
Students' perceptions of Computer Assisted Learning: an empirical study

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Abstract: Research indicates that although students are the ultimate 'beneficiaries of Information and Communication Technology (ICT) – based' higher education learning their voices have been neglected in its development. This paper attempts to redress this imbalance by illuminating students' perceptions of the use of Computer Assisted Learning (CAL) in an undergraduate accounting module. The findings suggest that students are in favour of using EQL in a supportive role only. Interviewees rejected the idea of replacing human tutors with machine tutors and they believed that most of their learning occurs in tutorials and ranked these as the most important component of the module.

Keywords: CAL; computer assisted learning; EQL; students' perceptions; students' learning approaches; e-learning.

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1 Introduction

Increasing use of Information and Communication Technology (ICT) (Lareki et al., 2010; Lytras et al., 2007; Turan and Khasawneh, 2008) in higher education learning and teaching is a global phenomenon that is evidenced by the billions of dollars invested in ICT in various universities around the world (Selwyn, 2007). The increasing use of computer applications in college education is likely to have important effects in the teaching and learning of various subjects (Liu et al., 2010). However, the emphasis of

previous research so far has been on development rather than on the analysis and evaluation of computer applications (Hejmadi, 2007; Spellman, 2000). Further, the research and evaluation that has been done so far into the students' use of computers in learning has focused on the teacher's perspective. Little research has been done from a student focused perspective (Damodharan and Rao, 2009; Prosser, 2000; Schmid, 2008). Selwyn (2007) argued that although students are the ultimate 'beneficiaries of ICT-based' higher education learning and teaching their voices have been neglected in its development. This paper attempts to redress this imbalance by illuminating some of these neglected, but important, student voices and concerns in the above context of CAL.

Given the importance of student-centred learning in higher education in general (de la Sablonnière et al., 2009; Ramsden, 2003) and in accounting education in particular (Ballantine et al., 2008; Joshi and Chugh, 2009; Lont, 1999) research needs to be carried out from the students' perspective. The aim of this paper is to examine students' perceptions of CAL in general and EQL (CAL courseware) in particular. As opposed to the previous questionnaire based studies, the research method followed in this study applies the 'phenomenographic method' that involves the use of a series of interviews to gather information (Margaryan and Littlejohn, 2007). It provides rich insights into the students' learning experience of CAL. This method is relatively under-utilised in the accounting education literature (Paisey and Paisey, 2004). Paisey and Paisey (2004) called for further work using the interview method. While most of the previous accounting education studies examined students' perceptions of CAL mainly from the context of financial accounting (Aisbitt and Sangster, 2005; Lane and Porch, 2002; Marriott and Lau, 2008; Sangster, 1992) and taxation (Dillon et al., 1998; McCourt and Radcliffe, 2000), very little research has been conducted so far from the context of management accounting (at least from a UK background). The current study seeks to address that research gap in the literature. The main objective of this paper is to illuminate students' experiences and perceptions of the use of CAL to support teaching in a first-year undergraduate management accounting module.

This study is conducted in the context of the module: 'MGT 102: Introduction to Management Accounting'. It is an undergraduate first year module in the Management School of a UK university. The module consists of four essential components: lectures, tutor led tutorials, own reading and self-supervised tutorials on EQL.¹ In this paper we are particularly interested in the students' perceptions of the fourth component of the module in relation to the other components. The fourth component is an important part of the module and is used to support the weekly lectures (2 h) and weekly tutorials (1 h). This gives the students the opportunity of taking some responsibility for their own learning and, therefore, developing a life-long learning skill through independent study. The module is aimed at developing a basic understanding of management accounting techniques. This is to be achieved in two parts. Students are supposed to learn various management accounting calculations in part one. The second part is aimed at developing critical understanding of management accounting concepts and philosophies. The use of EQL is mainly aimed at helping students with part one of the modules. A comparison of module contents and EQL contents is provided in Appendix A.

In the next section of the paper students' learning approaches are discussed followed by a sub section on CAL in the context of accounting education. Section 3 of the paper discusses the research design and methods. The research findings are presented in Section 4. Finally, summary implications of the study and conclusions are provided in Section 5.

2 Literature review

2.1 Students' approaches to learning

Students approach their studies in two ways: surface and deep learning approaches. These approaches are derived from the original empirical research by Marton and Saljo (1976) which since then has been elaborated by others (Biggs, 1987; Entwistle, 1981; Mellanby et al., 2009; Ramsden, 2003; Yang and Chang, 2009). Many studies in the accounting literature draw upon the higher education literature to discuss the learning approaches of students in some details (Ballantine et al., 2008; Beattie et al., 1997; Sharma, 1997).

Ballantine et al. (2008) did a longitudinal investigation of accounting and business students' approaches to learning over time using a specific learning environment, a case study method. They revealed that changes in students' approaches to learning over time were not influenced by gender or programme of study. However, they found a significant increase in students' approaches to surface learning. Beattie et al. (1997) argued that intervention strategies aimed at the improvement of teaching and learning in accounting education require an understanding of the complex and contingent nature of learning approaches. Sharma (1997) empirically examined accounting students' approaches to learning and the influence of learning context on their learning approaches. He found that students' perceptions of learning context (curriculum, assessment methods, course delivery method etc.) influenced their learning approaches.

It is argued that surface learning approach does not lead to high 'academic achievement' (Rodriguez, 2009). Surface learners resort to rote memorisation of the facts and 'reproduction of knowledge' (Ellis et al., 2008, p.269) to pass the examinations. They "tend to focus on specific comparisons in the text, or the sequence of the text, but not the main parts ..." (Hoque, 2002, p.142). On the other hand, a deep learner vigorously interacts with the content and takes a keen interest in the subject matter. An important attribute of the deep learner lies in his or her desire to search for meaning of the text in order to understand the issues involved. A deep learner spends more time on reflections and understandings as opposed to rote memorisation. The distinction between the two approaches is, however, rather more complex (Beattie et al., 1997). It is difficult to neatly divide students' learning approaches into the deep and surface categories (Sharma, 1997). A student can use both approaches for different parts of their study (Laurillard, 1997, 1978).

Laurillard (2009) argues that ICTs are not designed with the educational objectives of the teachers and learners in mind. However, they can be used effectively to improve learning experience of the students. When students use CAL with the intention to learn, reflect and understand the subject matter, it can be called a deep learning approach and when the intention is just to complete the task that will be a surface learning approach (Ellis et al., 2008; Prosser, 2000). If the objective behind the introduction of CAL in accounting education is to create a better learner by improving his or her learning experience then it might be interesting to examine whether CAL courseware, like EQL, promotes a deep or surface approach to learning.

2.2 *Computer Assisted Learning (CAL) in accounting education*

CAL can be used to play both a supplantive role and supportive role (Huczynski and Johnston, 2005; Sangster, 1992). In a supplantive role CAL replaces the lecturer/tutor. On the other hand, in a supportive role it does not substitute the lecturer/tutor rather it gives an opportunity for practice and for self-assessment and also to reinforce the points made by the lecturer/tutor. While some studies report the use of CAL either in a supportive role (McCourt and Radcliffe, 2000; McInnes et al., 1995) or supplantive role (Lane and Porch, 2002), the respondents of the study by Sangster (1992) used CAL in both supplantive and supportive roles. Supplantive CAL may have the benefits of reduced teaching costs and free staff times more for research activity. On the other hand, supportive CAL will increase teaching costs and reduce staff time for research because of additional cost involvement and staff time spent for developing courseware or selecting off the shelf software (McInnes et al., 1995; Sangster, 1992). McInnes et al. (1995) found that when used in a supplantive fashion CAL did not adversely affect the examination performance of students but CAL in a supportive role did not improve students' examination performance. On the question of how students experience supplantive CAL, the study noted that CAL had an adverse effect on students' interest in accounting in the sense that students who opted to use CAL, although initially very enthusiastic about accounting, their enthusiasm reversed by the end of the course.

Although McInnes et al. (1995) did not find any encouraging results in terms of CAL's impact on student performance, in another comparative study it was found that students using CAL had achieved significantly higher examination performance as well as higher quality coursework (Jensen and Sandlin, 1992). The reasons noted by the authors for superior performances by the CAL group were: use of computers in the presentation of materials, quality of course materials and its ready availability for consultation and review. Thus, we see that the impact of CAL on accounting students' performance is inconclusive and mixed. A similar conclusion was reached by Boyce (1999) in his review of studies related to the impact of CAL on student performance.

The extant literature in accounting education mostly explores the impact of CAL on student performance in terms of examination and assessment results (Aisbitt and Sangster, 2005; Friedman, 1981; Groomer, 1981; McInnes et al., 1995; Sangster, 1992), which reflects a narrow view of learning and does not sufficiently reflect the quality and depth of the learning experience (McInnes et al., 1995). It does not tell us much about students' general perceptions of CAL and the students' learning experiences while using computer-based courseware.

So far little research has been carried out to study student perceptions of CAL in the accounting context. However, a few exceptions include Lane and Porch (2002), Marriott and Lau (2008), McCourt and Radcliffe (2000), McInnes et al. (1995) and Sangster (1992). The study by McInnes et al. (1995) provides limited insights in this area as noted above. They examined the effectiveness of PEER accounting software from the students' perspective and found that students preferred traditional lectures and tutorials to PEER. On the other hand, Sangster (1992) found that majority of students preferred PEER as opposed to traditional lectures. One reason for such contradictory results could be that while the financial accounting students in McInnes et al.'s (1995) study used CAL in a supportive role, students in the Sangster's (1992) study used it in both supportive and

supplative roles (McCourt and Radcliffe, 2000). Via a questionnaire survey Lane and Porph (2002) examined, *inter-alia*, students' attitudes and perceptions towards CAL and accounting as a subject. They found that students' perceptions of CAL as well as accounting as a subject were negatively affected by its use. All of these studies were mainly conducted from the context of financial accounting. Marriott and Lau (2008) reports the results of a qualitative investigation of first year financial accounting students' use of online assessment. Their findings indicate that online assessment helped students to improve their performance and, also, students perceived this type of assessment as having a favourable impact on their learning. Their study supported the findings of previous work in this area by Aisbitt and Sangster (2005).

In the area of taxation, using the Technology Acceptance Model (TAM) (Davies, 1989; Teo et al., 2009; Turan and Khasawneh, 2008), it was found that accounting students' acceptance of 'Turbo Tax' (a tax preparation software) was generally higher than expected (Dillon et al., 1998), but the study does not enlighten us as to what led to such higher acceptance and whether the use of such software resulted in any better form of student learning (deep vs. surface). Within the UK context, McCourt and Radcliffe (2000) examined undergraduate students' perceptions of EQL tax software. In this study students perceived EQL to be as effective as lectures and taught tutorials and they believed it was an interesting and stimulating learning tool. However, they considered it as an inadequate delivery medium for conceptual and theoretical material making it inappropriate for use in the supplative role although they strongly supported its use in the supportive role.

In the non-accounting contexts, studies which examined students' perceptions/attitude towards CAL gave mixed results. One group of studies suggests that CAL remains unpopular with most students who prefer to learn in a more traditional teacher-directed form (Oliver and Omari, 2001; Shaw and Marlow, 1999; Spellman, 2000). Another group of studies indicates that CAL can improve/enhance students' attitude/perceptions towards their course of study, course quality and organisation (Huczynski and Johnston, 2005; Kulik et al., 1980; Leidner and Jarvenpaa, 1995). However, in a recent literature review of the use of CAL in nursing education Bloomfield et al. (2008) found limited empirical evidence on the use of CAL in clinical nursing education.

3 Research design and method

3.1 Research strategy and its justifications

The purpose of this study is to gain rich insights into why and how first year students perceived and experienced the use of CAL in accounting discipline. For this purpose a phenomenographical approach has been followed (Margaryan and Littlejohn, 2007; Marton, 1994). According to Marton (1994, p.4425) this approach involves an "empirical study of the different ways in which people experience, perceive, apprehend, understand or conceptualise various phenomena in the world around them". The objective of the current study stated above fits this approach very well. Many previous researchers have used this approach to examine students' approaches to learning (Ellis et al., 2008).

Such an approach is socially constructivist in nature (Burrell and Morgan, 1979) and requires the use of an in depth interview based qualitative research method (Holley and Oliver, 2010; Morgan and Smircich, 1980; Silverman, 2006). The aim 'is to describe

qualitatively different ways of experiencing phenomena' (Jones and Asensio, 2001, p.315), in this case CAL. Such an approach enabled an understanding of 'students' interpretations and subjectivity' (Hoque, 2002, p.143) of CAL in the context of the case study module MGT 102. Hoque (2002) examined students' perceptions of the use of journal articles in accounting via interviews with six students.

The face to face in depth interview method adopted in this study enabled a deep understanding of lived experiences and perceptions of the students interviewed in this study. Such an approach is laborious and time consuming. It creates enormous amount of unstructured data to be analysed. However, it helped to achieve the objective set out in this paper. In this study knowledge was developed in a socially constructive manner (Burrell and Morgan, 1979) and is not free from research bias. The researcher here is not a mere independent observer. This is because the researcher is intimately involved in the construction of narratives in the story. In this process a socially constructive nature of the world is assumed. While such an assumption is not incontestable it is believed to be more plausible in the context of this study. The findings from this kind of study cannot be generalised. However, that was not the objective of this study. Despite these weaknesses the approach used in this study helped to gain access to the rich experience and explanations of the students' perceptions of CAL.

3.2 *Participants*

Five of the students studying for the module were interviewed for the purpose of this study. The objective was to illuminate the students' experience and perceptions of CAL rather than making predictions about it. Care was taken to select interviewees from different gender, ethnicity and age groups. More than 80% of students in the cohort were British students. Student interviews were followed up by several e-mail communications where further clarifications were requested. All of the interviewees were first year students studying for a BA in Business Studies. They were aged between 20 and 25 years and were studying in a British university. The brief profiles of the interviewees are given in Table 1.

Table 1 Profile of the interviewees

<i>Interviewee</i>	<i>Gender</i>	<i>Nationality</i>	<i>Extent of EQL use</i>
One	Female	British	Moderate
Two	Female	British	Moderate
Three	Female	British	Moderate
Four	Male	Indian	Low
Five	Male	British	Moderate

3.3 *Data collection and analysis*

The interviews were conducted in the form of a dialogue together with a promise of anonymity. The purpose was to let the interviewees speak freely and share their learning experiences in their own terms. The researcher attempted to intervene as little as possible with a view to give them a chance of uninterrupted reflection on their own perceptions and experience of CAL. This approach helped to build a social constructivist narrative

of the students' perceptions of CAL in accounting. All interviews took place in the researcher's office. The researcher was not involved in the teaching and delivery of the module. The interviews began by welcoming the interviewees. Then as part of the interview protocol (see Appendix B) they were briefed about the project and its purpose. Most of the questions in the protocol were asked in an open ended fashion with a view to explore their perceptions towards in CAL in general and EQL in particular. The interview protocol was used as a rough guide in the discussion.

All interviews were tape recorded using a standard mini tape recorder and transcribed fully by the interviewer. Using the procedures described in O'Dwyer (2004) interview transcripts and their summaries were analysed manually to look for broad themes and emerging patterns in the data. These themes are presented in the next section and direct quotes from the transcripts are used to substantiate the findings.

4 Research findings and discussion

4.1 Learning with EQL

Students' learning strategies and the extent to which EQL helped in their learning were a recurring theme in the interviews. Most of the interviewees found EQL helpful in their learning. It was stated that it helped to enhance or clarify the understanding of various management accounting techniques. They think it is a different way of explaining things.

"It's not like lectures. It's a different way. It's just that you can go through it as fast as you like. You don't have to keep up with the lecture notes. You can go back and do it in your own time. If you don't understand a particular question or if you find something really hard in the lecture or in the tutorial you can go to that particular bit in the EQL and see how they explain it. I found it really helpful." (Interviewee Two)

Another student responded in a similar fashion,

"They [EQL sessions] were quite interesting. I think I'd use more of it. It's like a different way of explaining things. I think it'll be useful to have it. The additional exercises are quite helpful." (Interviewee Three)

Most of the interviewees saw the benefit of using it as a revision tool only to get a high score in the examination or who are sceptical about the extent of learning that is possible with EQL. For example,

"I don't think that very much learning occurs in EQL. I think it's an aid to revision. I'm not sure EQL, on its own, would be enough to get me through the exam." (Interviewee One)

Another sceptical interviewee pointed out the limited usefulness of EQL:

"I felt it did help but it was far too time consuming when tutorial questions were more effective. I don't believe it was worth the time needed." (Interviewee Four)

Given the technical nature of EQL and its relation with the part one of the module only, the above quotations could be interpreted as strategic use of CAL to achieve surface learning objectives rather than deep learning objectives (Ballantine et al., 2008; Beattie et al., 1997).

4.2 *Role of EQL in the module*

All of the interviewees expressed the opinion that it should only be used as a supportive element (Huczynski and Johnston, 2005; Sangster, 1992) to the lectures and tutorials. None of them wanted to see EQL in a supplantive role (Huczynski and Johnston, 2005; Sangster, 1992) replacing the lectures and tutorials.

One interviewee argued that the principal role of EQL is to reinforce the materials taught in the lectures and the tutorials:

“I think it reinforces the materials that you are taught in the lectures and the tutorials.” (Interviewee Two)

They noted that EQL reinforces the concept learned in lectures by putting it into practice. They also believed that EQL helps to achieve technical proficiency on a particular topic by practicing many different exercises on the same topic. Moreover, according to the interviewees, it can be used as an alternative source of explanation or clarification if they could not understand a particular point through the explanations given in the lecture and the tutorial.

Another important role of EQL is to provide a flexible and independent learning facility. The present university environment encourages students to learn independently. Developing and promoting learners’ autonomy (Smith, 2008) is essential to the empowerment of students in higher education (Benson, 2007; Benson and Voller, 1997). Undoubtedly, one of the objectives of using CAL courseware, like EQL, in higher education is to promote learners’ autonomy and thereby reducing staff time required to respond to students’ queries. The idea is to give more control to the learner by allowing him/her to learn at his/her own time and pace. In an exploration of how EQL can help independent learning one student responded as follows,

“I think it helps to promote independent learning. You can use it whenever you like – in your own time and pace. So it’s giving you the option of learning on your own.” (Interviewee Five)

“Each component of the module is different. The lectures give you one thing, tutorials give you the opportunity to ask questions or something else and EQL allows you to work through things in your own time.” (Interviewee Two)

Thus, the above discussion suggests that EQL should be used in a supportive role and that it helps to reinforce the materials taught in lectures.

4.3 *EQL and tutor-led supervised tutorials*

Another interesting theme emerging from the data was related to students’ attitudes towards tutor led tutorials as opposed to EQL. All interviewees agreed that tutor led tutorials played a crucial role in their learning process.

“I learned a lot in tutorials about how to approach a question and how to work it out. I mean that’s quite valuable. May be that I’m approaching the example in a different way. And then Bill (tutor) shows an easier way of doing it.” (Interviewee One)

Another respondent very firmly talks about the usefulness of tutorials,

“It definitely helps. Because smaller groups give you the chance to ask questions about things that you still didn't understand. It's being able to get someone who will be able to explain it over and over again.”
(Interviewee Two)

So how does EQL stand in relation to the tutor led tutorials? What makes it different from the supervised tutorials? One interviewee puts it in this way:

“I can ask questions in supervised tutorials. I can interact with my tutor. And also I can see what other peoples in the class are doing. I think EQL is also interactive in someway apart from that you can ask questions and can get direct answers in supervised tutorials. Tutorials can be tailored to my individual requirements whereas EQL is more generalised.” (Interviewee Three)

“It's [tutorials] actually doing things with someone helping you if you get stuck. Whereas in EQL if you get stuck, you don't understand anything, you can't get any help. There is no one around for help. It's only a computer.”
(Interviewee One)

When asked a speculative question about whether they would prefer tutor led tutorials to EQL four out of five interviewees said they would prefer the supervised one. Only interviewee three favoured both:

“In EQL you don't have to go through all the questions as long as you know where you going. If there is a topic that you don't know very well you spend more time on it. In tutorials you have to go through all the questions and also you can't go back to last week's tutorials because of the time pressure.”

However, in response to the question whether it would be feasible to replace human led lectures/tutorials with computerised lectures/tutorials, she (like all other interviewees) strongly opposed such an idea.

“No. I prefer a combination of both as it is now. Because there are advantages in both. If you're dealing with a question or a topic and if EQL does not give a clue on that you still have the option to go to your tutor. And, also, there could be people who would like EQL while others would still prefer tutorials.”

Similarly, a number of other interviewees opposed the idea of replacement saying,

“It depends on the subject taught. For a subject like management accounting I'd say no. I prefer someone to introduce things to me. I'm not used to mechanised teaching ... If you can get used to mechanised teaching at a very early age I think only then it might be OK. You can't really interact with the machine. Even if you can, that's not going to be very lively and enjoyable. Moreover, the body gestures of the lecturer/tutor are important.” (Interviewee Four)

“No. Absolutely not. I find tutorials the most valuable part of the course. Often I did not need either the lectures (reading at home or looking over handouts would have been preferable) or EQL, which just wasted my time. Tutorials, however, allow you to make sure are on the right track or if you are not you have the chance to see how the questions should be done and if you are stuck you have the choice to talk to the tutor. It is the tutorials that will have got me through this course not the lectures or the EQL and I would never ever want to have the tutorials swapped for EQL.” (Interviewee Five)

Although accounting literature suggests that CAL should target technical/applied content of the accounting curricula, not theoretical and conceptual materials (Boyce, 1999)

generally interviewees are not prepared to accept a machine as a replacement of their lecturer or tutor. However, they also opposed the idea of removing EQL altogether.

4.4 Most important and least important component of the module

Given the time dedicated to lectures it could be expected that students would rank it as the most important component out of the four components in the module. In fact, the interviewees of McInnes et al.'s study (1995), who used PEER software for an accounting course, did rank lectures as the most important source of information. In the lectures important information is given by the lecturer who designs the entire module and sets the examination paper. Contrary to this expectation, four out of five interviewees voted in favour of tutor led supervised tutorials as the most important component of the module.

“I think most important would be the tutorials because of the interaction with the tutor. The lectures are obviously important. It gives you the materials needed. But tutorials are more important because you can ask help for things that you don't understand.” (Interviewee Two)

However, given the applied nature of accounting it is not surprising that students would prefer to learn ‘by doing’ in the supervised tutorials. Students think that is the best way of achieving problem-solving skills that are essential for the module. In contrast to the students’ preference for tutor led tutorials in an email communication to the researcher the module leader commented that:

“I found it very interesting that tutorials are the most valued aspect of the module (we have been thinking of reducing them next year).”

Only one interviewee ranked his own reading as the most important element.

“I think it's my own reading. Because in lectures you've got things put up on the board and you need to take notes. If you didn't read your textbook you're not going to do well anyway in tutorials and EQL ... You're better off reading your textbook. That's why my own reading is so important.” (Interviewee Four)

While the importance of reading cannot be over emphasised in the higher education context, four out of five interviewees thought it is the least important component of the module saying it could be quite ‘boring’ reading a textbook, particularly an accounting text. This finding is consistent with McInnes et al. (1995) and Sangster (1992). It is true that by repeatedly practicing a set of numerical questions and answers students can achieve one of the learning outcomes of this module (to be able to do certain calculations). In this way they can probably get away without doing the background reading. However, without detailed background reading one cannot possibly have a proper understanding of the theoretical aspects of management accounting or the philosophy behind those calculations which could be rather more important to a deep learner.

In order to explore how EQL works as a whole in the module specific interview questions were asked about the relationship between the lectures, tutorials and EQL. Some responses describing the relationship were as follows,

"I think they all complement each other. They all help the understanding. Each component is different. The lectures give you one thing, the tutorials give you the opportunity to ask questions or something else and EQL allows you to work through things in your own time. It works together really well. We need all three of them." (Interviewee Two)

"I think its all work together. Because you're taught things in the lectures, then you put it into practice in tutorials and EQL. It may make sense when the lecturer write down all the questions and answers but when you actually try it by yourself it shows how much you've learned in the first instance and also it shows what you didn't understand. You've got to be able to do it by yourself." (Interviewee Three)

5 Summary and conclusions

The perceptions of students towards CAL can be interpreted using the theory of deep vs. surface learning strategies. It appears to be that CAL was used by the interviewees to achieve surface learning purposes (Ballantine et al., 2008; Beattie et al., 1997; Hoque, 2002). Most of them were sceptical about the usefulness of EQL or used EQL as a revision tool only to secure higher examination scores. Despite the widespread global use of ICT to revolutionise higher education teaching and learning and its celebrations by the educational technologists (Selwyn, 2007) evidence in this paper suggests that interviewees' use of CAL courseware was rather restrictive and limited. In spite of the case study university's plan to reduce human led tutorials and more frequent use of CAL courseware like EQL interviewees in this study felt less enthusiastic about the potential of EQL to enhance the quality of their learning.

The interviewees were in favour of using EQL in a supportive role only. This finding is consistent with McCourt and Radcliffe (2000). The idea of replacing a human tutor with a machine was rejected by the interviewees. The interviewees believe that most of the learning occurs in the tutorials and rank these as the most important component of the module while reading was ranked as the least important component. The latter finding is consistent with McInnes et al. (1995) and Sangster (1992).

In spite of the increased use of computers in our day to day life, including university life, it may be concluded that the interviewees included in this study prefer human led teaching and want computer led tutoring in a supportive role only. This conclusion is consistent with some of the earlier studies (Oliver and Omari, 2001; Shaw and Marlow, 1999; Spellman, 2000). Students' preference for tutor led tutorials stands in sharp contrast with the case study university's desire for reduction in resource intensive tutorials. Such move might be in line with "the managerial concerns of university administrations" and "the economic concerns of government" (Selwyn, 2007, p.85) but it might have very little to do with enhancing the quality of students' learning experience. The evidence presented in this paper points to that direction.

At a time when higher education institutions are looking for ways to deal with larger class sizes, and the consequent increased demand on staff resources, the above findings have serious policy implications. In the light of their findings (negative impact on students' perceptions and attitudes towards CAL and accounting as a subject) Lane and Poch (2002) also expressed similar concerns and urged higher education institutions to consider the implications of "extending the use of CAL in order to efficiently redirect limited staff resources" (p.217).

Despite the call by the several UK policy initiatives to integrate computers more fully into higher education detailed research might be carried out to find out why students still prefer human led teaching. This study was carried out with first year students. Further research could find out whether students' attitudes towards CAL and EQL change as they become accustomed to them as their studies progress.

It is acknowledged that one of the limitations of this study arises from the small scale nature of it. Statistical generalisation is not possible on the basis of this study. However, that was not the purpose of this study rather the objective was to gain rich qualitative insights into the students' experiences and perceptions of CAL in the context of accounting education. Future studies might be undertaken based on a large sample using quantitative method such as questionnaires to test whether the results revealed in this study can be generalised statistically. Another avenue for further research could involve replication of this study into other disciplines.

Given the lack of attention on students' perspective of CAL in the higher education context (Selwyn, 2007) this paper has attempted to illuminate the students' voices and concerns in the increased use of CAL in higher education institutions. The objective of this study is to examine students' perceptions of CAL via in-depth interviews – a relatively under-utilised research method in the accounting education literature (Paisey and Paisey, 2004). By using this method the current study provides a rich explanation of students' perceptions and learning experiences of CAL in general and EQL in particular. Previous studies on students' perceptions of CAL in the accounting education literature were mainly conducted from the context of financial accounting (Aisbitt and Sangster, 2005; Lane and Porch, 2002; Marriott and Lau, 2008; Sangster, 1992) and tax (McCourt and Radcliffe, 2000) via the structured questionnaire method. This study was conducted from the context of management accounting via qualitative in-depth interviews and therefore contributes to the existing body of accounting education literature on the students' perceptions of CAL.

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Note

¹EQL (Understand Management Accounting) is an accounting software package developed by EQL International Limited during the 1990s. It is very popular with UK universities and professional accounting institutes (www.eql.co.uk). It covers almost all technical topics noted in the part one learning objective of MGT 102. However, generally it does not cover the theoretical issues noted in the part two learning objective.

Appendix A: Module contents vs. EQL contents

<i>Summary of module contents</i>	<i>Summary of EQL contents</i>
<i>Part 1: Calculations</i>	
Classification of costs	Introduction to costing
Absorption & marginal costing & ABC	Accounting for overhead and contribution analysis
Decision making	Decision making
Budgeting	Budgeting
Variance analysis	Variance analysis
Investment appraisal	Investment appraisal
	Pricing and transfer pricing
<i>Part 2: Understanding</i>	
Nature & scope of management accounting	
Day to day practices of management accounting and its relevance	
Behavioural aspects of budgeting	
Responsibility accounting & relevant performance measures	

Appendix B: Interview protocol

- 1 If you were to explain to a friend how EQL helped your learning what sort of things would you say?
- 2 How did you approach your learning using EQL?
- 3 What did you do with EQL? Why did you do?
- 4 What sort of things did you learn from tutor led tutorials?
- 5 Would you prefer tutor led tutorials to EQL? Why?
- 6 Would you recommend replacing tutor led tutorials with EQL sessions? Why? Why not?
- 7 Which component of the module do you perceive to be the most important? Why?
- 8 Which component of the module do you perceive to be the least important? Why?
- 9 How do you see the relationship between lectures, tutor led tutorials and EQL?
- 10 What do you think is the role of EQL in the module as a whole?