

## Attitudes of Botswana College of Agriculture (BCA) academic staff members Toward the Use of Computers Technology in their job

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**Abstract:** The purpose of the study was to examine attitudes of Botswana College of Agriculture (BCA) lecturers towards using computer technology in their work and how often lecturers use classical educational technology resources, modern educational technology tools, computer technology resources, and laboratory technology tools in their work. A sample of 70 lecturers was surveyed using a 5-point Likert-type questionnaire with statements giving descriptions of how lecturers perceived the use of technology and the extent of use. Findings of the study based revealed that majority of the participants had positive attitudes towards technology integration.

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### Introduction

Beginning the mid part of the 20<sup>th</sup> Century, technology usage in the society has increased thus compelling educators to adopt it in the classrooms. Progress has been made to the point that institutions of learning have also considered the integration of a variety of technologies to support teaching, learning, administration and research. In Botswana, the government has equipped secondary schools with computers, internet and other technological devices (Batane, 2004). To support such efforts, awareness curricular on computer technology is offered to secondary school students. In addition, the current policy on education which came into operation in 1994 stresses the importance of “science and technology in the education system” at all levels (Botswana Government, 1994). In 2003, the Ministry of Communication Science and Technology was established to take the mandate of technology administration and research ethics in the country. In higher education, technology is central to both curricular and pedagogical endeavours as people use it for instruction and offered as courseware.

Policy makers, politicians, educators and researchers alike other countries seem to believe that adoption of technology will go a long way to improve education particularly for the future generation. Marrison and Frick (1993) reported the increase on the use of microcomputer technology in education systems of the United States of America (USA) since the beginning of the 1980s. Isman et al (2007) stated that incorporating technology in sciences is very important more so that it facilitates the learning of complex concepts of science. Isman et al (2007) further classified technology into four different

categories which are essential in teaching and learning; classical, modern, computers and laboratory educational technology tools. The findings on the use of different kinds of technology in educational settings have been found to differ from one area to the other. Willis (n.d) contends that efficiency in the classroom requires the application of a variety of technologies and advance preparation of teachers to use technology. Studies on the use of technology in developing countries are limited to inform stakeholders about educators’ perceptions of the use of technology in institutions of learning. Thus, a baseline study such as this one is needed in Botswana to ascertain the attitudes of lecturers regarding computer technology usage.

Technology education is crucial for education today just like it is in other fields of social and economic development. Nowadays, institutions have established departments to integrate internet technology as a resource for communication, a tool for inquiry, device for construction, and as an emerging medium of instruction (Grabe and Grabe, 2005). The adoption of technology in education is a way to improve students’ learning, effective classroom instruction and curriculum design. According to Dede (2006) technology in education has the potential to help learners master complex skills required in the information age period. The information communication technology is imperative to provide appropriate solutions for communication, virtual communities learning, inquiry-based methods, and bringing back mental pictures of real situations in the classroom settings. Dede (2006) impresses upon the fact that technology in developed countries is at a point whereby it is likely to reshape the education

system. According to Isman et al (2007) educators who desire to be successful in science education, need to adopt technology in most of the things they do because certain concepts of science can be easily explained and understood through the use of computer technology.

According to Simsek (2005) although there are changes that have come about since the establishment of education of technology in the previous century its importance continues to advance. However, the impact of computer technology in education is affected by factors such as inadequacy of; skilled human resources, hardware, software, infrastructure, funds, and management programs (Hart-Young, 2006; Whitehead et al (2003) in Clark 2006. Ferguson and Tshoof (2006) also noted that "classroom and school environment; teachers' technological background and predisposition, student's prior knowledge and experience; open and engaging curriculum, and access to handheld computers as learning tools" as circumstances affecting the integration of technology in the education. In a study conducted by Sa'ri et al. (2005) it was revealed that most teachers have moderate levels of information technology competency. Those teachers who use technology in their classrooms are likely to have constructivist's style of teaching which promotes child centeredness.

The purpose of the study was to describe lecturers' attitudes towards using technology. The specific objectives of the study included to: describe demographic characteristics of BCA lecturers in this study, attitudes of participants towards the use of computer technology and the relationship between attitudes and the extent of use of computers technology by respondents.

### Methods

This was a descriptive-correlational research study sought to describe attitudes of lecturers towards the use of technology in teaching. Seventy (70) lecturers were randomly drawn from 99 lecturers at the Botswana College of Agriculture. A list of lecturers was requested from the college administration and arranged alphabetically by the researcher. The Kreje and Morgan formula was used to obtain sample size of 70 deemed appropriate representative in the study.

Data were collected using a structured questionnaire comprising of close-ended items to determine the lecturers' attitudes towards computers technology and the how often they use technology in teaching. The questionnaire used in this study was a

slightly modified version of one used in a study conducted by Isman, Yaratana and Canner (2007) in Turkey and also similar to one used by Teo (2008). The survey instrument was reproduced by the researcher and the content was validated by three lecturers and an expert on instructional technology in the department of AEE. The researcher sought permission from Isman, Yaratana and Canner (2007) to adapt the instrument of their study.

To gather data, the researcher delivered the questionnaires by hand to all lecturers in different departments, Botswana College of agriculture. To minimize non-response error personal contacts with respondents was maintained as much as possible in the study. A follow-up on the respondents was done as frequent as two days using e-mails and telephones.

Data were analyzed using SPSS version 17 for windows computers to calculate frequencies, percentages, means, standard deviations, and correlation statistics. To describe the attitudes of lecturers, means and standard deviations were computed for each statement. To interpret results, the 5-point scale was divided into 3 parts; the mean of 1.00 -1.66 denoted low attitudes, 1.67- 3.32 denoted moderate attitudes and 3.33-5.00 denoted positive attitudes towards the use of technology. To describe the extent of use of different technology by lecturers' means and standard deviation were used. To interpret the results, a mean falling between 1.00 - 1.66 denoted zero to less frequent use of technology; a mean between 1.67 -3.32 denoted moderate frequent use; and a mean falling between 3.32-5.00 denoted frequent use of technology by lecturers. The Pearson-Product moment correlations were calculated to describe the relationship between attitudes of lecturers and the extent to which lecturers used different technologies. Rad et al. (2009) reported convention scales used to interpret the magnitudes of correlation coefficient values (  $r$  )  $\pm 0.070$  -A very strong association;  $\pm 0.50$  to  $\pm 0.69$ - A substantial association;  $\pm 0.30$  to  $\pm 0.49$ - A moderate association;  $\pm 0.10$  to  $\pm 0.29$  - A low association;  $\pm 0.01$  to  $\pm 0.09$ - A negligible association and 0.000 - No association.

### Results

The results in Table 1 presents the mean and standard deviation scores on perceived attitudes of BCA lecturers, personal and Table 2 shows Mean, Standard Deviation, Correlations, magnitudes and significance scores for computer technology, tools and resources recorded by BCA lecturers.

Table 1: Mean and standard deviation scores on perceived attitudes of BCA lecturers

Perception statements	Attitude outcomes	Mean	Std. Dev
I hesitate to use a computer for fear of making mistakes I can't correct	positive	4.73	0.75
I feel nervous about using the computer technology	positive	4.65	0.81
Computer technology makes me feel comfortable with my job	positive	4.15	1.37
I like to use computer technology	positive	4.58	0.70
Computer technology helps me improve teaching	positive	4.56	0.66
Computers make me obtain information easily and faster	positive	4.62	0.92
Computers make it possible to work more productively	positive	4.56	0.70
Computers allow me to do more interesting and imaginable work	positive	4.26	0.86
Computers help me to enhance the presentation of my work to a degree which justifies the extra effort	positive	4.47	0.66
I can probably teach myself most of the things I need to know about computers	positive	3.76	1.35
I can make computers do what I want them do	positive	3.71	1.19
If I get problems using the computer, I can usually solve them one way or the other	positive	3.62	1.13
I am not in complete control when I use a computer	positive	3.38	1.33
I need experienced person nearby when I use a computer	positive	4.12	0.88
I avoid preparing a PowerPoint presentation because it involves working with computers	positive	4.62	0.65
Minimize contacts with computers in my job	positive l	4.61	0.89
I only use computers when I am checking e-mail	positive	4.59	0.82
I will use computers in almost everything I do. In my job and outside	positive	3.44	1.28

Table 2: Mean, Standard Deviation, Correlations, magnitudes and significance scores for computer technology, tools and resources recorded by BCA lecturers

Kinds of Technology	Mean	Std Dev	r	Association	Sign
<b>Classical educational technology resources</b>					
Chalkboard	2.86	1.33	-0.09	Negligible	0.62
Textbooks	4.24	.85	0.01	Negligible	0.77
Posters	3.02	1.11	0.13	Low Association	0.48
Charts	2.56	1.11	-0.06	Negligible	0.72
Bulletin boards	2.44	1.28	0.15	Low association	0.41
Notice boards	2.91	1.16	0.13	Low Association	0.46
Exercise books	3.00	1.28	0.271	Low Association	0.12
Drawing instruments	2.56	1.54	0.03	Negligible	.087
Slides	3.26	1.69	0.00	No association	0.98
<b>Modern educational technology tools</b>					
Internet and WWW page	4.62	.92	0.06	Negligible	0.74
Teleconferencing	1.65	1.15	0.33	Moderate	0.06
Video-conferencing	1.50	0.86	0.25	Low Association	0.15

Video	2.88	1.27	0.22	Low Association	0.22
Search Engines over internet	4.12	1.15	-0.00	No Association	0.99
Overhead projectors	3.74	1.08	-0.02	Negligible	0.91
Scientific Calculators	3.71	1.24	0.09	Negligible	0.09
Internet Cameras	2.06	1.28	0.17	Low association	0.32
Chat or teleconference	1.88	1.32	0.20	Low Association	.025
VCD or DVD	2.71	1.27	0.30	Moderate	0.09
Laser Disc of Films	2.00	1.30	0.26	Low association	0.13
Video Camera	2.35	1.32	0.21	Low association	0.24
Radio or tape	1.82	1.19	0.02	Low association	0.91
<b>Computer educational technology resources</b>					
<b>Windows and MS-DOS</b>	<b>4.15</b>	<b>1.44</b>	<b>0.51**</b>	<b>Substantial</b>	<b>0.00</b>
Data Projector	3.44	1.52	0.29	Low Association	0.09
<i>Special Software</i>	<i>3.26</i>	<i>1.56</i>	<i>0.41*</i>	<i>Moderate</i>	<i>0.02</i>
<i>Practice Software</i>	<i>2.85</i>	<i>1.59</i>	<i>0.36*</i>	<i>Moderate</i>	<i>0.04</i>
Scanners	3.59	1.31	0.30	Moderate	0.09
Digital Cameras	3.38	1.44	0.33	Moderate	0.06
<i>Multimedia</i>	<i>3.41</i>	<i>1.62</i>	<i>0.48**</i>	<i>Moderate</i>	<i>0.00</i>
<i>Laptops</i>	<i>4.38</i>	<i>1.07</i>	<i>0.61**</i>	<i>Substantial</i>	<i>0.00</i>
Printers	4.59	.92	0.25	Low Association	0.15
CD-ROM or DVD-ROM	3.79	1.27	0.27	Low Association	0.12
<b>Laboratory educational technology resources</b>					
Gloves	2.71	1.53	0.05	Negligible	0.77
Safety masks	2.68	1.41	0.11	Low Association	0.55
Models	2.41	1.18	-.012	Low Association	0.50
Connection cables	3.55	1.33	0.18	Low Association	0.33
Power supplies	3.69	1.26	0.14	Low Association	0.45
Bulbs and lamp sockets	3.18	1.49	0.13	Low Association	0.45
Litmus	1.71	1.14	-0.08	Negligible	0.64
Protective clothing	3.32	1.47	0.07	Negligible	0.70
Tripods	2.21	1.07	-0.03	Negligible	0.89
Graduated Cylinders	2.15	1.21	0.03	Negligible	0.86
Various Filter papers	2.24	1.23	-.017	Low association	0.33
Thermometers	2.50	1.29	-.014	Low association	0.45
Pendulum	2.18	2.49	0.27	Moderate	0.13
Sterilizers and centrifuges	2.06	1.25	0.00	No association	0.99
Dissecting Corvettes	1.97	1.88	-0.13	Low association	0.46
Compasses	2.12	1.04	0.15	Low association	0.41
Bunsen Burner	1.79	.98	-0.20	Low association	0.27

\*\* significant @ 0.01 level, \* significant @ 0.05 level

## Discussions

The demographic characteristics summary of the respondents revealed that majority of the respondents were males (91%), approximately three quarter (71%) hold doctoral degree (PhD), two-thirds (65.5 %) of the respondents were citizens of Botswana and most (41%) aged between 41 and 50 years old. Research objective # 2 was to describe the attitudes of lecturers in using technology and the extent to which they use the different computers technology at BCA. The mean scores for the eighteen statements were calculated and presented as shown on Table 2. Due to the rating scale used, the actual mean score is 3, such that mean scores above 3 were denoted as favourable, while those below 3 depict unfavourable. The results revealed an overwhelming general positive attitude by farmers towards the use of computer technology. All the means for the attitudinal statements were above the cut-off point of 3. The most prominent attitudinal statement as ranked by the lecturers were statements of positive attitudes that I hesitate to use a computer for fear of making mistakes I can't correct (4.73), I feel nervous about using the computer technology (4.65).

Objective # 3 was to determine the relationship between lecturers' attitudes and the extent of use of computer technology resources and tools in teaching (Table 2). Majority of the statistical means were between 1.67 and 3.32 in all categories of technology implying moderate use of technology. With regard to relationships between lecturers' attitudes and extent of use of technology, the results showed low association between the variables. Table 2 shows that from a list of 49 technologies, only 5 are significantly related at 5% to the attitude of lecturers. These are Windows and MS-DOS ( $r = 0.51$ ,  $p = 0.00$ ), Special Software ( $r = 0.41$ ,  $p = 0.00$ ), Practice Software ( $r = 0.36$ ,  $p = 0.00$ ), Multimedia ( $r = 0.48$ ,  $p = 0.00$ ) and Laptops ( $r = 0.61$ ,  $p = 0.00$ ). These trends of results may be due to the issues of availability, accessibility and the e-readiness of the lecturer in terms of competence to use these technologies.

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