

# Towards a learner-centred approach: Interactive online peer assessment

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## **Abstract**

The tremendous workload produced by multiple assessments that aim for a learner-centered approach to learning in huge classes and the inability to provide results timeously, often results in lecturers' maintaining teacher-centered approaches to learning even if they appreciate the benefits of learner-centered approaches. One step toward a learner-centered approach is to incorporate peer assessment. In this study we went one step further and combined peer assessment with e-learning. Interactive online peer assessment can lessen the workload on lecturers and may be an important step towards designing courses that are learner-centered.

In this study we report on the lessons and experiences of an interactive online peer assessment system. An evaluative case-study approach was undertaken. The theoretical underpinning of this study is activity theory. Lecturers monitored and evaluated the progress of the students who undertook this course and this article is a report of the study.

Interactive online peer assessment can be enhanced if support structures and tools are readily available. For interactive online peer assessment to work there needs to be a paradigm shift at an institutional level, at the lecturer level, as well as role clarity, and a willingness on the part of the students to accept a shift in their role in the learning process. The outcome of the intervention was generally positive but some of the findings indicated that technical problems experienced during the course by students contributed to their negative attitudes toward interactive online peer assessment.

## **INTRODUCTION**

Increasingly institutions of higher learning are turning toward computer and electronic systems, that is, e-learning, in order to generate and provide tools that will mediate student learning. According to Cohen and Nycz (2006), the role of the lecturer shifts towards that of course developer, and once the course is active, to course facilitator. In this article, e-learning is broadly defined as the use of digital and networked technologies to support and enable teaching and learning.

E-learning is an important response to the increasing number of students in the system, which is a result of the widening of access to higher education. This turn to e-learning has been facilitated by the emergence of new technologies that enable interaction and feedback, which are the cornerstones of learning and teaching. Bozalek et al. (2007) demonstrate that even though differences in the levels of resources at universities function to maintain the inequality in the distribution of educational advantage, e-learning is one way of countering this inequality by providing expansive access. e-learning is particularly suited to distance learning (Anderson and Garrison 2002).

We turned to the Learning Management Systems (LMS), an e-learning system at the University of the Western Cape (UWC), to build tools, but specifically online interactive peer-assessment instruments/tools that could mediate and scaffold students' engagement with Operations Management concepts and theory — in order to support their learning. It was an innovative learning intervention because it combined peer assessment with e-learning to give rise to e-peer assessment.

We opted for e-learning because we felt that we would be able to communicate effectively and timeously with our students. Previous research has indicated that the lecturers' timely response significantly influences the students' satisfaction (Sun, Tsai, Finger, Chen and Yen 2008). In addition, Levy (2007) states that the relationship between the student and the lecturer is one of the factors that distinguishes between students who choose to continue with the course, or to opt out.

Traditionally, lecturers are able to acquire feedback from the students on their learning experiences by face-to-face consultations, thereby enabling a continuous evaluation of the learning process. Conversely, echoing the sentiments of Romero and Ventura (2007), when students work within electronic environments, face-to-face consultations are not possible — therefore, lecturers must look for other ways to obtain this information. We used a blended learning approach, which is described by Garrison and Vaughan as the 'thoughtful fusion of face-to-face and online learning experiences' (2008, 5).

A learner-centred approach is where the learner is allowed more choice, afforded greater control over his or her learning experience, and the learning experience is more active, as opposed to being a passive experience (O'Neill and Tim McMahon, 2005). Through this approach, learners may grow to become more involved in taking an active role in assessing their own learning and that of their peers in many ways. This process may require a change in the lecturer's perceptions about their own roles as they gather information about learners 'learning' in order to inform ensuing learner-centred teaching activities.

## **RESEARCH QUESTION**

Does the online peer-assessment tool facilitate a learner-centred approach to learning? From an Activity Theory perspective, we ask the following sub-question: Will changes in the learning activity system that shifts some control and decision making to learners lead to learners taking more responsibility for their learning?

## **THEORETICAL UNDERPINNINGS**

We turn to Vygotsky and other researchers (e.g. Engeström 1999; Hardman 2005) working within the Activity Theory paradigm, to flesh out our assumptions concerning learning and teaching. This study is underpinned by Activity Theory, Vygotsky's theory of learning and aspects of peer assessment.

### **Vygotsky's Theory of Learning**

According to Vygotsky, a human being never encounters the world uncontaminated. The experience is mediated and understood through the use of tools. Human beings use tools to understand their environment, change their environment; and they are themselves transformed through tool usage. Tools are intrinsic to everything that we as humans do.<sup>1</sup> We adopt the position that learning takes place through a process of individual constructivism within a social context.

He elaborates further, saying that through the support received by interacting with a more capable individual, students are able to learn more than through learning on their own. The zone of proximal development 'is the distance between the actual developmental level, as determined by independent problem-solving and the level of potential development, as determined through problem-solving under adult guidance, or in collaboration with more capable peers' (Vygotsky<sup>1</sup> 1978, 86). It is closely related to the concept of scaffolding.

In our interactive online tutorials or itutorials, the zone of proximal development is expanded when peer assessment takes place during the online interactive tutorial sessions — when peer assessors refer to the model answer (a tool), and when the students use their own prior knowledge. The zone of proximal development is further expanded when the student requests moderation, since there is interaction between what the lecturer has prepared, in terms of the model answer, the assessment event conducted by a peer, and the lecturer's final arbitration and feedback in the learning cycle.

### **Activity Theory**

There are three generations of Activity Theory. The first generation is the simple individual model. The second generation is an expansion to include the context and the community involved in the activity system. The third generation in the activity system brings at least two activity systems together — to broaden the discussion, and to include multiple perspectives, voices and networks of interacting activity systems (Engeström 1999).

Our discussion in this article is mostly embedded within the second generation perspective.

The activity within a course at a university takes all the activities done, in order to fulfil the requirements to pass the course as its units of analysis from an Activity Theory perspective (Hardman 2005). It positions all such activities within a network of other activities. No activity is isolated. The activity system or network comprises the group of students who share a common problem space of having to study a

particular module, and who are motivated to solve their problem of having to pass the course by using tools (textbooks, previous theories, word-processing tools, etc.) to attain that object.

‘This motive gives sense and direction to actions or chains of actions, which are carried out by the subjects (individuals or groups), and which are oriented towards specific or finite goals’ (Blin and Munro 2008, 477).

According to Jonassen and Rohrer-Murphy (1999, 64): ‘(A)ctivities are the human interactions with the world, and the conscious activities that are a part of those interactions’. Furthermore, they assert that: ‘(R)ather than learning before acting, as traditional theories prescribe, Activity Theory believes *a priori* that the human mind emerges and exists as a special component of interactions with the environment, so activity (sensory, mental, and physical) is a precursor to learning’ (Jonassen and Rohrer-Murphy 1999, 64).

Thus, in a university course, learning is tied to what the learner does, in order to pass a course in terms of assignments, tests and discussions with peers or others.

An activity system has six main components: the subject (the participants in the activity) whose viewpoint is adopted, the mediating artefacts (tools), the object (the outcome of the activity), the rules, the community, and division of labour (Cole and Engeström 1993; Jonassen and Rohrer-Murphy 1999). The relationship in this system is driven by rules, which both enable and limit behaviour. (See Figure 1).

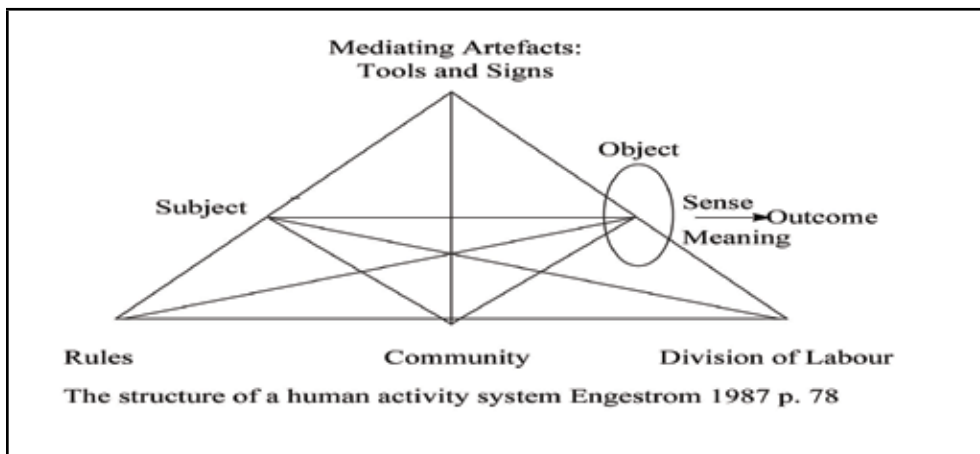


Figure 1: The structure of a human activity system (From: Engeström 1987, 78)

Warmington et al. (2005) summarise Engeström (1999), who suggested that Activity Theory may be summarized in the form of five principles:

1. The activity system is taken as the prime unit of analysis;
2. There are multiple actors in an activity system ;
3. The third principle is the historical dimension in activity systems;
4. Contradictions, as sources of tension, change; and development, therefore, is the fourth principle; and

5. The fifth principle proclaims the possibility of expansive transformations in activity systems.

Activity Theory is used to understand learning in terms of all the factors that impact on the learner, rather than only seeing learning as a process relegated to the mind of the student. The tutorials integrated ICT into the teaching and learning experience. The activity system for students has now changed; and this new change will probably lead to new changes being contemplated and or implemented in the future. This introduces a whole new dimension in the course's activity system from the previous activity system, in which tutorials were paper-based. Whereas previously the student had to navigate by attending formal scheduled tutorials, they now have to interact with the LMS, and the restrictions that it imposes on them in terms of time, format and instructions — in order to be successful.

Russell (2002) says that the world does not come neatly divided into activity systems. It is up to the researcher to define the activity system, based on the purposes of the research study, and to focus on the theoretical lens that activity theory provides. So, several activity systems are arguably in motion for a student. However, our article focuses on the online interactive tutorial-activity system.

To summarise, activities (doing the tutorials) are performed by subjects (students), motivated by a goal (learning and teaching), transforming an object (learning Operations Management concepts) into an outcome (knowledge of operations management concepts). An object may be shared by a community of actors. They must work together to reach a desired outcome. Tools, rules and division of labour mediate the relationship between the subjects, the community and the object.

For example, in order to complete the tutorial or the whole course (object), a student (subject) needs to make use of a word-processing application and a calculator (external artefact), while also considering a particular structure and genre of writing (internal artefact) learned previously. The rules that govern this activity include the timeframe of the course, anti-plagiarism rules, following the university code of conduct, etc. The community includes the lecturers, the ICT staff that provide the e-learning equipment and materials at the lecture venues, the library staff, etc. The division of labour refers to what is expected of the lecturers — in terms of lecturing, preparing notes, and from the students — in terms of e-peer assessment, writing tests and examinations, and submitting their tutorials. However, a strong note of caution has been sounded by an investigation which was conducted by Mouyabi (2010, 1187), who states that 'it is arguable whether or not e-learning offers global opportunities due to the technologies used and the ability to build in tools the environment that is never seen in classrooms'.

### **Peer assessment**

Peer assessment is an evaluation method, whereby students evaluate or judge each others' work or performance, according to set criteria (Falchikov 2001; Gouli et al. 2006). Traditionally, lecturers have been the custodians of credit-bearing assessment,

but there is an increasing trend in university courses where other forms of assessment, including self-evaluation and peer-assessment are increasingly being used. Asking students to evaluate their fellow students' work is justifiable from a number of perspectives. These include the fact that it contributes towards their own learning (Topping 1998); it increases a student's responsibility for his/her own learning (Brown 1998). It is also used as a method to diversify the learning experiences of students.

Assessment is an active process, encouraging reflection on and discussion of one's own answers: thereby, fostering a deeper approach to learning (Donaldson and Topping 1996).

It has also been argued that 'the experience of seeing multiple opinions on a piece of work' (Robinson 1999) promotes what Perry (1988) termed a 'relativist', as opposed to a 'dualist' approach to knowledge. This approach also alleviates a part of the marking burden, thereby allowing lecturers to concentrate more on teaching, learning and the moderation process (Bhalerao and Ward 2001). Furthermore, Roberts (2006, 6), states that peer assessment is 'the process of having the learners critically reflect upon, and perhaps suggest grades for, the learning of their peers', distinguishing it from group assessment in that students assess each others learning, even though the learning may have occurred individually, or at least outside of any formal collaborative groups'. This definition allows the use of peer assessment for learning by the 'peers' through analytical and critical expressions.

## **METHODOLOGY**

### **The activity system**

The subjects in this research project were second-year students enrolled in an Operations Management course at the University of the Western Cape, South Africa. Moving the learning interaction online (the mediated artefact) was seen as a way of dealing with large classes — without having to employ more tutors, and subsequently managing a multitude of tutors. However, going online does not reduce the number of people involved; it only reduces the amount of direct contact time. The trade-off is that the lecturer needs to spend more time preparing and managing the course content. The contact time was two hours per week; and we assigned two types of online assessments. The first type of assessment was a Multiple Choice Question (MCQ).

The second assessment instrument/learning tool was the online interactive tutorials (itutorials). These were conducted via UWC's in house developed e-learning learning management system (LMS). The LMS was designed to be able to incorporate module-specific functionalities, while the itutorials were designed to enable the students, not only to do the tutorials by entering the answers online, but also to enable the students to mark their peers' answers — by providing them with a rubric in the form of a suggested model answer or marking memorandum. We built

in a response mechanism, that is, a request for moderation, which we anticipated would be necessary in cases where students disagreed with a peer's marking of their assignment.

The tutorials system was a modified activity system, as it replaced an earlier activity system. This means that the online interactive peer assessment system represents the new tools and rules that mediate learning for students in this Operations Management course. The lecturer is the subject acting on the learners' understanding (object). This was transformed by using an online interactive tutorial (mediating artefact) to arrive at the outcome, which is the students' success in demonstrating knowledge of operations management concepts, theory and application. The tools include views on the nature of the subject, the assessment instruments, the online interactive tutorials and the peer assessment, including the final summative assessment (Gardner 2005, 94).

The IT programmer or designer of the interactive component in the overall LMS is one of the members of the community. The object-oriented nature of the activity is what gives it direction, as well as what distinguishes it from the other activities. The object should correspond to the motive that drives the system and the interrelationship of its elements (Meyers 2007).

In some instances, the object does not correspond to the motive for all the participants in the activity system. University students' motives are to pass a course, and not necessarily to learn as much as possible about a certain subject — which is the motivation of the lecturers and the general university community. There appears to be a contradiction here between the different actors. The introduction of the online participative peer-assessment device is a step to homogenise the objectives of all those involved. What students value, and how they learn, will depend on how the students view what matters in their assessment (Hardman 2005).

## **Research design and data collection**

An evaluative case-study approach was undertaken in this study. Data were collected through: (1) multiple choice questions (2) face-to-face interviews (3) open-ended-online questions and (4) feedback from students.

The project researcher interviewed the students to explore students' attitudes towards the new activity system, as well as to identify the issues that students were experiencing — for further investigation. In addition, we included four non-mandatory questions at the end of one of the MCQ tests. The questions were related to problems encountered when using the e-learning system, hours worked on the system, preferences for a tutor, rather than for an online system, and whether the student had learnt more when using the online system. In addition, on the day the students wrote their final assessment, we interviewed 40 students, and asked them evaluation-type questions regarding online peer assessments. The interview data was coded into different conception and approach categories which was then analysed.

## Method of analysis

The responses to the 40 interview questions were analysed by two researchers following a qualitative methodology in terms of its emphasis on collecting data in the form of interviews, analyzing the data by identifying qualitative relationships and displaying its outcomes in ordered categories. Conceptions of learning by way of online-peer-assessment were analysed according to the overall responses to the questions.

## FINDINGS AND DISCUSSION

### Lack of motivation: The reliability of peer assessment

One of the major problems we experienced was that students did not want to assess the tutorials of their peers; or if they did assess them, they did not give any constructive comments, as required. This is a point of contradiction in the activity system. This means that the activity system needs further adaptation or addition. This could be in the form of training for students on how to do peer assessment, as well as training in the new role that students are expected to play in a learner-centred learning environment.

The inability of their peers to assess appropriately and correctly was an issue that was consistently highlighted by the students (O'Grady 2004). In addition, students felt that 'other students' were less able to do the assessment than they were — based on their assessment of their peers — or less able than the course lecturers.

Despite the fact that students found the inclusion of the model answers helpful, some indicated that they had still struggled with the assessment process.

You cannot mark another student, based on what you yourself do not know, and just give marks because you are not sure about it yourself. I only really understand this course now at the end.

There were also various statements about the poor quality of student marking (see the next section on receiving feedback), which underscores this impression that students were not able to carry out peer assessment properly. Students felt that many of their peers were 'not interested in marking properly', thereby indicating a lack of incentive for doing assessment correctly.

I feel students aren't exactly putting much effort into doing the marking.

Students also do not care about your work, so one gets bad results. I would prefer [the course to be taught] using a traditional style tutorial, because some students do not take the [marking] seriously.

They do not bother themselves by marking other student's tutorials. If they do mark the tutorials, they just mark for the sake of doing it — without thinking about the



future of the student that he or she is marking. It would be better if the tutors could be the ones who mark our work.

Many students felt that the quality of peer assessment was poor, and that they had received low quality feedback. Low quality feedback compromises the learning that is possible. Fifty percent of the class surveyed were of the opinion that the marking was fair, but a large percentage (42%) felt that the marking had not been fair (see Table 1).

The above comments also speak to the notion of ‘contradictions’, as a means towards change and development in the activity system. Obvious shortcomings are highlighted in the above examples; and if the subjects are to achieve their objectives in the future, then the activities will have to change, or the roles of the community, or both.

Table 1: Student perceptions on fairness of marking  
Was the other students' marking of your work fair or not fair?

		Frequency	Per cent	Valid per cent	Cumulative percent
Valid	It was fair	20	50.0	51.3	51.3
	It was not fair	17	42.5	43.6	94.9
	Sometimes fair and sometimes not fair	2	5.0	5.1	100.0
	Total	39	97.5	100.0	
Missing	NAV	1	2.5		
Total		40	100.0		

### Student attitudes toward the E-learning system

It seems as if most students preferred the online tutorials (see Table 2). This happened despite the majority reporting to have experienced problems with the system. This is possibly because of the convenience of being able to do their tutorials at any time within the stipulated timeframe, as well as at any place. However, many of them admitted that it took more time — than other similar courses — to work on the tutorials of this course.

Students were prepared to spend more time on this course, because they felt that they had learnt more using this mode and method, as demonstrated by the data found in Table 2. More than 84 per cent indicated a preference for the online tutorials while as many as 81 per cent indicated they had learned more this way.

Table 2: Whole class data

Questionnaire Item	Yes	No	Total
1: Did you experience problems with the e-learning system?	84%	16%	100%
3: Do you prefer online interactive tutorials to tutorials with a tutor?	84%	16%	100%
4: Do you think you have learnt more with the online interactive tutorials than with tutorials with a tutor?	81%	19%	100%

### ***Developing a learner-centred approach***

Have we developed a learner-centred approach or have we merely moved the teacher-centred course online? We have in a sense, perhaps only replicated the teaching-oriented model. In some ways, we have moved towards a learner-centred approach by involving students in peer assessment, but there remains a further journey ahead of us. Activity theory indicates that lecturers and students have different roles to play. Division of labour, so that the outcomes are met, is predicated on the interactive relationship, the guidance of the lecturer in guiding the interactions, and the willingness of students to engage in the learning task (Hardman 2005).

When asked what kind of teaching approach they preferred, a few students made observations that using the rigid online system taught students to work professionally and to meet deadlines.

Online tutorials [give] you responsibility ... that if you didn't submit by the due date and time then you could forfeit your mark. That alone teaches you to be professional and responsible, so that in future you can meet your deadlines at work without any excuses and extension dates.

Students who specified that they preferred to have both (online interactive tutorials and personal tutorials) rather than one or the other — typically focused on the benefits of personal interaction. When asked what kind of teaching approach they preferred:

Both. I enjoy interacting in the tutorials, as you get to ask questions that at that time you would want to know. Sometimes at the actual lecture, you forget to address the question you want to. Having a set time to go to tutorials makes it more effective for me, as I now have a set time for the specific subject. The online tutorials mean that you get to do them at home, which is convenient for me, personally; but it does not allow me to address certain questions to anyone if I have them.

### **Challenges of a learner-centred approach: Understanding the difference between a model answer and all potential answers**

However, the biggest concern remains whether [Operations Management] theory application is definitive — because the model answers seemed to propose only one way of looking at theory application, which posed a challenge for us as peer assessors, particularly in marking open-ended questions (suggestions / how do you think? ... etc.).

The above quotation poses a grave concern because a model answer only gives a general perspective of the potential answer. The students' experience is limited, so this could pose a problem if the student is only relying on peer assessment. But it also poses a learning opportunity. If the model answer is going to be continually referred to, then we have to construct it in such a way that it engages the students in thinking

more broadly. Perhaps multiple answers should be provided, as well as additional notes, which highlight how the question can be looked at differently by different students, and what the potential solutions are, as well as to where the students might be going off the mark.

The model answers made me see my own mistakes in answering. I got a chance to have a look at the model answers, and I got a chance to see where I went wrong.

The above quotations indicate that some of the students did benefit from the model answer. It seems to indicate that peer tutoring is potentially a meta-cognitive tool; it extends students' opportunities to focus on their learning and the way in which they are answering the questions. The model answer is, therefore, a way in which they can check their own learning instantaneously. In a way, this compensates for the contact with the lecturer because the student is able to see more explicitly what and how the lecturer (the expert) thinks; and hence this is modelled for the student.

The detail of the model answer serves as feedback. Students probably never get as detailed a feedback in their regular tutorials. However, we need to revisit the model answers to ensure they provide better feedback, or serve as a better meta-cognitive tool. A suggestion here is that we should include links to further reading or references, so that students can have access to resources that might increase their understanding.

### **Learning through peer assessment**

Evidence from students feedback indicated that the students felt that they had learnt through the e-peer assessment. In the tutorial responses, 58 per cent reported that they had learnt from assessing their peer's tutorials. Students indicated that they had benefited from doing the peer assessment, and were able to improve their own understanding. Therefore, the students felt that their understanding of the subject matter had improved through peer assessment.

Peer assessment served a formative role in developing students' understanding of the subject matter (Hardman 2005).

There were problems and positive experiences with e-peer assessment. In the final questionnaire, about half of the students reported that they did not learn from assessing their peers; because the answers they were reviewing were often wrong (see Table 3). However, the tutorial responses showed a more complex learning mechanism, since students were being exposed to incorrect answers, which educated them about what Operations Management is not. Also, it could be argued that even though students did not feel as if they were learning during the process, they actually were learning.

Table 3: The impact of assessment on student understanding  
 Marking the other students did not help my own understanding much, because their answers were often wrong

		Frequency	Per cent	Valid per cent	Cumulative per cent
Valid	Agree	21	52.5	52.5	
	Disagree	19	47.5	100.0	
	Total	40	100.0	100.0	

Other students reported on the lack of time that prevented them from marking carefully; and this supposedly affected their learning in the process:

No did not learn from marking, I was always in a hurry when I marked and didn't, take note.

Students had one week to submit the tutorial, and the peers had a few days in which to assess more than one student's tutorial. In addition, access to computers and network downtime might also have impacted on students' ability to assess in the time allocated. Time to assess was, therefore, spent not only on assessment, but also in trying to understand the content in that short time. This compromised the assessment process. This course placed added demands on some of the students, because it took time away from other courses on which they had to concentrate.

I believe the online style was a bit more time consuming. At many times, you had to wait for a computer before you could start typing. There were many problems on the system. We had little interaction with the lecture and fellow students doing this.

May I also express my concerns with the amount of tutorials that we were doing. It is too time consuming, and was actually interfering with the time allocated to other modules. As a part-time student, I have to juggle my time to make a success of my studies; and I felt that the load of work was too much to handle.

Those students that mentioned a learning effect reported both enhanced understanding of the course content, and of their answers from reviewing other students' work. They also commented that it had helped them prepare for the test. Learning stems from both having access to the model answers, as well as comparing your answer with that of another student's work.

The fact that students had to revise their work helped them to focus more on what was important.

## **BOX 1: Comments from students who reported a positive learning effect**

Q2 'I learned a lot from marking others students' tutorials. It was very helpful and it enhanced my understanding of the course content.'

Q2 'Yes, I did learn from marking other students' work. I got a chance to look at the [model answers] and I got a chance to see where I had gone wrong.'

Q2 'It gave me a better understanding of the work and showed me where I had gone wrong. It was also good revision for the tests.'

Q2 'Yes, I learnt a lot by marking tutorials, because it was easy for me to compare my answers and make corrections for the next tutorials on how to answer: for example, in full sentences or maybe in doing calculations.'

Q2 'Marking other students' tutorials was definitely useful, as it allowed for exposure to a range of different perspectives on the same topics. One definite advantage was that it exposed me to different examples of basic concepts — which made the theory more relatable.'

### **Discussion**

In summary, the comments from the students in their role as peer assessors were somewhat negative. This is to be expected because we had changed the expectation of what is required from that which a student could expect if s/he were doing a typical course where peer assessment was not a requirement. Negative comments can also be attributed to the fact that this was probably their first exposure to peer assessment, online peer assessment, and to an introductory basic course with new content for students.

They, therefore, felt under-prepared for peer assessment. Most of the students were happy with the flexibility afforded by the online interactive tutorials. Weaknesses identified include that there was not enough involvement of students in the re-design of the activity system, nor were the students adequately trained in terms of peer assessment or for using the LMS (McAtominey and Cullen 2002; Ecclestone 2000).

Most of the students were happy with the course, despite problems with the system because of the interactive nature of the course (84% of the students reported in the affirmative).

### **CONCLUSIONS**

We asked the question earlier: 'Does an online peerassessment tool facilitate or lead to a learner-centred approach to learning?' A simple answer would be yes, since firstly, the students had a greater choice in when and where they could do their itutorials. Secondly, they were active participants rather than passive consumers of the content; and thirdly, they had more control over their learning by being able to participate in selfassessment and in peer assessment.

We also asked the following sub-question: Does changes in the learning activity system that shifts some control and decision making to learners lead to them directing their own learning? Overall, it seems, as if learners' attitudes to taking responsibility for their own learning had improved. They seemed to welcome the initiative but questioned their ability to do so. It is true that online systems by default provide

students with more choices, provided that they have access to it. Thus they had more opportunities to direct their own learning.

In implementing this online interactive tutorial system and the use of peer assessment, there was conflict with the culture of the University (where 95% of the courses were being taught from a teacher-entered perspective) and the School of Business and Finance in terms of buy-in and provision of resources. What is required is a shift in the roles played by the stakeholders in the learning process; students have to be responsible for learning, lecturers for guiding this process, and university administrations making resources available to facilitate e-learning. More specifically for students it was the practice of learning and working together across disciplines. It provided students with the chance to learn about their own and their fellow-students to contribute to knowledge sharing, and as a result to learn in a new and stimulating way. The use of online peer assessment regardless of its challenges provides a useful way to connect with the students in an ongoing learning society.

E-peer assessment worked, but again there needs to be role clarity and a willingness on the part of the students and the lecturers to shift their role in learning. Students and lecturers also need to change how they view the role of assessment in their learning. This requires lecturers to adopt a different view of learning than the traditional banking model which conceptualises learning as the internalisation of discrete information and skills, to a conceptualisation where 'learning is viewed as expanding involvement — social as well as intellectual — with some activity system over time' (Russells 2002).

The re-design of the activity system was not entirely learner-centred, since the overall context of the course was still encapsulated with a teacher-centred approach, which is the trend within our institutional context. The challenge is to develop an interactive tutorial that can incorporate constructivist learning principles and practices, in spite of the institutional and pedagogical constraints.

Overall, the data show that there is potential for e-peer assessment to support learning and learner-centredness, but that existing roadblocks need to be removed (including technical access problems, timing, technology failure, incentives and support for better assessment). A strongly emerging theme was that of students preferring to get input and marking for their tutorial answers from lecturers or trained tutors, since they do not feel they get adequate value from the feedback of their peers. This speaks to the old activity system prior to the e-peer assessment, where the lecturer was the judge. This is a dimension that needs to be addressed since peer learning and assessment is a key step toward learned-centred teaching and learning.

Surprisingly, students were found working in self-organised groups (and getting feedback from their peers) and finding it very useful. This demonstrates that, informally, students do engage in peer assessment and feedback and that this can be used as a basis for building formalised e-peer assessment.

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## NOTES

1. Vygotsky (1978) proposed that a human being does not directly react with others, but interacts with others through the use of tools and signs.

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