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Students' Experiences of a Continuous Assessment Approach at a Higher Education Institution

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ABSTRACT Assessment is an important component of any teaching-learning process. Due to economic and historical factors many higher education institutions have been using large-scale summative assessment. However, there is move away from summative assessment to formative and continuous assessment (CA). Academics are therefore re-thinking assessment practices and considering using the latter approach. One of the challenges when using CA is developing the logistical procedures for large classes. This study is based on the introduction of a CA approach for 1000 second-year macro-economics students in the Faculty of Management Studies at the University of KwaZulu-Natal. It was underpinned by an interpretive research orientation and was explorative in that it aimed at achieving an in-depth understanding of these students' experiences of CA. Qualitative data were gathered. The article starts with a literature review of assessment and CA, followed by a description of the research methodology and design of the CA strategy, and finally a discussion of the qualitative data and findings of the study. The qualitative data indicate that CA assisted students to manage their workload better and improved their understanding of the subject content. This approach to assessment in higher education institutions requires additional research, but the positive results demonstrate that CA could be considered as an approach to improve teaching and learning in large-class contexts.

INTRODUCTION

Higher education institutions world-wide have experienced growth in student enrolments. However, due to political and economic circumstances it has not always been possible to appoint additional staff, and as a result class sizes have increased dramatically. Lecturers have had to struggle with greater workloads, and one aspect of teaching and learning that has proved challenging in bigger classes is assessment (Ballantyne et al. 2002). This is mainly because it is harder for lecturers to use formative assessment when the student number is high, as it is difficult to provide effective tutoring and feedback. With existing political imperatives for reducing costs in higher education institutions, the current situation with large classes is unlikely to change (Ballantyne et al. 2002). As the trend for bigger class sizes continues, a key issue facing academics is how to maintain quality teaching and assessment. One possible solution to this challenge is to introduce a continuous assessment (CA) approach that is specifically designed to accommodate the logistical complexities associated with large-class teaching.

Literature Review

Assessment is the process of gathering data on the students' understanding of the work. These data can be qualitative or quantitative. Assessment can also be classified as summative or formative. Summative assessment or assessment of learning is more one-dimensional; it drives the curriculum, and is inauthentic, context-independent and inflexible. Formative assessment or assessment for learning is more multidimensional, integrated with the curriculum, authentic, context-embedded and flexible (Birenbaum et al. 2010). Historically South African universities have used examinations and tests as a means of assessing students' knowledge and skills, and these can be classified as summative assessment or assessment of learning.

Falayayo (1986) defines CA as a mechanism to assess students during a given period of teaching. A broader definition by Airasian (1991) describes CA as an "assessment approach which should depict the full range of sources and methods teachers use to gather, interpret and synthesize information about learners; information that is used to help teachers understand their

learners, plan and monitor instruction and establish a viable classroom culture". From these definitions one can infer that CA takes place over time, at regular intervals, and can use a variety of instruments. Lopez et al. (2007), Coll et al. (2007) and Ariasian (1991) state that CA has three distinctive characteristics: it provides information on assessment that can be fed into the planning of the next round of assessment; it can use a variety of assessment types; and it provides constant feedback on students' progress which enhances continuous, regular learning.

Academics at institutions of higher education are expressing an interest in using CA. The reason for this is twofold: firstly, lecturers recognise that effective teaching and learning requires continuous information about students' understanding and progress; and secondly, lecturers feel that assessments that are continuous and based on less work are fairer towards students (Nitko 1995). Many stakeholders feel that using only one or two major tests during the semester and one examination at the end of the semester is limiting due to a lack of regular feedback, and causes unnecessary stress for students (Nitko 1995). Nitko (1995) explains further that CA can be used summatively and formatively. He distinguishes between informal formative CA, formal formative CA and formal summative CA. We explain each in more detail below, and indicate which was most applicable to the learning that took place in this particular class.

- ***Informal Formative CA:*** This type of assessment is informal and consists of informal observation and feedback on the students' understanding and progress. It can include observing students' reactions as well as talking to students to see if they understand a topic.
- ***Formal Formative CA:*** This is when the lecturer uses short tests to determine students' pre-knowledge before teaching starts, to determine students' understanding of concepts. This type of assessment can be pen and paper tests or performance assessments. The purpose is to monitor and guide students' progress by helping them to identify problems on a daily basis, and give them constant feedback on their learning.
- ***Formal Summative CA:*** According to Nitko (1995), this type of assessment is more formal. It is important that the assessment is carefully aligned with the curriculum and learning outcomes of the module. The assessment can be a pen and paper test every week or second week, regular smaller projects, or performances. This type of CA is applicable to this study as a strategy was planned whereby four smaller pen and paper tests were scheduled over a period of a few weeks to determine whether students understood and managed the content of their lectures better.

Everson (2010) cites research conducted by Boud (2000), Chansarkar and Raut-Ray (1987) and Kniveton (1996), and highlights some of the advantages of CA. Everson (2010) finds that CA is the only form of assessment that is both systematic and effective at monitoring students' skills and understanding. CA places the student at the centre of the learning process, which can help the student to develop self-regulated learning skills. Rengel (2009) describes self-regulated learning as the degree "to which students can regulate aspects of their own thinking, motivation and behaviour during the learning process".

Research has shown that self-regulated learning can be developed through CA. Therefore, it is argued that formal summative CA as described in the previous section can contribute to the development of self-regulated learning. Self-regulated learning entails three important aspects: the capacity to learn; the capacity to know how to learn; and the capacity of students to know that they have learned (Somervell 1993). Nicol and MacFarlane-Dick (2006) concur and state that self-regulated learning incorporates the setting of learning goals, implementing strategies to achieve these goals, managing resources, reacting to external feedback and producing the end product. Boud (2000) asserts that it is important for all lecturers to strengthen students' self-regulated learning skills, which includes cultivating their ability to conduct self-assessment.

Kniveton (1996) agrees about the benefits of CA, and finds that the majority of students prefer CA because it helps them to manage their time better. Chansarkar and Raut-Roy (1987) note that CA increases students' overall marks. In their research they retained a summative exami-

nation but used CA throughout the semester, finding that this impacted positively on students' final marks. Isaksson (2007) also found in his research at Stockholm University in Sweden that students have a positive perception of CA, but he also stated that is was difficult to determine if there was an improvement in the marks of students when using this approach.

Everson (2010) cites Conway (1992) and Yorke (2001), who found that CA helps to improve students' retention of content learned. Birenbaum et al. (2010) maintain that an integrated assessment system (that includes CA) allows students to test themselves and review their own progress. Regular assessment can also help to motivate and assist students to become more independent learners.

Everson (2010) in her study warned that multiple-choice question (MCQs), often used with CA, can lead to a surface approach to learning if not properly administered. Gibbs (1992) found that students may take a deep approach to learning when revising MCQs in tests for examination purposes. She said that students' engagement with deep or surface learning depends a lot on the assessment strategies followed. Although many people think that CA will promote surface learning, Gibbs (1992) showed that when an assessment strategy is non-threatening and non-anxiety provoking, students tend to learn better and have a deeper understanding of the work. She said that often some form of CA is likely to be less threatening and stressful, but warned that for CA to enhance deep learning there must be plenty of formative feedback at regular intervals, and all assessments need to have clear assessment criteria which are known by the students before they undertake the assessment activity. Gibbs (1992) also found that students are more likely to take a deep approach to learning if they are motivated and can see the relevance and importance of the work.

There is also some evidence that suggests that students prefer CA, and when frequent assessment is combined with regular feedback it will improve student learning (Rushton 2005). Bangert-Drowns (1991), cited in Rushton (2005: 24) found that students taking more than one assessment in a semester scored higher than those that did not have the same number of assessments.

Evidence showed that, as discussed above, CA has many advantages and if used properly with good assessment criteria and frequent feedback can assist students to understand their work better through a deeper approach to learning.

Context of the Study

Second year macro-economics (Economics 201) at the University of KwaZulu-Natal in Durban, South Africa, is a one-semester module that has been an obstacle to student throughput in undergraduate economics. The module consists of three parts and the second part has been particularly challenging for students: it sets up the fundamental conceptual framework that forms the theoretical backbone of intermediate macro-economics, of applied macro-economics taught at third-year level, as well as of advanced macro-economics taught at postgraduate level. It is therefore of great importance that students fully comprehend all of the concepts in this section - but many struggle to do so. This can be partially attributed to the fact that in this section students must make extensive use of mathematics and graphs, and according to anecdotal evidence from staff who teach the module, the students struggle. According to the above-mentioned staff, this problem seems more acutely felt by students from disadvantaged secondary schools. Approximately 1000 students register for Economics 201, and thus lecturers are faced with the additional challenge of trying to assess students effectively in a large-class context.

The School of Economics and Finance recognised that part of the solution to the above problem was to encourage students to engage with the learning material throughout the course. The School believed that this would help them to identify and address problem areas in this course on a continuous basis as the course progressed. This is important, because if students do not understand the concepts, they fall behind and fail to comprehend the models as they become more complex. The staff involved with the project also wanted to assess students on smaller sections of work.

By reducing the volume covered by each test, the lecturers wanted to give the students the opportunity to concentrate on and comprehensively learn each sub-section of part 2 of the module. The School of Economics and Finance expected that introducing CA into a big class would assist lecturers in enabling students to manage their workloads more effectively, which

in turn would facilitate their understanding of the subject. Coll et al. (2007) confirm that the above objectives can be achieved with CA, by noting that it helps students to improve their learning and allows them to develop their ability to make more informed decisions on how to improve their learning.

The students completed three tests during the semester prior to implementation of the CA approach. The first two tests consisted of approximately 50% MCQs and 50% written questions. The third test consisted of only MCQs. Part 2 was assessed primarily in the second test, and about half of the questions in the third test were based on part 2. All three tests were one hour in duration (see Fig. 1).

With the CA approach the number of tests during the semester increased to five (see Fig. 2). The structure of test one remained the same and was still based on part 1 of the module. However, the number of tests in part 2 increased from one to four - and it was these four tests that constituted the CA approach. Part 3 of the module is currently a relatively small part of the overall module, and is formally assessed in examination questions, so there is no test for this section.

Three of the CA tests were of 20 minutes' duration and consisted of 10 MCQs; these were completed during the daytime lecture timetable. The remaining test took one hour, during which students were required to give written responses and draw diagrams. Due to the length of the test, it was held in the evening. Part 2 is 5 - 6 weeks in duration, and the four tests were written over a period of 6 - 8 weeks. The average time between assessments was approximately two weeks. This allowed for a small enough section to be tested, but there was still enough material for each test to be of substance. Moreover, the interval was short enough to ensure that students were being continuously assessed.

There was no significant difference in the types of questions asked in the CA tests and those set in previous years. Thus the implementation of CA was primarily a change in the way that the tests were structured as opposed to a change in content. Figure 2 illustrates the change in the test structure.

From a logistical point of view, the interval of approximately 2 weeks between tests made the exercise more manageable than if the tests had been scheduled closer together, such as in weekly sessions. Before embarking on this CA project, the School realised that designing and managing the logistics of an undergraduate CA approach would be one of the most challenging and potentially problematic aspects of the exercise, given the large size of the second-year macro-economics class. Implementation of the CA approach was staged at the Westville campus, since this is where most of the economics students are based, with a module enrolment of approximately 1000. The School therefore appointed a test and session coordinator to plan, oversee and manage the logistics of the exercise.

An important issue was to ensure that all CA tests had the same security and controls associated with conventional tests. This was necessary to ensure that the tests had the same level of credibility among students as standard tests. Less structured assessment sessions can result in extensive cheating, which would undermine the integrity of the assessment. The 1-hour evening test (test 4) was run on the same basis as the usual economics class tests, so no new logistical challenges were presented. Students all wrote simultaneously and both students and invigilators were familiar with all the procedures.

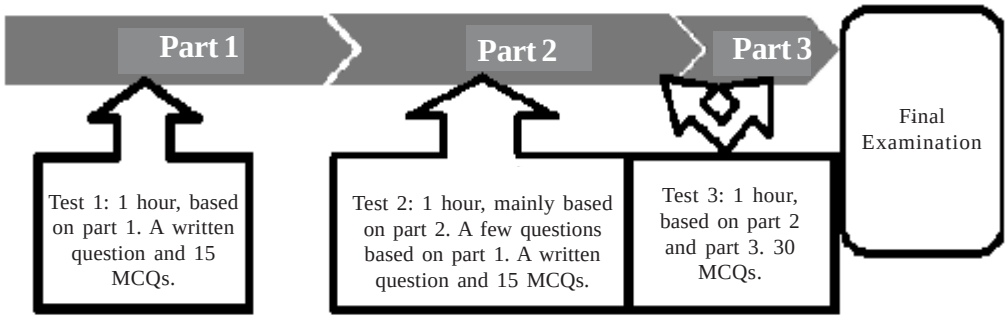

Fig. 1. Test structure prior to CA

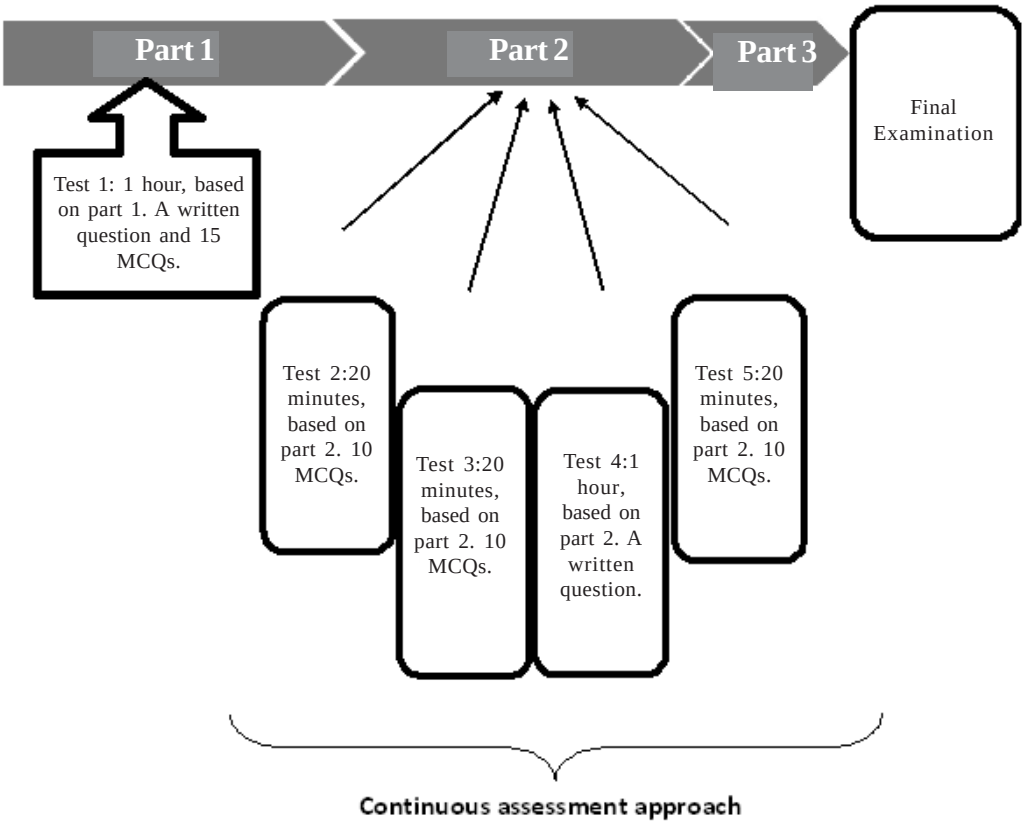

Fig. 2. Test structure after implementation of CA

The 20-minute assessments were new and needed to be effectively managed.

Like the evening tests, it was necessary for all students to write the daytime MCQ tests simultaneously. This was done in order to avoid the problem of students who completed their assessment in a later time slot somehow finding out the test content and then having an advantage over the students who wrote earlier. Sufficient venues and a common lecture period therefore needed to be found to achieve this objective. There could be no delays during the daytime test sessions, as students and staff needed to be at their next lectures or tutorials directly afterwards. Moreover, invigilators needed to ensure that all students signed the class register within the 20 minutes. Invigilators were therefore employed based on a ratio of approximately 1 invigilator per 40 students, and this proved appropriate for collecting students' signatures (marking their presence for the test) in the limited time available and also invigilating the test.

Economics tutors (postgraduate students) were employed to be present in each test venue. Given that the test venues were widely dispersed across the campus, it was impossible for the lecturer to tend to all venues at the same time. With the short duration of the tests, if a query arose in the paper it had to be addressed immediately so that students could continue with the test. The function of the tutors was therefore to answer any queries that might arise from the question paper. If they were unable to answer the question, the lecturer could be contacted via cellular telephone. Feedback after each assessment was provided via the computer LAN with MCQ answers and a suggested solution being placed in the lecturer's LAN folder. Students

had access to lecturers and tutors during designated consultation times, during which they were able to address any test queries. Given the large student number and the staff involved with the project, the authors believe that they were able to develop an efficient feedback/consultation system whereby students had sufficient avenues through which they could fully address any problems they may have experienced in the tests.

Limitations to the implementation of the CA approach were that it did not use a large variety of assessment types, and that each round of assessment did not feed forward to the next round. However, given the large number of students, the staff felt it was important to simplify the administration of the project. The researchers therefore elected to set mainly MCQs as these could be electronically scanned, eliminating the need to find markers and allowing faster release of results. The staff believed that students could still derive much benefit from being continually assessed, even if the tests were administered in a fairly standardised format.

The CA approach has been a logistical success for the four years it has been running. According to the authors' experience, when a class size is very large the pedagogical goals of a CA approach can only be achieved if the project is well-organised and all logistics are carefully thought through.

RESEARCH METHOD

The purpose of this research was to explore the experiences of second-year macro-economics students in the implementation of CA in a large-class context. This led to a specific research question. The function of research questions is to explain specifically what the research will attempt to learn or understand (Babbie and Mouton, 2001) and with this in mind the following research question was formulated:

- What are the experiences of students of CA in a large class?

This study was underpinned by an interpretive research orientation. It was an exploratory study that aimed to achieve an in-depth understanding of the second-year macro-economic students' experiences with CA. The researchers viewed this group of students as a case study, the latter being defined as a phenomenon that occurs in a bounded system (Miles and Huberman 1994). The researchers therefore identified the second-year macro-economics class as a bounded system and used a qualitative research approach.

As mentioned in the previous section, the sample was the whole group of approximately 1000 second-year students. Qualitative data collection took place via a questionnaire administered by the course lecturer. The data were analysed by using a thematic approach. The responses to the open-ended questionnaires were read a number of times, and emerging themes were identified and coded. A spreadsheet of each theme was produced, on which the comments were recorded. Trustworthiness was ensured by giving students enough time to answer the questions and by allowing them to answer anonymously. Ethical measures as per university regulations were adhered to which included obtaining informed consent from all participants, who were assured of anonymity and confidentiality in their agreement to complete the questionnaire

RESULTS AND DISCUSSION

The qualitative data gathered from the open-ended questionnaires were identified and coded according to the following four themes, which are discussed in more detail below:

- improved retention and understanding of the content; module more manageable for the students; continuous engagement with the course material; and transferability between assessment type.

Improved Retention and Understanding of the Content

The overwhelming response by students was that the use of CA helped them to understand the module better. They felt that more frequent tests compressed the work into smaller parts, which made it easier to prepare for the assessments. They were of the opinion that a subject like macro-economics can be difficult and complex, and that smaller sections of work made it easier for them to learn and understand the various concepts. As one commented: *"Yes, I definitely understand the sections tested in the smaller tests better than others. I enjoyed the 20-minute tests and feel it was to the advantage of students"*. The students elaborated further and said that the more regular testing helped

them to identify problems early on, which assisted them in keeping up with the work. One student confirmed this when he/she said: "*It forced me to address problem issues as they arose as opposed to just before exams. This improved my understanding tremendously*".One expressed the following view: "*This approach has broken down the material in smaller segments which is similar to the system of tutorial tests. I thoroughly appreciate this system and feel more connected to the course than in previous economics modules that did not employ this system"*.

The idea of scaffolding was also mentioned by students. Many felt that it is important to understand a section first before moving on to the next, and CA helped them to build their knowledge progressively over a period of time. Again many students indicated that CA helped them to remember the content better and for a longer period of time, as noted by one student: *"It helps me to concentrate better"*. This notion is confirmed in the literature; Conway et al. (1992) and Yorke (2001), cited in Everson (2010: 40) found that formative CA impacts positively on students' retention. Everson (2010) states further that "I believe all university courses should be assessed continuously, we learn more, it stays in our memories for longer".

An important response from some students was that if the time between lectures and tests was shorter, it would definitely help them to understand and remember the work better in preparation for answering questions in the test or examination.

The positive feeling towards this approach was emphasised by the following response:*"I remember the content of the module better than the other modules that did not have continuous assessment"*.

There seems to be some uncertainty with the students' responses on this issue. Although many of them said that CA improved their understanding of the module, it seems that many of them mentioned that CA helped them to remember the content better. Considering this, it seems that CA primarily assisted students to remember the content better, but it is also possible that continuous engagement with the content could assist them with improved understanding of the content, as can be seen from some of their comments.

Module More Manageable for the Students

The majority of students indicated that a CA approach helped to make the module more manageable. They felt that breaking the workload up into smaller sections made it much easier for them to manage their preparation for tests. This in turn made it easier for them to give 100% attention to the module. Students also felt that it reduced the pressure on them during the semester, and that working through the module was definitely less stressful. Most of the students said that this approach helped them to improve their time management, not only for this module but also for others. As one student commented: "*This really helps; it prevents last-minute studying when the workload is too much and sort of allocates time for revision and therefore during exams all you need is to revise"*. This sentiment is echoed by Everson (2010) who states "Thus via shorter, more regular assignments (tests) it is possible to avoid short bursts of intensive studying…"

There was, however, some concern, and one student noted: "*Yes it helps but it also makes it more difficult when you have other tests from other subjects"*. This was confirmed by another student, who said that CA can result in students writing too many tests in one week.

Continuous Engagement with the Course Material

Many of the students indicated that a CA approach forced them to engage more frequently with the content. Students commented that frequent revision of the material made them feel more connected to the module. Most of the students approved of continuous engagement because it forced them to study and complete practice questions. One student explained the advantages of continuous engagement as follows: "*Through continuous engagement I could identify my weaknesses and try to improve for examinations*". Another commented: "*The many tests that we wrote forced us to study, therefore if I did not understand I would utilise the opportunity we have to consult with our tutors"*. This experience is supported by Everson (2010) when she says "*With CA, then, it is possible to have frequent, short assignments both to maximize student opportunities for practice and to distribute student effort throughout the course"*.

One student wrote that this approach suited his/her study methods. As discussed in the literature review, the majority of higher education institutions tend to use summative assessment, which is not always to the benefit of all students. Many students also indicated that continuous engagement with the content gave them more opportunity to absorb it and prepared them better for answering challenging questions. Thus, an important advantage of this approach is that it prevents students from trying to learn all the work in a short period of time before the final examination, and ensures that students continually engage with the content. However, the danger is that students can think this type of assessment helps them to improve their learning, instead only contributing to a surface approach to learning instead of a deep approach. This is evident in comments such as the above, where the student said it helps them to absorb the content better.

Transferability Between Assessment Types

The CA tests consisted mainly of MCQs, largely due to the difficulties of finding enough markers for 1000 students and associated delays with marking paragraph-style answers. MCQ answer sheets are scanned electronically so do not present these problems. While most of the questions in the CA were MCQs, approximately half of the examination was made up of essay-type questions. An important question therefore was whether CA also prepared students for the examinations.

It was very interesting that many students felt that although the CA approach consisted mainly of MCQs, it also helped them to prepare and answer essay-type questions. Based on the students' responses, the researchers felt that this type of approach contributed towards transferability between different question types. The main reason given by students was that by understanding the main concepts and constant engagement with the content, they were better prepared for the entire examination. One student explained it as follows: *"Yes, due to the smaller quantity of work tested, there was sufficient time to thoroughly understand the work and apply it to essay-type questions"*. Another confirmed this by saying *"Multiple-choice questions cover a wide variety of aspects concerning a particular topic. It would help us with essay questions as well as gaining understanding of material covered"*. This was further confirmed by a student who said *"Most of the MCQ were asked based on the graphs which is useful in essay question."*

Everson (2010) also found that MCQ-style testing is very effective, as it helps students to understand the work better, but warned that MCQs can lead to a surface approach to learning if not properly administered. Macdonald and Twining (2002), however, found that students may take a deep approach to learning when revising MCQs in tests for examination purposes.

CONCLUSION

In this research it is evident that many students' experiences of CA were positive. This article is not trying to demonstrate that use of CA is only positive, but instead emphasises that students perceived that their learning improved. The qualitative data indicated that students had a positive view of this approach. Quite a number felt that their understanding and management of their work improved. Of interest was that students felt the shorter MCQ tests helped prepare them for essay-type questions contained in the examination. This notion is also supported by the literature. As discussed in the literature review, CA has three characteristics: it provides information on assessment that can be fed into the planning of the next round of assessment; it can use a variety of assessment types; and constant feedback on the students' progress enhances continuous, regular learning. It is evident from the data gathered that this article focuses more on the third characteristic, namely that students improved their retention, learning and understanding of the subject content through regular assessment and learning. Due to the nature of the study and the large class size, the authors were unable to achieve the other two characteristics, namely the feed forward to change the next round of assessment practices and use of different assessment types.

As mentioned earlier, the danger is that students can get a false perception that CA contributes to a deep approach to learning, but there is evidence to suggest it can rather lead to a superficial understanding that depends mainly on retention. However, there is also clear evidence from the literature that CA can lead to a

deeper understanding of the work and, used correctly, CA can play a vital role in improving results.

Based on the qualitative data gathered from one school the authors cannot generalise the findings to other contexts, but it seems that CA has some advantages and that higher education institutions may consider making greater use of CA. This study highlighted the logistical difficulties of conducting more frequent assessments, particularly in large classes, but again the evidence clearly shows that students benefit from this approach, so academics must not be deterred by the organisational challenges that accompany CA.

The literature also states that by using more continuous (formative) assessment, students develop into more self-regulated learners, and it is very important that they develop this skill to succeed in higher education. It is, however, important that CA is accompanied by good feedback. With large classes it is difficult for lecturers to give appropriate and timeous feedback, but research suggests that immediate although imperfect feedback impacts very positively on students' results. Such feedback can be computer-based or oral in class from the lecturer. Analysing the data, it is clear that CA has some advantages for students, but lecturers must be aware that CA can contribute to a surface approach to learning where students focus more on memorisation than deep learning that enhances understanding. The strength of CA is that in many higher education institutions with large classes it can help to get students more involved with the content, and at least monitor their understanding and knowledge of the content on a more regular basis.

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