to deeper higher order learning outcomes.

In 2009 MCQ databanks were created for each of the modules covered in the criminal law courses. They were uploaded onto the Moodle learning management system Study Desk sites for the courses. There are 10 sets of questions for each course; each set has either 10 or 15 questions, with each question carrying a point value of 1. Each semester the courses are run the MCQs are released to the students as the semester progresses, together with other course resources, including recordings of on campus classes. (Once uploaded the questions can be easily edited to make corrections and take account of changes to the law.)

The questions were originally drafted by external consultants using grant funding<sup>4</sup> and then reviewed by the course coordinator, one of the authors of this article. There are a mix of questions which are directly related to what is covered in classes, the study guide and prescribed readings from texts, legislation and cases. The questions are both simple and hard, and were designed primarily to encourage students to interact with legislation and case law relevant to the course and to learn, reinforce, consolidate or test declarative knowledge as required. Avoiding 'obscure knowledge' (Higgins & Tatham, 2003: 5) the questions focus on fundamental principles in criminal law pertinent to the jurisdiction in which the courses are taught. A few deeper higher order level learning questions are thrown into the mix requiring students to work from declarative into functioning knowledge.

Consistent with literature on the writing of MCQs,<sup>5</sup> questions were framed in the positive, sought definitive responses avoiding the use of vague frequency and probability terminology, and responses were made as plausible as possible to avoid deducting correct answers by way of elimination of the obviously implausible. Questions and responses were kept short and focused to avoid quiz fatigue and information overload.

Most questions are based on selecting the correct response from four options. General feedback is provided for each of the answers either correct (with reinforcing feedback included in the answer), or incorrect (with correcting and reinforcing feedback included in the answer). References to reading in prescribed texts and appropriate sections of legislation and

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<sup>4</sup> This was provided by the USQ Faculty of Business and Law Learning and Teaching Excellence Committee.

<sup>5</sup> There are many University guides for the construction of MCQs available on the internet. See for example: Christina Ballantyne, *Multiple Choice Tests*, accessed 9<sup>th</sup> June, 2010 <<http://www.tlc.murdoch.edu.au/eddev/evaluation/mcq/mctests.html>>; *Designing and Managing MCQs: Application of Blooms Taxonomy to the design of MCQs*, accessed 9<sup>th</sup> June, 2010 <<http://web.uct.ac.za/projects/cbe/mcqman/mcqappc.html>>; R Lasso, *Taking Multiple Choice Exams*, accessed 9<sup>th</sup> June, 2010 <[http://www.caslpa.ca/PDF/examprep\\_documents/Taking%20Multiple%20Choice%20Exams1.pdf](http://www.caslpa.ca/PDF/examprep_documents/Taking%20Multiple%20Choice%20Exams1.pdf)>; University of Technology Sydney, *Multiple choice question*, accessed 9<sup>th</sup> June, 2010 <<http://www.iml.uts.edu.au/assessment/types/mcq/index.html>>; Clair Hughes, *Using MCQs for formative and summative purposes: A discussion paper prepared for the Assessment Subcommittee of the UQ Teaching and Learning Committee*, accessed 9<sup>th</sup> June, 2010 <[www.tedi.uq.edu.au/downloads/.../Multiple-choice-Questions-and-tests.doc](http://www.tedi.uq.edu.au/downloads/.../Multiple-choice-Questions-and-tests.doc)>; *QUICKBITE : Multiple-choice questions (MCQs) and examinations*, accessed 9<sup>th</sup> June, 2010 <[http://www.tedi.uq.edu.au/downloads/assessment/MCQ\\_Quickbite\\_Aug07.pdf](http://www.tedi.uq.edu.au/downloads/assessment/MCQ_Quickbite_Aug07.pdf)>; A Guide to using Multiple Choice Questions and other Objective Test Questions, accessed 9<sup>th</sup> June, 2010 <<http://www.latrobe.edu.au/teaching/assets/downloads/Guide%20to%20objective%20test%20item%20writing.pdf>>.

cases are provided in the feedback to encourage students to engage further with the concepts, or to refer them to appropriate sources to direct, correct or fill the gaps in and improve their learning (Higgins & Tatham, 2003: 7-9). The MCQs are not timed so students can research the answers in their texts and course materials and are given the opportunity to self-assess (Nicol, 2007: 56).

The MCQs are not compulsory. They remain open for the duration of the semester so that students can print or access them at will. The report logs for the MCQs show a spike in use immediately prior to the exam indicating, among other things, that students are using them to study for exams or to test their knowledge prior to the exam. The report logs also indicate that many students are working through the MCQs progressively throughout the semester and in so doing they should be better able to keep pace with course content (Allen, 2008: 184) and complete and derive benefits from other deeper higher order TLAAs in the course, including summative assessment.

Summative assessment for both courses includes an assignment (40%), comprised of a court visit in Criminal Law A (and Advanced Criminal Law A) and an advocacy exercise (mock court case) in Criminal Law B (and Advanced Criminal Law B), and an exam (60%). The exam consists of two parts: Part A, 20 MCQs (20%); and Part B, a short answer written component consisting of a combination of problem solving and essay questions (40%). Because the formative MCQs are linked to the summative assessment in this way students are more likely to attempt the formative MCQs as they are often strategic in their learning and are driven by assessment (McNeill, Gosper & Hedberg, 2008: 8; and Nicol, 2007: 56). Also where it exists, student aversion to MCQs can be overcome through practice (Selby et al., 2008: 209). In preparing for the exam in this way students should be better able to regulate their study to focus more effectively on the areas where knowledge is lacking, and as such perform better. These factors, together with others discussed in this article, are consistent with many of Nicol's and MacFarlane-Dick's seven principles of good feedback and the development of autonomy in learning; "MCQs can be used to support the development of learner self-regulation" (Nicol, 2007: 53 and 57).<sup>6</sup>

Data on student responses to the questions is periodically checked by the course leader so that class activities can focus on areas of difficulty, and over time areas of consistent difficulty have been identified and are dealt with routinely.

### **THE CORRELATION BETWEEN STUDENT USE OF MCQ FORMATIVE ASSESSMENT AND OVERALL PERFORMANCE IN FOUR CRIMINAL LAW COURSES**

The verity of MCQs as formative assessment is difficult to determine (Allen, 2008: 181. See also Roberts, 2006: 6). To reiterate, the approach taken in this investigation is simple and exploratory. It was focused on examining the correlation between student use of the formative MCQs as against their performance in summative assessment in the criminal law courses, as

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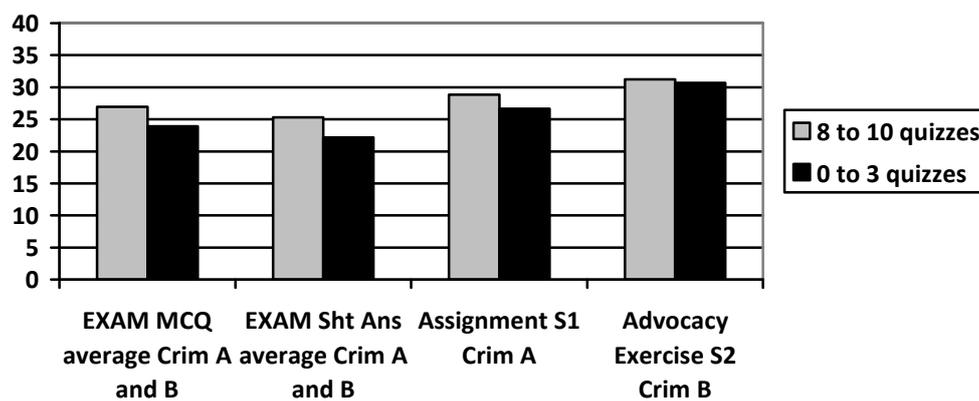
<sup>6</sup> Mapping the use of MCQs to the seven principles of good feedback practice. These are (1) Helps clarify what good performance is (goals, criteria, standards); (2) Facilitates the development of self-assessment and reflection in learning; (3) Delivers high-quality information to students about 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 teaching.

an indicator of formative MCQ efficacy as a learning resource. Student opinions regarding the value of the MCQs in these courses were also canvassed.

The data used was that available on the learning management (Moodle–Study Desk) and results and grading (Gradebook) systems used by the university where the courses are taught, and as such the analysis is reflective of their utility in this regard. Over two successive years (2009 and 2010) data relating to student use of the formative MCQs in the four core criminal law courses was tracked against their performance in summative assessment and overall performance in the courses (n= 491). For purposes of this investigation, level of use was classified as low/non-use, for students who attempted 0- 3 of the 10 sets of formative MCQs for each of the courses, moderate use 4–7, and high users 8–10. The majority of students enrolled in the courses fell into the high (55.2%) or non-use (37.6%) categories (n=456). Only 7.2% were in the moderate use category (n=35) and due to the low numbers it was decided that the results of this group would be omitted from the study as non representative.

The clear divide between users and non users can be partially attributable to what Ibabe and Jauregizar describe as ‘intrinsic interest’ in the task; some student will enjoy doing the formative MCQs more than others and this will influence motivation and level of use (2010: 253). Research also suggests that motivation is enhanced where students are given repeat opportunities to take MCQs which are linked to summative assessment (Nicol, 2007: 56) explaining somewhat the relatively high use.

Table 1 below shows the average results for student performance in individual course assessment items correlated with level of participation in the formative MCQs. The results show a positive correlation between high level use of the quizzes and marginally better performance in all items of assessment.<sup>7</sup> It is interesting to note that the better performance was reflected in both the MCQ and short answer component of the exam, and not just the MCQs.



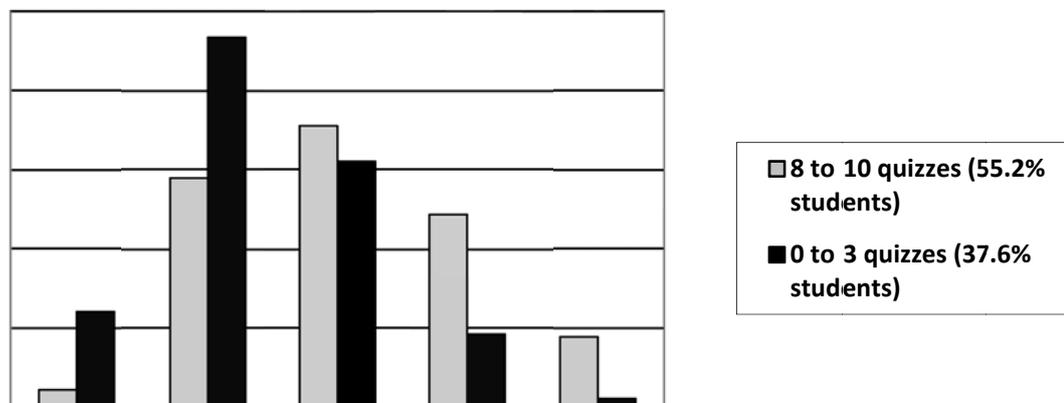
**Table 1: Formative MCQ Use Correlated with Performance in Exam (MCQ (20% Adjusted to 40%) and Short Answers (40%) and Assignments (40%))<sup>8</sup>**

<sup>7</sup> In terms of averages in assessment item performance, high users performed an average of 3% (or 1.5% adjusted to 20%) better in the MCQ component of the exam, 3% better in the short answer component of the exam, and around 1% better in the assignments.

<sup>8</sup> The results for the MCQ component of the exam were adjusted to 40% (cf 20%) to show clearly any differences in performance contrasted between assessment items.

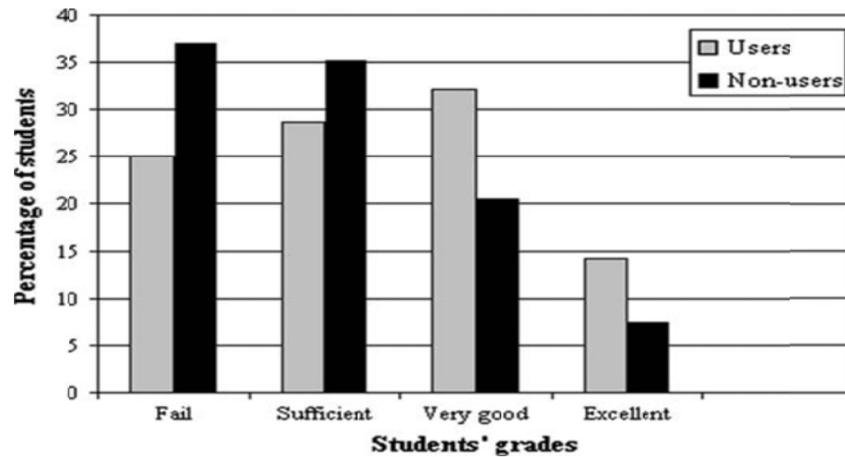
The slightly higher average performance in assignments as compared to exams is consistent with various studies showing that students adopt learning strategies according to assessment demand, and are more likely to employ surface learning strategies when preparing for exams than when preparing for assignments which are perceived as assessing deeper higher order learning objectives and skills (Dochy, Segers, Gijbels & Struyven, 2007: 92 referring to studies by Tang & Schouller). However, this is not always the case. Various studies have also shown that redesigning assessment to achieve deeper higher order learning objectives does not necessarily achieve the ‘desired changes in student learning’ although it may influence assessment preferences (Dochy et al., 2007: 93 and 94 referring to studies by Nijhuis & Struyven). This point needs to be kept in mind when considering the redesign of assessment methods with a view to inculcating deeper higher order learning approaches. In so far as MCQ assessment is concerned, some of these studies indicate that MCQ can play a positive role in teaching and learning (Dochy et al., 2007: 93 and 94) and as Nicol states, ‘what is important is not just the content and format of MCQ tests but the wider context within which they are used’ (Nicol 2007: 54). Dochy, Segers, Gijbels and Struyven acknowledge the role of ‘engineering – a blend of different (old and new, formative and summative) modes of assessment’ as long as assessment goals are ‘clear’, the assessment itself is ‘useful’ and has ‘appropriate workload demands’ (2007: 97).

Table 2 below shows the results for student graded performance in the courses overall correlated with level of use of the formative MCQs. A positive relationship between high level use and better overall performance is clearly indicated.



**Table 2: Formative MCQ Use Correlated with Overall Performance in Course from Failing Grades to High Distinctions (n=456)**

Table 2 can be contrasted with the results of another study conducted by Ibabe and Jauregizar involving a group of students enrolled in the first year Data Analysis 1 core course in a psychology degree. In that study, student participation in a range of online formative assessment exercises, including MCQs, was correlated against their final graded performance in the course (Ibabe & Jauregizar 2010: 248 and 251). The table below, showing the results of that study, exhibits a similar trend regarding positive relationships between use of online formative assessment and better overall performance in the course.



**Table 3: “Fig. 3 Students’ Grades According To Use Of The Self-Assessment Tool” (n = 82) (Ibabe & Jauregizar 2010: 251).**

These results are consistent with the results of another study conducted by Allen, regarding the use of formative MCQs for an undergraduate law module. Allen concludes that ‘the statistical data and the questionnaire data give weight to the argument that the provision of online MCQs may lead to a tangible improvement in the performance of those students who attempt them’ (Allen, 2008: 190).

A measure of the effect of the MCQs as a learning aid is student use (55.2% high user) and feedback. Student opinions of the MCQs expressed by way of comments on the student evaluation of the courses (SEC) 2009 and 2010, and a student evaluation of the formative MCQs in 2010, are clearly positive and again consistent with Allen’s research (2008: 189).

Many students who commented on the SECs in 2009 and 2010 identified the MCQs as a useful aspect of the course with some commenting: ‘Specially **loved** the quiz at the end of each module. It helped me **test** my retention of knowledge’; ‘the quizzes were a **useful learning resource**’; ‘don’t ever remove them’; ‘weekly quizzes were **excellent**’; ‘online quizzes are really **helpful**’; ‘the quizzes were **great** but not all of the questions were relative to the assignment and exam’; ‘I loved the quizzes, they were very **helpful** to **test my knowledge** and point out how much I have **retained** after the lecture’; ‘the quizzes are **challenging, interesting** and make excellent resource for later reference’; ‘the quiz element is, generally, to be commended and encouraged in future courses’; ‘access to quizzes **designed not for assessment, but to promote my understanding at my own pace**’.

During this period some unsolicited comments from students were received by email: “I just wanted to give you some positive feedback on the online quizzes you put on the study desk. They were really **helpful** and I thought it was great that they gave an **explained answer** and also **included the text on where to locate it for further info.** - online quizzes should definitely be included in criminal law B’; ‘I really appreciated the seminars and module quizzes as it helped me along the way to **try and improve.** As an external student who works full time it helped me to **pace** myself’; ‘I like to complete an attempt prior to study of the materials so I can gauge where I need to **focus.** The quizzes are extremely **useful**’.

In 2010 three custom questions eliciting Likert scale responses were asked on the end of semester student evaluation of course survey (SECs): Q1 The quizzes were a useful learning

resource; Q2 The quizzes helped me understand course content; and Q3 The quizzes helped me test my understanding of course content. A score of 4.5/5 or slightly above was received on each of these questions (n=60). Responses included: specially loved the quiz at the end of each module: it helped me to test my retention of knowledge. The advocacy exercise was specially testing (as this was my first as such), however, it was a great practical tool which is a must for my own benefit).

## CONCLUSION

The results of this case study show a positive correlation between formative MCQ use and overall performance in the criminal law courses that were the subject of this investigation. However, the identification of the precise role that the formative MCQs have to play in this equation requires further more in depth investigation regarding qualitative factors that may influence the correlation. In his research Allen provides some useful insight, including questioning whether it is the resource itself that enhances performance or the nature of the student likely to use it (2008: 190). Whilst this may be to some extent a valid influence, it is interesting to note that in this investigation there was still a bell curve from fails to high distinctions for both users and non-users of the formative MCQs, indicating that this may not necessarily be the case for all students who use them. Regardless, the results of the analysis and student use and feedback are self-evident and support a role for formative MCQs in teaching and learning.

A number of points can be made in summary regarding the sustainable value of formative MCQs in the criminal law courses. They are an efficient learning resource for knowledge base construction, consolidation and testing for the following reasons. MCQs are relatively cost effective, particularly considering that they are reusable and easy to update; they provide an interactive flexible learning resource, available to all students regardless of enrolment status; they are responsive to student needs in that students can do the MCQs at a time and pace of choice (Higgins & Tatham, 2003: 9) and are quick to do. Although predefined (Nicol, 2007: 56) they provide consistent feedback to all students who use them. They are engaging and motivating and they provide a useful diagnostic tool that assists in teaching and, as a self-regulated TLA, they can foster lifelong learning.

Although not specifically mentioned by students in feedback, a number of other features regarding the value of MCQs surfaced, somewhat unexpectedly, in that they facilitated communication with teaching staff and collaborative learning, both consistent with Nicol and MacFarlane-Dicks' seven principles of good feedback (2007: 56). Students would contact staff and discuss semantics in question drafting, and advise of typographical errors or other issues. In terms of discussion of semantics there were a number of benefits which flowed: the quality of the MCQs and feedback were improved where appropriate; and educational benefits are derived by default in that students learn to deal with ambiguity. Lombardi points out 'by confronting students with uncertainty, ambiguity, and conflicting perspectives, instructors help them develop more mature mental models that coincide with the problem-solving approaches used by experts' (2007: 10). This is something that is particularly relevant to the practice of law that often revolves around ambiguity in, and competing interpretations of, legislative provisions, case law and documents relating to legal transactions. Consistent with Nicol, who postulates that effective use of MCQs can support 'social learning' (2007: 63), another benefit was that students also formed study groups around completion of MCQs, supporting a social constructivist approach to their learning.

Despite some reservations, pedagogical literature supports the considered use of formative MCQs to support teaching and learning. Their use is particularly suited to foundation law courses to support the acquisition of declaratory knowledge which is, in turn, necessary to support functioning knowledge and deeper higher order learning outcomes.

Whilst the case study supports the efficacy of MCQ formative assessment, many students are still not using them despite obvious links to summative assessment. Considering their high voluntary use it would be an interesting exercise to make them compulsory progressive summative assessment and evaluate any resultant effect. To make them compulsory would force students to study and to do so progressively, so knowledge is more likely to be retained and better able to support the deeper higher order learning objectives of the course. However, this would be counterproductive to some of the pedagogical benefits of formative assessment methods which in essence are about providing a learning resource to encourage students in their lifelong learning journey. To make them a compulsory summative assessment item may change student approach to their use for, as Selby, Blazey and Quilter state, 'student expectations of assessment are relevant to the approach they adopt' and 'the perceptions that students have of assessment even at the end of an exercise will dictate their approach' (2008: 225; see also Hinett & Bone 2002: 50).

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