ABSTRACT

As Information and communication technology (ICT) resources become more readily available for support of on-campus programs and Web-based learning, it is useful to analyze the value of these resources available to students in understanding their attitudes towards the increased use of ICT and e-learning. This exploratory study was conducted to determine the attitudes of undergraduate students towards ICT; the extent to which students use ICT and examine the main reasons why students use ICT. Of the sample of 166 students, majority indicated they had access to a computer, had access
and regularly used the Internet. In addition, more females than had access to a computer off campus than males. Over 90% used the course-based WebCT, whereas only 30% used the Campus Pipeline. The study showed that students were generally favourable towards ICT. Males were more inclined to incorporate ICT in web-based instruction compared to other teaching activities. Older students were more interested in using ICT only as a supplement to teaching activities.

**Keywords:** Information and communication technology, WebCT, Internet, management students.
INTRODUCTION

Information and Communication Technology (ICT) encompasses the effective use of equipment and programs to access, retrieve, convert, store, organize, manipulate and present data and information (Gay and Blades, 2005). E-learning, which is described as the use of ICT to enhance or support learning and teaching in education, has become increasingly important in tertiary education (OECD, 2005).

ICT skills are currently of great interest to governments, businesses and individuals alike. Through the use of automation, ICT has become integrated in the management of knowledge and its accompanying ICT tools. Industry and commerce also depend on knowledge management, which has forced businesses to become ICT savvy (COM, 2003). More importantly, it is expected that ICT would be fully integrated into the academic curriculum in order to prepare students for the world of work.

Students at the University of the West Indies (UWI), Cave Hill Campus, have access at minimal cost, to a variety of electronic information resources. These include:

- the Distance Education Centre (DEC), which was intended to explore the potential for using telecommunications technology across the three campuses,
- on-line registration of courses,
- access to course material via web-based tools such as WebCT.

The present study examines three main research questions:

1) What are the attitudes of undergraduate students to Information technology?

2) To what extent do students use information technology?
3) What are the main reasons behind student’s use of information technology?

The paper is structured as follows. The next section presents a selective review of the literature on the nature and importance of ICT. The following section presents the methodology and data collection procedures of the study. Next, the findings and discussion are presented as it relates to the main research questions. The final section concludes the present study.

SELECTIVE LITERATURE REVIEW

The increased use of computers and the level of Internet access by businesses and individuals alike is an important measure of technological development. Governments also measure this development in areas such as education and health. The focus of formal or informal ICT training whether conducted in the workplace, through an institution, or by self-training enhances this development. Training therefore is of paramount importance as current and future employees are expected to be adequately skilled in ICT.

Online learning using ICT and e-learning have become an accepted educational standard across universities worldwide where students have been identified as stakeholders in the development and implementation of e-online learning (Ling et al., 2001; ANTA, 2002; Lee & Nguyen, 2005; OECD, 2005). To support this, administrative and faculty offices at universities use considerable proportions of their budgets to provide this technology for their students in the learning process (RSGB, 2000).
Universities have sought methods of developing ICT skills and knowledge in their graduates in an effort to prepare them for employment. These methods include possession of basic ICT certification as an entry requirement, specific ICT foundation courses, or integrating ICT skills into the curriculum which is accredited as part of the degree award (DEE, 2001).

Universities and other tertiary education institutions have indicated that e-learning has a generally positive effect on the quality of teaching and learning, although few have been able to offer detailed evidence. Although many student satisfaction surveys have been conducted on the use of e-learning tools, it is still unclear whether students use them enough. It should be determined whether refraining from its use is simply through ignorance or some other underlying concern, and how it can be addressed. Without investigation, it is difficult for universities to know if they are meeting the needs of students effectively (OECD, 2005).

The University of the West Indies (UWI), whose role is the delivery of high-quality, relevant tertiary-level education to meet the human resource development needs primarily of the Caribbean basin, finds itself having to respond to a number of challenges in this Millennium Era. As the business of education becomes increasingly competitive and more for-profit stakeholders enter the marketplace, the UWI, like any private sector business, must find ways to respond effectively to the new threats. This challenge coupled by the need to deliver to rapidly increasing numbers of students, many of whom opt for the part-time rather than full-time mode of study, has lead the UWI to respond by implementing a number of ICTs.

Another pressure is from the rapid development of ICTs itself where
these technologies offer new ways of producing, distributing and consuming academic material. As with so many other institutions, new technologies have caused universities to rethink not simply isolated features but their entire mission and how they go about it (Seely, Brown & Duiguid, 2000).

In addition, this challenge is joined by the Barbadian government’s mandate to harness the ICTs as a tool that could be utilized to further transform the Barbadian society and economy, and to capitalize on thrusts that would harness the new ICTs' power to support development and economic growth in both the public and private sectors (Nation, 2005)

Any organizational formats developed to accommodate the new educational standards need to be managed carefully in order to avoid early disillusionment and the possible failure of students to realize the full educational potential of ICT use and e-learning (Hunt, Thomas & Eagle, 2002; McPherson, 2002; Zentel, Bett, Meister, Rinn & Wedekind, 2003).

For UWI to have a competitive advantage in the global marketplace, the management of e-learning and use of ICTs must be managed as a business. Therefore, the infrastructure and management of human resources must be ready for the challenge. This includes the ability of administrative and teaching staff to be capable of designing, creating, delivering and managing e-learning. For teaching staff, much of this responsibility falls upon those who have to deliver the course materials. Also UWI must
ensure that even though other universities are re-shaping for e-learning, that students be properly prepared for this transition into the blended learning environment (Concannon et al., 2005). Finally, financial costs and adequate budgets must be available to support this infrastructure.

Empirical reports concerning ICT, its importance and usage among students can be noted. For example, Dorup (2004), in a study of undergraduate medical students in Denmark, found that most students had access to computers at home as well as used email and the internet regularly. In addition, Dorup (2004) found that that in his sample, males had more access to computers at home, and held more favourable attitudes towards the use of computers in their medical studies compared to females. A small proportion of students reported that they would prefer not to use computers in their studies. Males were also significantly more inclined to replace traditional teaching activities with better ICT resources. Finally, there were favourable attitudes toward the use of ICT as a supplement, as opposed as to using ICT or distance education as a replacement to traditional teaching activities.

METHOD

Sample, Instrument and Procedures

One hundred and sixty-six undergraduate management students were targeted for the study, using a self-administered questionnaire. The questionnaire sought to measure students’ attitudes, experience and reasons for the use of ICT on and off
campus. It was adapted and modified from Dorup’s (2004) study of medical students in Denmark. The first part of the questionnaires sought demographic information such as age, gender and enrolment status. Table 1 shows the demographic profile of the respondents in the sample. Majority of the sample were female (77%), persons 25 years and under (61%) and full-time students (53%).

The second part of the questionnaire elicited the information on students’ attitudes to computer use, which were dichotomously scored (yes and no). These questions were:

1. I like to use a computer for typing assignments, calculations or reports.
2. I wish I would not have to use a computer as part of my studies.
3. I would like to use the computer as a supplement to other teaching activities
4. I would like to use the computer instead of other teaching activities
5. I would like to use email to ask questions to my teachers if possible
6. I would like to use the computer for distance education from home

The next part of the questionnaire focused on students’ usage of computer and other ICT resources. Finally, the questionnaire asked students about the frequency of ICT usage as well as their primary reasons for using ICT resources.

Table 1
Demographic Profile for the Sample
### FINDINGS AND DISCUSSION

#### Attitudes to Information Technology

Table 2 shows that the majority of the sample expressed favourable attitudes to the use of ICT within the academic environment. Particularly, students were more
inclined to use computers for: typing assignments (92%), part of their studies (95%), supplementing other teaching activities (72%), emailing questions to teachers (90%), and distance education from home (68%). However, students were resistant to the use of computers as full replacement of the regular, traditional teaching experience. This finding suggests students’ strong preference for both forms of the academic experience (i.e., interaction with the teacher and interaction with information technology), consistent with Dorup (2004). With respect to gender analyses, no significant gender differences were found on four of the five attitudinal ICT statements, indicating that both males and females generally had a preference for the use of information technology. However, males (55%), to a significant degree, generally preferred to use computers as replacements to other traditional teaching activities, compared to females (33%) (p<0.05). This finding was also congruent with that of Dorup (2004). Concerning comparisons using age, no significant differences were found on these items except for using the computer as a supplement to other teaching activities: older students (over 25 years) (81%) preferred using the computer as a supplement to teaching, compared to younger students (25 years and under) (67%) (p<0.05) (see table 3).

Table 2

| Overall Attitudes to Information Technology |

139
<table>
<thead>
<tr>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

- I like to use a computer for typing assignments, 92 8
- calculations or reports.
- I wish I would not have to use a computer as part of my studies, 5 95
- I would like to use the computer as a supplement to other teaching activities, 72 28
- I would like to use the computer instead of other teaching activities, 39 61
- I would like to use email to ask questions to my teachers, 90 10
- if possible
- I would like to use the computer for distance education from home, 68 33
<table>
<thead>
<tr>
<th>Statement</th>
<th>GENDER $\chi^2$</th>
<th>AGE $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to use a computer for typing assignments, calculations or reports.</td>
<td>1.39</td>
<td>.64</td>
</tr>
<tr>
<td>I wish I would not have to use a computer as part of my studies.</td>
<td>.02</td>
<td>.004</td>
</tr>
<tr>
<td>I would like to use the computer as a supplement to other teaching activities</td>
<td>.96</td>
<td>4.18*</td>
</tr>
<tr>
<td>I would like to use the computer instead of other teaching activities</td>
<td>6.10*</td>
<td>.27</td>
</tr>
<tr>
<td>I would like to use email to ask questions to my teachers if possible</td>
<td>.04</td>
<td>.47</td>
</tr>
<tr>
<td>I would like to use the computer for distance education from home</td>
<td>1.02</td>
<td>2.69</td>
</tr>
</tbody>
</table>

Table 3

Attitudes to Information Technology by Gender and Age

Chi-square statistics were computed with gender and age as the independent variables for separate analyses.

*p<0.05.
**Computer and Internet Usage**

Table 4 shows that majority of students in the sample have access to a computer off campus (94%), 89% reported they have access to the Internet at home, and 96% had an off-campus email address. Concerning the on-campus facilities, over 90% indicated that they use WebCt and were aware of the campus online homepage. However, only a third of the sample (30%) indicated that they use the Campus Pipeline system. This finding may suggest that although most students are actively interacting the computer and information technology facilities (also consistent with Dorup, 2004), there is still room for improvement insofar as the Campus Pipeline is concerned. The relevant campus authorities may need to educate students about the advantages of using the Campus Pipeline. In relation to gender analyses, no significant gender differences were found with the exception of the access to a computer off-campus; females (96%), to larger degree than males (87%), reported that they had access to a computer off-campus ($p<0.05$) (see table 5). This finding conflicts with Dorup (2004), who found that males were more likely to have access to computers off campus, compared to females. This finding implies a growing interest in ICT among females, compared to that of the past. With respect to age, no significant differences were found.
Table 4

<table>
<thead>
<tr>
<th>Computer and Internet Usage</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have access to a computer off-campus?</td>
<td>94</td>
<td>6</td>
</tr>
<tr>
<td>Do you have Internet access at home?</td>
<td>89</td>
<td>11</td>
</tr>
<tr>
<td>Do you have an off-campus email address?</td>
<td>96</td>
<td>4</td>
</tr>
<tr>
<td>Do you use WebCT for any of your courses?</td>
<td>98</td>
<td>2</td>
</tr>
<tr>
<td>Do you use Campus Pipeline?</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Do you know the campus home page?</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>Question</td>
<td>Gender</td>
<td>Age</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------</td>
<td>-----</td>
</tr>
<tr>
<td>Do you have access to a computer off-campus?</td>
<td>4.37*</td>
<td>1.55</td>
</tr>
<tr>
<td>Do you have Internet access at home?</td>
<td>0.04</td>
<td>2.08</td>
</tr>
<tr>
<td>Do you have an off-campus email address?</td>
<td>0.14</td>
<td>1.26</td>
</tr>
<tr>
<td>Do you use WebCT for any of your courses?</td>
<td>1.23</td>
<td>0.32</td>
</tr>
<tr>
<td>Do you use Campus Pipeline?</td>
<td>0.08</td>
<td>0.001</td>
</tr>
<tr>
<td>Do you know the campus home page?</td>
<td>1.87</td>
<td>0.34</td>
</tr>
</tbody>
</table>

**Computer and Internet Usage by Gender and Age**
Note. +Chi-square statistic was computed with gender as the independent variable.

*p<0.05.

Frequency of and Reasons for Internet Usage
In relation to frequency of Internet usage at home, majority (64%) of students surveyed indicated that they use the Internet regularly. In addition, a larger proportion (75%) indicated that they regularly use email. This finding correlated well with that of Dorup (2004). The finding presents a favourable picture that ICT is becoming increasingly important to students and that the use of Internet and email is now a commonplace practice among management students.

A question was posed concerning the primary reasons for Internet use. The most common responses, cited by students, included research, school assignments, emails and chatting. This finding implies the growing importance of the Internet for school-related activities and that students are seemingly taking advantage of this resource.
CONCLUSION

This study found that management students were generally favourable to ICT in an academic setting. In addition, males were more favourable towards the use of computers as replacements to other teaching activities. Older students were more favourable to computer use as a supplement to other teaching activities, compared to younger students.

Students had access to computers and the Internet off campus. There also seems to be widespread usage of various forms of information technology such as Internet, WebCT and email. No significant gender differences were found with the exception of the access to a computer off-campus; females to a larger degree than males (87%), reported that they had access to a computer off-campus. With respect to age, no significant differences found. The main reasons for the use of the Internet offered included research and email.

These findings are important in that they can serve to inform educators about the usage of information and communication technology in an academic environment. This is important in that the students will need to use ICT in the workplace and prior preparation is a necessity. Moreover, the international community has embraced information technology in business, and these findings augur well for business in the Caribbean. Future research should consider undertaking large-scale studies of attitudes to ICT among business professionals and other practitioners.
REFERENCES


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