Approaches to studying and students’ use of a computer supported learning environment

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Although studies of students’ study approaches in face to face learning environments are commonplace, studies investigating the role of students’ study approaches in online learning environments is currently a less explored area. This paper presents the findings of a survey aimed at investigating the relationship between students’ approaches to studying and their perceptions and use of a computer-supported learning environment in e-business and e-commerce. Participants in the study were a group of post-graduate students studying an E-Business and E-Commerce module. The ASSIST inventory is used to identify the main study approaches within the population. Descriptive statistics of the responses to the inventory confirm the validity and consistency of the results, while a factor analysis identified two main study approaches within the population, a ‘deep-strategic’ and a ‘surface-strategic’ study approach. Positive correlations were found (i) between WebCT and two aspects of a deep and one aspect of a strategic approach and (ii) between the E-Business and E-Commerce CSLE and two aspects of a strategic approach and one aspect of a surface approach. The paper concludes with suggestions for future research investigating study approaches in online learning environments.

Keywords: Approaches to studying, computer supported learning environments, student perceptions and use

1. Introduction

The study of individual differences is a distinct tradition in educational research that has sought to investigate how individual differences such as cognitive controls, cognitive styles, learning styles, personality types, and prior knowledge influence the learning process [1]. One of these differences that has received a good deal of attention over the years is a student’s study approach (e.g. [2,3]). The current paper reports on a study investigating the relationship between students’ approach to studying and their perceptions of a computer supported learning environment (CSLE) in e-business and e-commerce.

Studies investigating students’ approaches to studying have been mainly carried out within face-to-face learning environments (e.g. [4–6]). It is not until comparatively...
recently that studies have emerged that investigate the role of approaches to studying in CSLEs [7–9]. The findings from these studies have clearly demonstrated that approaches to studying as well as other individual differences such as learning styles and gender differences can have a demonstrable impact on the computer supported learning process and its outcomes. The findings from the current study contribute to this body of knowledge investigating approaches to studying in general and their role in influencing the take up of CSLEs in particular. The study concludes with recommendations as to how an educator might design a CSLE to take account of the different approaches to studying that might exist in their student population.

The structure of the paper is as follows. First a definition of approaches to studying is provided; this is followed by a short review of studies that have investigated approaches to studying as a factor contributing to the uptake of CSLEs. The research design and findings are presented next. This is followed by the discussion. A concluding section considers proposals for the design of adaptive CSLEs that take individual differences in approaches to studying into account – thereby aiming to support effective study approaches and enhance ineffective approaches to studying.

2. Approaches to studying

Research investigating students’ study approaches in higher education seeks to understand how students’ learning behaviours can be differentiated with reference to the student’s intention in studying the learning material. Initial research categorized these learning behaviours into those that displayed a deep or a surface approach to studying [2]. Subsequent work added a third category, a strategic approach to studying [3]. These three approaches to studying, and their defining features, are summarized in Table 1. These three approaches can be categorized with reference to the intention that informs the students’ act of studying. In a ‘deep’ learning approach a student’s intention is to understand the content of the learning task. In a ‘surface’ learning approach a student’s intention is simply to complete the requirements of the task, irrespective of any understanding of the educational content of the task. In a ‘strategic’ learning approach a student’s intention is to “obtain [the] highest possible grades”, rather than process the intrinsic educational content of the task. While it can be argued that from a tutor’s perspective a deep approach to studying is one that fulfils a higher education focused on nurturing an intrinsic interest in learning, from a student’s perspective it is a combination of a deep and strategic approach that may help to maximize learning outcomes.

Different approaches to studying relate to different sets of study habits. In the case of a deep approach learning behavior is composed of acts intended to process the meaning of the educational content. In the case of a surface approach learning behavior is composed of acts intended to simply process educational content at an informational or symbolic level. In the case of a strategic approach learning behavior is composed of acts intended to process educational content in a manner
that maximizes the marks awarded for completion of the task rather than in a manner that processes educational content on the basis of its intrinsic interest.

The initial Approaches to Studying Inventory (ASI) [10] was designed as an instrument to investigate the interrelationship between students’ study habits and the new theoretical constructs (of deep, surface, and strategic learning) that were emerging at that time [6]. The ASI was hence developed as a research instrument that could be used to extrapolate from observed aspects of behaviour and provide evidence for the existence of such constructs. Since then the ASI has undergone a number of revisions and has been used to fulfill a number of educational purposes e.g. identifying students’ difficulties in studying, monitoring the success of teaching innovations, exploring relationships between teaching practice and students’ study approach [6]. Subsequent revisions of the ASI, in the form of the Revised Approaches to Studying Inventory (RASI) and the Approaches and Study Skills Inventory for Students (ASSIST) have been used for similar purposes.

3. Approaches to studying and CSLEs

Current research investigating the nature of students’ approaches to studying within CSLEs can be categorized into those studies that consider that there is a direct relationship between approaches to studying and use of web-based learning [7] and those that consider that the relationship between students’ approaches to studying and their use of web-based learning is indirect, mediated by contextual factors such as
students’ perceptions of the quality of their academic environment as a whole, rather than simply the quality of web-based learning provision (see Fig. 1). Examples of studies that consider there to be a direct relationship are addressed first. This is followed by a review of examples of studies that consider that the relationship between students’ approaches to studying and CSLEs is mediated by context.

3.1. Direct relationship

Hoskins and van Hooff review current literature on the evaluation of web-based learning in universities and identify two overlooked questions: “Which students voluntarily utilise web-based learning?” and “Does this use influence their academic achievement?” [7]. Participants were 110 out of 143 second year undergraduate students studying Psychology. The module unit studied was Biological Psychology and WebCT was used as an online learning environment to supplement lectures and classes. Facilities available in the CSLE included “information regarding course content and organization . . . practical learning via a self-assessment quiz; and an opportunity for dialogue via a bulletin board” [7]. The authors state that students were ‘repeatedly encouraged’ to visit the online learning environment but no ‘extrinsic reward’ was provided for doing so.

In response to the first research question, a number of student-related independent variables were chosen and a relationship between these variables and students’ use of a computer supported learning environment for a second year Undergraduate psychology degree was investigated. The variables were gender, age, approach to studying measured by the ASI [10], and ability measured by the previous year’s academic performance. Dependent variables were the overall use of WebCT (measured by frequency of hits, period of access, and number of weeks from first to last access), dialogue (measured by the number of messages read and posted on the bulletin board), and self-assessment (measured by the number of times, length of time, and improvement/deterioration in marks for the quiz).
relationship was identified between active use of the bulletin board (i.e. reading and posting of messages) and an achievement orientation. In other words those who read and posted more on the bulletin board also attained higher scores on those components on the ASI intended to measure a strategic approach to learning. In response to the second research question the uses of WebCT acted as the independent variables, with student variables as covariates, and a relationship investigated between these variables and the overall grade for the module unit acting as the dependent variable. Analysis consisted of a univariate analysis of covariance. In respect of approaches to studying no main effect for any of the aspects of WebCT usage was identified on the overall coursework mark, practical reports contributing to this mark, or on elements contributing to the examination mark (a series of multiple-choice questions, and a brain labeling exercise). However a main effect of active bulletin board use on the overall examination mark was identified. Notwithstanding the fact that a positive correlation does not amount to the discovery of a causal relationship, the findings of Hoskins and van Hooff’s study does at the very least support the statement that active users of a bulletin board tend also to be strategic learners “Being organized must surely allow a student the luxury of spending time on online learning activities. Even though WebCT use was not rewarded or assessed. A strategic student might be inclined to use any tool that might facilitate their achievement” [7].

Research by Richardson and colleagues [8,9,11,12] adopts a more skeptical attitude towards the nature of a direct relationship between study approaches on the one hand and online learning environments on the other. It is maintained for example that the “empirical evidence that particular interventions will induce desirable changes in approaches to learning is limited. One possible explanation for why it may be hard to improve the quality of student learning is that effects of contextual factors on approaches to studying are mediated by students’ perceptions of their academic environment” [9]. Hence much of this research is guided by the question as to whether there is a relationship between students’ study approaches and their perceptions of their academic environments.

### 3.2. Indirect relationship

Richardson and Price [9] used the ASI in conjunction with an in-house inventory, the Course Evaluation Questionnaire (CEQ) to collect data evaluating this assumption. Participants were 254 postgraduate students studying one of two computer science modules, representing a response rate of 44.5%. These participants were administered with a postal survey questionnaire combining questions from the ASI and the CEQ. Respondents were asked to indicate their agreement with the statements on a five-point scale from 5 for ‘definitely agree’ to 1 for ‘definitely disagree’. A factor analysis on the scores returned for the ASI yielded two factors for both courses: a meaning orientation (deep approach) and a reproducing orientation (surface approach). Significantly different scores however for a number of aspects of a surface
approach suggested one of the courses was “more likely to induce a reproducing orientation... although both... courses were fairly successful at inducing a meaning orientation” [9]. Analysis of the results from The Course Experience Questionnaire yielded mean scale scores for seven aspects of a course experience, along with an additional question indicating overall satisfaction with the course that amounted to a perception of academic quality: appropriate assessment, appropriate workload, clear goals, generic skills, good materials, good tutoring, student choice and overall satisfaction. It was found that compared to the course that was less likely to induce a reproducing orientation, the course that was more likely to induce a reproducing orientation “produced higher scores... on Generic Skills and Student Choice. However, they produced lower scores... on appropriate workload, clear goals and standards, and good materials” [9]. After further correlation analysis substantiating the positive interrelationship between the sets of results for the two questionnaires, it was concluded that “the impact of different courses on students’ approaches to studying is mediated by their perceptions of those courses” [9]. Richardson and Price qualify their findings however by stating that correlation analysis does not imply a causal relationship between variables, in this case approaches to studying and perceptions of the academic environment.

Richardson [8] again investigates the relationship between students’ study approaches and their perceptions of their academic environment. In contrast to Richardson and Price [9] the participants were undergraduate students studying a Level 1 introductory web-based course in computing. A postal survey containing modified versions of the CEQ and RASI (Revised Approaches to Studying Inventory) was administered to 400 participants drawn randomly from the potential population of 831 students. 178 completed questionnaires were returned representing a response rate of 44.5%. Findings relevant to the current study were (i) positive correlations were found between the ‘overall measure of perceived quality from the CEQ’ and students’ total scores on a Deep and a Strategic Approach and (ii) a negative correlation was found between the ‘overall measure of perceived quality from the CEQ’ and a surface approach. It is maintained that these findings provide further evidence in support of a research approach that investigates students’ study approaches in conjunction with students’ perceptions of the academic quality of their course. The conclusion is also drawn that the study demonstrates the applicability of using concepts and tools originally devised for studying traditional face to face settings to online learning environments. Richardson [11] raises the question as to whether students’ approaches to studying influence academic perceptions and the potential nature of this causal relationship. The paper further highlights the general issue raised by this research as to the contextual specificity of approaches to studying research and that a range of factors including demographics, campus/off-campus learning, and subject discipline can all have an influence on studying and need to be taken into account in the interpretation of findings.

In sum current research into CSLEs is beginning to accumulate evidence of the relationship between students’ approaches to studying and online learning environments. Evidence is being put forward in support of a direct relationship between
these variables e.g. between an achievement orientation and active use of a bulletin board [7]; or an indirect relationship, where the study approaches adopted by students are not influenced directly by a distance learning environment but mediated by those students’ perceptions of the quality of their course [8,9]. What is also not clear is the direction of the relationship i.e. whether approaches to studying influence online learning environments or whether online learning environments influence approaches to studying [11]. The current study focuses on whether a direct relationship exists between students’ approaches to studying and their perceptions and use of an E-Commerce and E-Business CSLE. A CEQ was not used in conjunction with the ASSIST inventory so findings as to whether there is a correlation between study approach and course evaluation are not part of the current study. It is acknowledged however that the pedagogical use made of the learning environment is an important criterion in influencing students’ study approaches.

4. Method

4.1. Participants

Participants were 35 postgraduate students studying an elective module in E-Business and E-Commerce as part of their MSc Information Systems (IS) MSc Information Management (IM) degrees. Class contact time consisted of 12 2-hour lectures and three practical classes of 1 hour each, over a period of 12 weeks. Students’ performance on the module was assessed by two reports: (1) an individual consulting report based on a case study provided by the module team (40%), and (2) a group report consisted of a collaborative business plan (60%). The students also met with the module tutor by arrangement to discuss their group assignment. To supplement the lectures and practical classes, a computer-supported learning environment, designed in WebCT, was made available to the students. All students had already had some experience with WebCT which was used in a core module for both MSc IS and MSc IM programmes in the first semester. Hence, it was assumed that the students were somehow familiar with the WebCT environment and did not need further training on its usage. Nevertheless, students were introduced to the role of WebCT in the context of E-business and E-commerce module at the beginning of the module and were repeatedly encouraged to use it. The learning materials in WebCT included: (1) information regarding course content and organization (e.g. module outline, lecture slides, assignment outlines, module calendar) (2) information about events and activities taking place during the module (e.g. news announcements and news archive), (3) learning resources (e.g. online information resources, hyperlinks to other sites, audio and video clips). In terms of tools, the module team offered a chat tool to enable synchronous online communication, newsgroups to allow asynchronous online communication, and group presentations to allow file sharing within project groups (by uploading and downloading files in this space).
4.2. Research instrument and procedure

In order to collect data on students’ study approaches and their perceptions and use of the CSLE a survey questionnaire was administered to all students on the E-Business and E-Commerce module. The survey was composed of four sections consisting of (1) demographic and other information e.g. gender, nationality, prior subject knowledge, and subject interest (2) the 52-item version of the most up-to-date version of the approach to studying inventory, the ASSIST survey questionnaire (http://www.ed.ac.uk/etl/publications.html). Participants were asked to indicate their agreement/disagreement with the statements on a 5-point scale from ‘5’ agree to ‘1’ disagree (3) preferred learning method (4) general perceptions of WebCT in general and specific use of the E-Business and E-Commerce CSLE. The section on WebCT consisted of two parts, the first part asked respondents to indicate their agreement with 25 statements relating to their general perception of WebCT as a tool and their perceived usefulness of WebCT for their learning on a 5-point scale e.g. agree – mildly agree – undecided – mildly disagree – disagree. The 25 statements were developed on the basis of the literature of computer-supported learning environments. For example, the statement “I consider WebCT to be an information tool” is based on the finding that users frequently use the system to check and download information rather than use it for other purposes; similarly the statement “WebCT supports self-paced learning” is based on the argument that the computer-supported learning environment offers users an opportunity to learn about the materials in their own time and at their own pace. Other statements such as “WebCT is useful because it allows me to communicate with my other group members asynchronously”, and “WebCT is useful because it allows me to communicate with my tutor”, focused on the participants’ perceived usefulness of the system. The second part asked the respondents to indicate their agreement with some statements relating to their perception of the usefulness of the materials and tools included in WebCT for doing their individual and group assignment on a 5-point scale e.g. very useful – useful – somewhat useful – not useful – undecided. The purpose of the survey was addressed at the outset of the survey. The students were asked to fill in the questionnaire and submit it either with their individual assignment or directly to the module coordinator. A total number of 35 students on the module returned the questionnaire, representing a 100% rate.

4.3. Data analyses

The purpose of the analysis was to (i) identify the validity of approaches to studying as a theoretical construct in the population being studied (ii) establish any correlations between students’ study approach and their perceptions of WebCT, and between their study approach and their use of the E-Business and E-Commerce CSLE. In order to determine the main approaches to studying among the module’s students a factor analysis was conducted on the aggregated responses to the ASSIST inventory. A correlation analysis was then carried out to investigate (i) the relationship
between participants’ study approaches and their perceptions of WebCT, and (ii) the relationship between participants’ study approaches and their perceived usefulness of the E-Business and E-Commerce CSLE for their learning.

5. Results

A factor analysis identified two main study approaches within the participants, a ‘deep-strategic’ and a ‘surface-strategic’ study approach. Positive correlations were found (i) between WebCT and two aspects of a deep and one aspect of a strategic approach and (ii) between the E-Business and E-Commerce CSLE and two aspects of a strategic approach and one aspect of a surface approach.

5.1. Approaches to studying

Mean scores on the deep, strategic and surface scales were 16.34 (SD 2.3), 16.47 (SD 2.7) and 10.35 (SD 3.81) respectively (see Table 1). The coefficient alpha score for each of the sub-scales indicates a high level of internal consistency for each sub-scale. The ranking of these scores i.e. the higher scores for the achievement and meaning scales, and the lowest score for the reproducing scale indicate that the students were motivated to a greater degree towards maximizing reward and understanding the meaning of the course content; rather than being motivated towards reproducing the course content with no reflection on its educational purpose. With regard to the mean scores for each sub-scale, the scores for a deep approach indicate that overall the student body were more focused on ‘seeking meaning’ (16.92), on ‘use of evidence’ (16.86) and on ‘relating ideas’ (16.55) than on an ‘interest in ideas’ (15.04). The SD score for ‘seeking meaning’ (1.85) indicates a high degree of consensus among the students in terms of their agreement with the relevant inventory statements, while the greater SD score for ‘interest in ideas’ (2.72) is indicative of a broader range of opinion. Mean scores for a strategic approach indicate a greater motivation towards ‘monitoring effectiveness’ (17.26) and ‘achieving’ (17.21) rather then towards ‘time management’ (16.00) and ‘organised studying’ (15.27). The ‘achieving’ sub-scale attracted the lowest SD score (2.34), with time management the highest (3.14). Mean scores for a surface approach to learning are higher for ‘fear of failure’ (12.09) and ‘syllabus-boundedness’ (11.95) rather than for ‘unrelated memorizing’ (8.70) and ‘lack of purpose’ (8.65). For the sub-scales of a surface approach, it is the sub-scales with the higher mean scores that attracted the higher SD scores. This is in contrast to the SD scores for the deep and strategic sub-scales where the inverse is the case i.e. the sub-scales with the lower mean scores attracted the higher SD scores. This pattern would appear to indicate that when the students were asked to agree or disagree with negative statements about their learning approach i.e. ineffective study strategies then they were more inclined to be ‘undecided’ about reporting on these statements.
A factor analysis, using principal axis factoring, was conducted. Factor loadings greater than 0.30 are considered significant and italicized in Table 2. The analysis derived two distinct factors within the population. Factor A corresponding most closely to what might be termed a ‘deep-strategic’ approach to studying and Factor B corresponding most closely to what might be termed a ‘surface-strategic approach’ to studying.

5.2. Approaches to studying and perceptions of WebCT

A correlation analysis was carried out to investigate the relationship between participants’ study approaches and their agreement with a range of statements evaluating WebCT as a CSLE. Positive correlations were found between ‘interest in ideas’ and ‘relating ideas’, two aspects of a deep approach to learning, and a range of online learning functions relating to keeping up-to-date, file sharing, and enhancement of learning outcomes. This raises the interesting question as to why there might be a relationship between a deep learning approach and these learning environment functions. The explanation for this finding lies in perhaps two areas. On the one hand a learning environment can support an ‘interest in ideas’ and potentially ‘relating ideas’ by acting as an awareness mechanism that draws students’ attention to the new content and ideas that the tutor and participants have contributed to the learning environment. The facility to share documents also potentially supports an interest in new ideas and potentially ‘relating ideas’. Students also perceived that there was a relationship between a learning environment and enhanced learning outcomes. This
Table 3
Approaches to studying and WebCT learning functions

<table>
<thead>
<tr>
<th>Approach to Studying</th>
<th>WebCT Learning Function</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deep approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest in ideas</td>
<td>Keeping up-to-date with what is going on in the module</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td></td>
<td>File sharing with group members</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td></td>
<td>File sharing with the tutor</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td></td>
<td>WebCT will enhance my learning outcomes</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td>Relating ideas</td>
<td>WebCT will enhance my learning outcomes</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td><strong>Strategic approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organised studying</td>
<td>Keeping up-to-date with what is going on in the module</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td></td>
<td>File sharing with the tutor</td>
<td>( p = &lt; 0.000 )</td>
</tr>
<tr>
<td></td>
<td>File sharing with group members</td>
<td>( p = &lt; 0.002 )</td>
</tr>
</tbody>
</table>

Table 4
Approaches to studying and usefulness of the E-Business and E-Commerce CSLE resources

<table>
<thead>
<tr>
<th>Approach to Studying</th>
<th>CSLE Resource</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alertness to assessment demands</td>
<td>Individual Assignment</td>
<td>( p = &lt; 0.004 )</td>
</tr>
<tr>
<td></td>
<td>Links to other sites</td>
<td>( p = &lt; 0.011 )</td>
</tr>
<tr>
<td></td>
<td>Online information resources</td>
<td>( p = &lt; 0.028 )</td>
</tr>
<tr>
<td></td>
<td>News archive</td>
<td>( p = &lt; 0.029 )</td>
</tr>
<tr>
<td></td>
<td>Video clips</td>
<td>( p = &lt; 0.036 )</td>
</tr>
<tr>
<td></td>
<td>Lecture notes</td>
<td>( p = &lt; 0.005 )</td>
</tr>
<tr>
<td>Group Assignment</td>
<td>Newsgroup</td>
<td>( p = &lt; 0.021 )</td>
</tr>
<tr>
<td></td>
<td>Audio clips</td>
<td>( p = &lt; 0.029 )</td>
</tr>
<tr>
<td></td>
<td>Online information resource</td>
<td>( p = &lt; 0.041 )</td>
</tr>
<tr>
<td><strong>Surface approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrelated memorizing</td>
<td>Lecture notes</td>
<td>( p = &lt; 0.021 )</td>
</tr>
<tr>
<td></td>
<td>Course-related materials</td>
<td>( p = &lt; 0.041 )</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>File sharing with the tutor</td>
<td>( p = &lt; 0.000 )</td>
</tr>
</tbody>
</table>

is a finding that is more difficult to explain. It may be the case however that students adopting a deep learning approach to the module may well be those students who are also willing to explore new learning methods. A positive correlation was also found between organized studying, an aspect of a strategic approach to learning, and ‘keeping up-to-date’ and ‘file sharing’ (see Table 3). An important aspect of learning is organizing ones external environment. An electronic learning environment can clearly support storage and retrieval of learning materials in one location and the exchange of documents and learning materials in one medium.
5.3. Approaches to studying and the E-Business and E-Commerce CSLE

A correlation analysis was also carried out to investigate the relationship between participants’ study approaches and their perceptions of the usefulness of the CSLE resources for their assignments. Positive correlations were found between ‘alertness to assessment demands’, an aspect of a strategic approach to learning, and a range of CSLE resources, including links to other sites, news archive, audio and video clips, as well as lecture notes. It will be assumed by students that any learning resources selected by a tutor will be relevant to their learning and hence of potential relevance to how they will be assessed. It is also worth noting that ‘unrelated memorizing’ and ‘fear of failure’, two aspects of a surface approach to learning, were correlated with ‘lecture notes’, ‘course-related materials,’ and ‘file sharing with the tutor’ respectively (see Table 4). With regard to ‘unrelated memorizing’, access to a single public repository of materials can clearly be an aid to students’ personal information management and act as a resource that supports the week-by-week progression of a module particularly so for those who may be adopting a ‘surface-strategic’ approach to their learning. On the point of a link between ‘fear of failure’ and ‘file sharing with the tutor’ this may be indicative of learners’ formative feedback on initial work towards an assignment.

6. Discussion

6.1. Approaches to studying

Descriptive statistics for the responses to the ASSIST inventory are broadly in line with those returned in similar inventory studies attempting to identify behaviours related to the three theoretical constructs of deep, strategic, and surface learning (e.g. [7,11]), accompanied by an indicator of high internal consistency. Where the current findings to some extent differ from recent studies is in the outcomes of the confirmatory factor analysis. Rather than confirming the presence among the participants of the three study orientations, the strategic approach was combined with the other two study approaches to form what we have called ‘deep-strategic’ and ‘surface-strategic’ approaches. Clearly aspects of all three study orientations were latent in the participants but that these aspects combined in a different way. The explanation for this may lie in a number of areas: the nature of the student population, the nature of the learning environment (or in the interaction between learners and their learning environment), or in the conditions of the test. Further research would be needed for example to ascertain the influence of any individual differences on study approaches. Learners’ responses to a learning environment may also display an eagerness to maximize grades – a combination of deep and strategic being optimal for the student. A surface-strategic approach, although sub-optimal from the point of view of university education, may also be considered a success-oriented strategy for some learners.
6.2. Approaches to studying, perceptions of WebCT, and use of the E-Business and E-Commerce CSLE

In investigating the relationship between study approaches and perceptions of WebCT correlations were found between two aspects of a deep learning approach ‘interest in ideas’ and ‘relating ideas’ and an aspect of a strategic approach ‘organized studying’. Thus WebCT was viewed by some participants as a medium that can potentially support processing of the meaning of the educational content, a tool that can potentially improve learning outcomes, and one that can support organized studying. The evidence from this study is that in actuality WebCT was found to be useful in relation to a strategic approach, in particular ‘alertness to assessment demands’; and interestingly a surface approach. This link between WebCT use and a strategic approach to studying is supported by another recent study: "the current data indicate that it is achieving orientation, not meaning orientation that is associated with WebCT use" [7]. The data in support of a surface approach may be explained by a need for a surface orientation to locate and digest information-based lecture notes and other course-related materials, as well as a need to check with their tutor that their work is of a conventionally required standard. In both these areas the approach has been to identify a direct relationship between study approach and perceptions of and use of an online learning environment [7]. This study used questions from the ASSIST inventory along with other in-house questions to evaluate WebCT perceptions and use. Combination of these results with a course evaluation questionnaire would be needed to establish whether perceptions and use are mediated by perceptions of the academic environment as a whole [8,9].

7. Conclusion

This study set out to investigate the nature of the relationship between students’ study approaches on an E-Business and E-Commerce course, their perceptions of WebCT in general, and their use of the E-Business and E-Commerce CSLE. A factor analysis of responses to the ASSIST inventory identified two main study orientations: a deep-strategic and a surface-strategic orientation. Correlations were found between aspects of all three theoretical constructs and perceptions and use of online learning tools, with a strategic orientation being the most prevalent. It needs to be borne in mind that, in common with other inventory approaches, a limitation of the findings is their reliance on self-reporting. Future research could usefully supplement data collection with online learning usage statistics [7]. The main conclusion that can be drawn from the research is that an emphasis in this study on students’ strategic approach to studying and their strategic use of WebCT e.g. for organized studying etc. suggests that further work can be done to use CSLEs to encourage a deep learning approach. This could take the form of a collaborative learning environment that supports both the exchange and interrogation of educational content.
References


