

CHAPTER SEVEN

INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGIES (ICTs) IN DISTANCE EDUCATION PROGRAMMES

7.1 INTRODUCTION

The growth of distance education has been associated with Information Communication Technologies (ICTs). In chapter two, the growth of distance education was traced and this growth shows the close relationship between ICTs and distance education. In fact, distance education cannot do without ICTs but the choice of the technology to use depends on a variety of factors including the '*desirability, feasibility, affordability and sustainability*' of the technology (Haddad and Zurich 2002:55).

In Uganda, as already shown in chapter 3 section 3.6, the teacher education programmes that have been run by distance education have not utilised a variety of technology but have largely depended on print and on face-to-face sessions. It was therefore important to establish what technology the stakeholders of the Bachelor of Education (External) Programme (B.Ed. External) have access to, what they believe can be used for B.Ed (External) and for what purpose and finally what prerequisites should be put in place for this technology to work. From the results already discussed in chapter six, it is evident that the teacher education programmes that have been offered in Uganda using distance education rely heavily on print. Integration of the ICTs in the programmes would place these programmes at the second and third generation of distance education. See also chapter two sections 2.3.4 – 2.3.6 for discussions on generations in distance education.

The respondents in this study were asked:

- which ICTs they have access to and where they can access the said technology;
- what ICTs should be used in the B.Ed (External) programme;
- why the ICTs should be used and the prerequisites that should be put in place for the technology to work in Uganda.

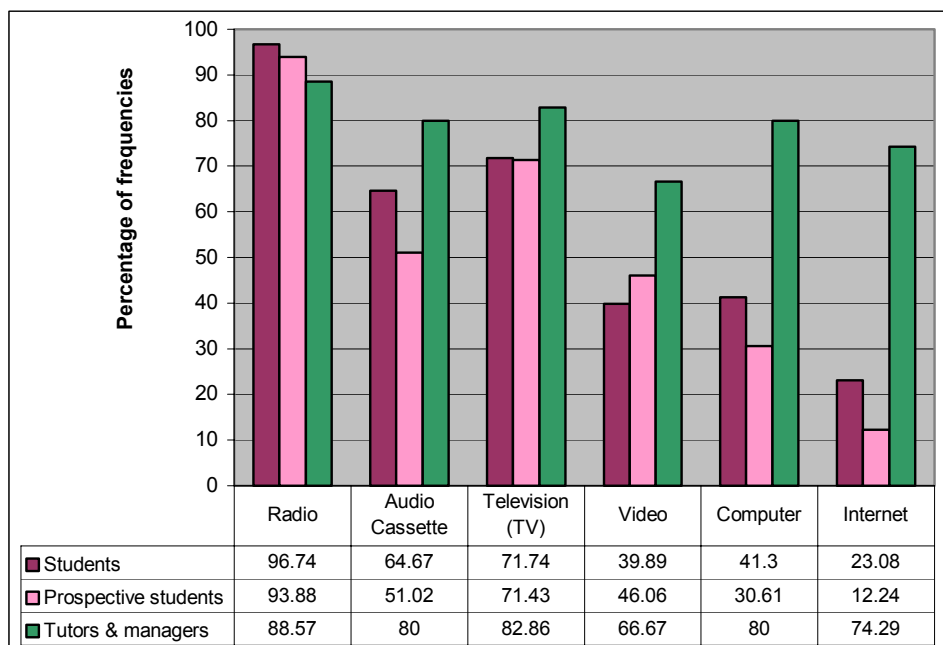
See appendices II – VI items 23 - 27 of the students' questionnaire, 25 - 29 of the prospective students' questionnaire, items 25 - 29 of the tutors and managers' questionnaire, and items 24 – 27 of the interview schedule.

The responses to these questions are therefore being presented in this chapter.

7.2 ACCESS TO ICTs

Access to ICTs is one of the major factors that must be taken into account when choosing the technology to be used (Bates 1994:1577, De Wolf 1994:1561, Meyer-Peyton 2000:85). According to the pilot study that was conducted during this study, questions on some ICTs such as teleconferencing and video conferencing were not understood and the respondents also said these technologies are currently inapplicable to Uganda because of costs and lack of infrastructure to support them (see also section 4.4.2 for the detail on the pilot study). A list of only some ICTs was hence provided and the respondents were asked to indicate whether they have access to it or not. They were also asked to indicate the location of this access as this predetermines the availability of the technology for study purposes. Figure 7.1 gives the respondents access to ICTs while table 7.2 gives the places where the ICTs can be accessed.

Figure 7.1: Frequency of students', prospective students', tutors and managers' access to ICTs



To establish whether there is a significant difference in access to technology particularly by students, tutors and managers, a Chi Square test was used. The level of significance was at $p \leq 0.05$. The result of the test indicates that there is no significant difference with regard to access to the audiocassette ($p = 0.0769$) and to the television ($p = 0.1718$) although a higher percentage of tutors and managers have access to both technologies. However, the result of the same test with regard to access to the video ($p=0.0043$),

computers ($p=0.0001$) and Internet ($p=0.0001$) showed a highly significant difference in access. In all the three technologies, only a small percentage of the students have access. Internet has the lowest percentage of students having access to it with only 23.08%.

It is therefore important to note that, according to the results of this study, nearly 60% of the students and prospective students do not have access to video, computer and to Internet so decisions on which technology to use and how access is to be provided must take this into consideration. Nevertheless, even with those students that indicate that they have access, only 3.39% have access to computers at home and 1.16% to Internet at home (see table 7.2 for details).

Table 7.1 gives the frequency and percentage of the respondents that DO NOT have access to ICTs while table 7.2 shows the ICTs and where each can be accessed.

Table 7.1: Frequency of students', prospective students' and tutors and managers' who DO NOT have access to ICTs

ICT	Students		Prospective students		Tutors & managers	
	F	%	F	%	F	%
Radio	6	3.26	3	6.12	4	11.43
Audio Cassette	65	35.33	24	48.98	7	20
Television (TV)	52	28.26	14	28.57	6	17.14
Video	110	60.11	26	53.06	11	33.33
Computer	108	58.7	34	69.39	7	20
Internet	140	76.92	43	87.76	9	25.71

A number of other places where the ICTs can be accessed were also identified and these include:

- Hotels/bars
- Schools
- Private Computer Centres/Business Centres
- Internet Cafes
- Post offices
- Work places and
- TDMS Coordination Centres

With the exception of the TDMS Coordinating Centres all these places belong to the private sector. So, although the numbers accessing the ICTs at these places is minimal,

it implies that the private sector is an important sector and a potential partner in the provision of access to ICTs. Makerere University therefore needs to explore this further.

Table 7.2: Percentage of students, prospective students and tutors and managers and their access to ICTs

ICT	CATEGORY	PLACE OF ACCESS TO ICTs				
		Home	Friend's Home	Relative's Home	Office	MUK
Radio	Students	97.28	25	24.46	19.57	8.20
	Prospective Students	93.88	28.57	32.65	10.20	8.51
	Tutors & Managers	91.67	8.33	8.33	27.78	22.22
Audio Cassette	Students	59.02	20.77	17.49	10.38	8.24
	Prospective Students	53.06	16.33	20.41	6.12	0
	Tutors & Managers	77.78	8.33	8.33	11.83	11.11
TV	Students	57.87	27.53	24.16	8.43	13.48
	Prospective Students	55.10	32.65	34.69	4.08	2.08
	Tutors & Managers	91.67	11.11	5.56	8.33	11.11
Computer	Students	3.39	5.65	7.91	26.55	27.12
	Prospective Students	10.20	16.33	2.04	20.41	6.38
	Tutors & Managers	19.44	0	2.86	62.86	31.43
Internet	Students	1.16	0	1.16	8.67	21.39
	Prospective Students	2.04	4.08	2.04	8.16	4.26
	Tutors & Managers	2.78	0	0	37.14	40

This study also shows that personal ownership to all the ICTs with, the exception of the radio, is clearly limited especially for the computer and Internet. This is consistent with what is expressed by the Republic of Uganda (July 2002:8,17), which indicates that by February 2001 Uganda had only 1,200 Internet/Email subscribers using wireless access and 4,500 using the dial-up access and with only one personal computer for every 1,000 people. See also table 7.3 that gives Uganda's access to various technologies.

Table 7.3: Uganda's access to telecommunications

Technology	1999	July 2000	February 2001
Fixed Telephone Lines	58,000	61,000	56,149*
Mobile Phone	70,000	140,000	210,000
	(subscribers)	(subscribers)	(subscribers)
Internet/email (wireless)	N/A	500 (subscribers)	1,200(subscribers)
Television Stations	11	11	19

Source: Republic of Uganda (July 2002:8)

* By February 2001 the number of fixed telephone lines had reduced but it is not clear why this happened.

These figures confirm the findings of this study which indicate that Uganda has poor access to ICTs, no programme should therefore be developed based on the assumption

that students will have personal access to video, computers or to Internet. Alternative ways of ensuring access would instead need to be considered.

Policy makers were asked to consider this question and suggest ways in which the ICTs can be made more accessible (item 26 of the interview schedule – appendix VI).

According to them, this could be achieved through:

- Collaboration with various institutions. In this way, ‘duplication of efforts and wastage of scarce resources’ could be avoided. In collaborative ventures, institutions would pool resources and run common centres. This collaboration should also extend to the public and to corporate sector like the different TV and radio stations.
- Establishing well-equipped centres. Since personal ownership is difficult, centres should be established where the distance learners can access the technology. These centres could be university centres, district resource centres or even schools/colleges (Perraton and Creed 2001:13).
- Careful planning of programmes. This should include proper planning and budgeting for the provision of the technology. For example, could plan for use of ‘CD-ROMs instead of Internet’.
- Government subsidies and support. Government support in form of subsidised cost of equipment and technology and waiver of taxes on this equipment.
- Personal ownership. Encourage students to own radios and audiocassettes.
- Funding acquisition. ‘Providers must be willing to invest in ICTs’.

Table 7.4 provides the results of the policy makers’ views in how ICTS could be made more accessible to users.

Table 7.4: Policy makers views on how ICTs can be made more accessible

How to make ICTs more accessible	F	%
Collaboration	23	34.85
Well equipped centres/schools	30	45.45
Planning of programmes	3	4.55
Funding of acquisition of ICTs	2	3.03
Personal ownership	2	3.03
Involving the private sector	1	1.52
Government subsidies and support	5	7.58

Access to all ICTs is still a huge problem in Uganda as shown in this study and as shown in table 7.3. The majority of students do not have access to video, computer and Internet whereas a higher proportion has access to the radio and to audiocassette. Clearly if Makerere University is to fully integrate ICTs in its B.Ed (External), a model

based on personal ownership of video, computer and Internet will not be appropriate. A model that exploits provision through centres and sharing of facilities is likely to promote higher access to the technology for particularly the students (Bates 1994:1577, De Wolf 1994:1561, Perraton and Creed 2001:13).

7.3 USE OF ICTs IN DISTANCE EDUCATION PROGRAMMES

7.3.1 Introduction

ICTs have a huge potential of enriching distance education because it can:

- According to Moore (1996:24), Peters (1996:51), and Bates (2000:16), enable the teacher and learner to bridge the distance between them.
- According to Tschang and Senta (2001:6), be used to get the '*...right types of content and learning to the individuals...*' and to this purpose it has been used for the production of study materials for distance learners.
- Be used to improve learning (Bates 2000:16, Tschang and Senta 2001:6)
- Enhance management and administration of distance education (Paul 1990: 124).

The government of Uganda also recognises the importance of ICTs in '*...national development, especially human development and good governance...*' (Republic of Uganda July 2002:21) and has therefore as its goal:

To promote the development and effective utilisation of ICT such that quantifiable impact is achieved throughout the country within the next 10 years (Republic of Uganda July 2002:21)

Policy makers in this study were asked to give their views regarding the use of ICTs in teacher education programmes provided by distance education in the country. This question was specifically addressed to this category because as a vital group in policy making, any innovation in the education system needs their support and involvement if it is to succeed. From their responses, the major issues identified were:

- The question of access to technology. To them, access to ICTs in the country is still a major challenge although the technology is already available in the country. So according to one official, 'government must play a role by deliberate effort at making the equipment accessible for example through subsidies'. It is for this reason that 13.91% of them recommended that access to ICTs is a prerequisite to any use in teaching and learning (see table 7.5). This access must be for all the users – teachers and learners.
- 56.25% of the officials who answered this question viewed ICTs as having a huge role to play in the training and education of teachers. One of the officials pointed out

that ‘work demands are changing and computer skills are core’. Another added that ‘the world around us is changing and we must change too to cope with all these changes.

- Also, according to the policy makers, there must be care in choosing the technology for use. So it is important to ‘utilise technology that is affordable and available to learners’. The need to diversify technology was emphasised because ‘depending on print media alone is no longer sufficient’.
- However the reality is that introduction of ICTs is likely not to be affordable to many. It is likely to be costly but that nevertheless, ‘...policy should promote use of technology.’

So, whereas the policy makers are keen to have ICTs integrated in teacher education programmes, there is also recognition that the cost of the technologies, and therefore access, to these is still a huge challenge. It is therefore vital for the government and teacher educators to carefully and deliberately plan for this integration taking into careful consideration the basic prerequisites necessary for this to work.

7.3.2 Prerequisites for effective and efficient integration of ICTs

The policy makers were also asked to identify the basic prerequisites that must be put in place for the integration of ICTs to be successful. The prerequisites identified are presented in table 7.5 and each of them will be briefly discussed in the next sub-sections.

Table 7.5: Prerequisites for effective and efficient integration of ICTs

Prerequisite	RESPONSES	
	F	%
Training and sensitisation of staff and students	38	33.04
Access to the ICTs by all users	16	13.91
Adequate funding for acquisition and maintenance	13	11.30
Electrification or access to alternative power	13	11.30
Policies and guidelines at national and institutional levels	6	7.83
Collaboration and networking with other institutions and departments	6	7.83
All the required equipment	20	17.39

a) Training and sensitisation of staff and students

Access to technology should be accompanied by knowledge and skills for its use. To achieve this, 33% of the policy makers recommended training and sensitisation of all the users. According to them, it is vital to have ‘qualified staff to run and manage the technology’ and tutors should be able to ‘...effectively use the equipment’. Equipping

centres is therefore not sufficient, all users must be sensitised and trained. According to one officer, it is vital to 'transform the teacher trainers by training them in the use of technology. For, unless the teachers themselves are exposed and have knowledge it is a waste of time to distribute computers to schools'.

Bates (2000:77) identifies human support for technology infrastructure as critically important. According to him, this human support includes the '*...technology support people... media and production and services people...instructional design staff... subject experts...*' All these different people need to be identified and trained to fulfil their different roles.

b) Access to ICTs by all users

The importance of access to ICTs has already been discussed in section 7.2 and in this study, 13.91% of the policy makers who answered this question identified access as one of the core prerequisites that must be put in place before the technology is chosen and used. According to them, for the technology to be effectively used, all users – students, writers, tutors and managers and support staff – should have access to the technology chosen for use in the distance education programmes. This also implies that all the necessary equipment for the technology to work should be made available. Access to technology in Uganda is still a challenge because, for example by 2001 Uganda had only 2 telephone mainlines per every 1,000 people while only 2.5 out of every 1,000 people were internet users (UNDP 2003:276). Also according to the Republic of Uganda (July 2002:17), it is estimated that only 1 in every 1, 000 people have a personal computer and that even in organisations, there are '*...very few LANs ...and there are hardly any WANs*'. Deliberate plans should therefore be in place for the acquisition of this equipment and efforts to ensure all users have access. According to the policy makers, in this study, this can be achieved through:

- Provision of 'technologies in schools as well so that the teachers can continue to use these technologies'. Perraton and Creed (2001:55) suggest that this can be achieved through governments or international agencies' support.
- Establishing 'satellite centres where these services can be provided'. LEARN Foundation in Bangladesh for instance used this strategy by supplying some computers to village schools (Perraton and Creed 2001:55). The African Virtual University could also be said to be using this strategy since it has satellite centres in different universities in Africa.

- 'Departmental website with all the necessary data'. A quick survey of the Internet will reveal many universities with websites where basic information can be found on courses, admission requirements and procedures and key contacts.

A number of authors have identified access to technology as an important factor (Bates 1994:1577, Meyer-Peyton 2000:85, Perraton, Creed and Robinson 2002:45). Planners should hence be concerned about access to the technology for all the users. It would be futile for instance to choose to use any technology if the students do not have access to it.

c) Adequate funding for acquisition and maintenance

Investment in technology in any distance education programme is one of the high costs (Bates 2000:19, Berge 2001b:19, Orivel 1994:1572). It is therefore imperative that funds for this be made available. 11.3% of the policy makers in this study were also of the opinion that funding for acquisition and maintenance of equipment is a prerequisite for the integration of technology in teacher education programmes. Also, that it must be remembered that there might be 'need for massive investment to start with'.

d) Electrification and alternative sources of electricity

Perraton et al. (2002:45) for instance identify access to electricity or alternative sources of electricity as one of the prerequisites for the use of ICTs. However in Uganda, access to electricity in Uganda is still very poor - with 89.7% of its energy use from traditional sources of fuel like firewood. This compares poorly to high-income countries that have only 3.3% of energy use from traditional sources (UNDP 2003:214-215). Since most of the ICTs require electricity to operate, availability of either electricity or alternative sources of power is a prerequisite. This is much more urgent in the rural areas where access to electricity is even more limited. Providers of distance education programmes in Uganda therefore need to plan for access to electricity or to alternative sources of electricity.

e) Policies and guidelines

According to Haddad and Zurich (2002:49) *'in planning a technology-mediated project for education, attention must be paid to the laws and regulations that will affect the project...'* 7.83% of the policy makers in this study agree with this for according to them, for teacher education programmes to successfully integrate ICTs, there must be policies and regulations that will facilitate this. In the words of one official, there is need for a 'clear vision, policy and plan for integration of ICTs'. One of them recommended that a

National Communications System be established to ensure coordination of facilities and service.

The Republic of Uganda (July 2002) has already developed a National Information and Communication Technology Policy while Makerere University has also developed an Information and Communication Technology: Policy and Master Plan. Makerere University's vision in this regard is

‘...university wide access to, and utilisation of information and communication technology to enhance the position of Makerere University as a centre of academic excellence, and its contribution to sustainable development of society’ (Makerere University February 2001).

The Department of Distance Education therefore needs to utilise this framework to develop guidelines that will support successful integration of ICTs.

f) Collaboration and networking with other institutions and departments

The policy makers in this study were also of the opinion that Makerere University can ensure access to technology for its B.Ed (External) students through collaborating and networking with other institutions and departments. While discussing access in b) above, the policy makers for instance identified schools and places where teachers could access ICTs. This is one example of institutions that Makerere University could collaborate with.

7.3.3 Conclusion

So according to the policy makers in this study, for ICTs to be successfully integrated into teacher education, it is vital to ensure that:

- There is access to the ICTs by all users and availability of all required equipment
- There is adequate funding for acquisition and maintenance
- Training and sensitisation of staff and students is carried out
- Electrification or access to alternative power especially in the rural areas
- Policies and guidelines are in place at both national and institutional levels

This is in agreement with what (Haddad and Zurich 2002:43) consider as prerequisites for according to them there must be ‘...*access, acceptance, and availability*’ which, put together encompass all that has been raised here by the policy makers.

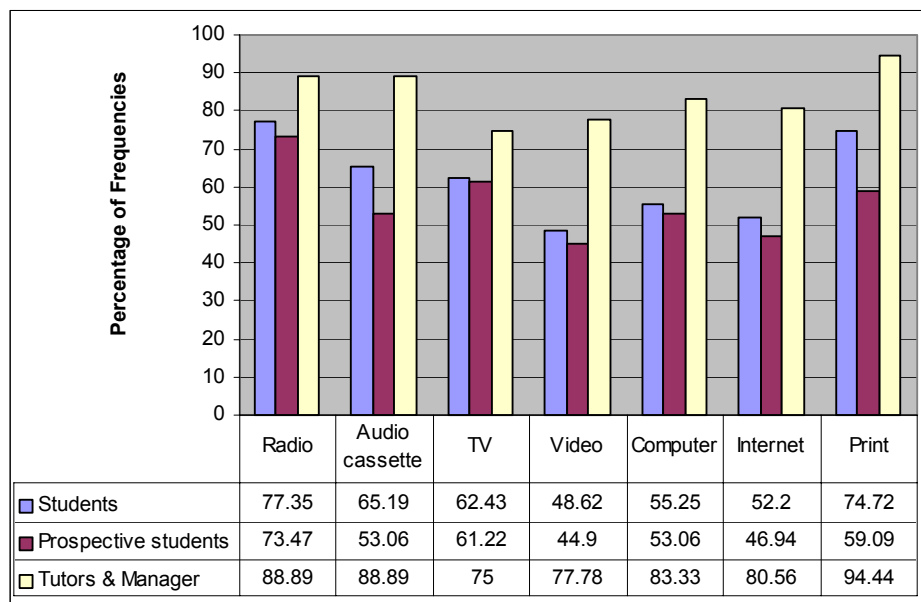
7.4 ICTS FOR B.ED (EXTERNAL) PROGRAMME

In chapter three section 3.6.5 the B.Ed (External) degree programme is described and according to that description, this programme has not integrated ICTs into its activities. This study therefore sought to establish the opinion of the respondents with regard to ICTs in the programme. See items 25 and 26 of the students' questionnaire, 27 and 28 of the prospective students' questionnaire, and items 27 and 28 of the tutors and managers' questionnaire (appendices II – V).

7.4.1 ICTs that can be used for B.Ed (External)

Taking into account the environment in Uganda in which the B.Ed (External) is being run, all the respondents were asked, using a YES/NO question to indicate which technologies could be used for B.Ed (External) activities. The respondents were given a choice of seven different technologies i.e. radio, television, video, computer, Internet and print. These different technologies are currently available in the country and it is for this reason they were chosen. Figure 7.2 gives the results of the responses to this question. According to these results, all technologies can actually be used in the country and the reasons are given in table 7.6. Nevertheless, it is worth noting that print had the highest number of responses by tutors (94.44%), whilst for students and prospective students this was radio (77.35% and 73.47% respectively).

Figure 7.2: Frequency of students', prospective students', tutors' and managers' views on ICTs to be used for B.Ed (External)



7.4.2 Reasons for choosing the ICT for use in the B.Ed (External)

Although technology is important and has potential to enrich teaching and learning, it should not be chosen for the sake of it and neither should it be chosen simply because it is available (Juma 2001:294). Technology should be treated as a medium, ‘...a *servant not a master...*’ (Tooth 2000:2). This study was therefore concerned with establishing how distance education programmes in Uganda can benefit from ICTs. All the respondents in this study were asked (using open questions) to give reasons for choosing a particular technology for use in the B.Ed (External) activities. See item 28 of the tutors and managers’ and prospective students’ questionnaires, and item 26 of the students’ questionnaire (appendices II – V) From the responses received, the following reasons were given:

- Accessibility of the technology
- For purposes of acquiring information and for communication
- The technology’s potential to enrich and reinforce learning
- For the transmission of special knowledge and skills
- Versatility of the technology

There is a close relationship between what the policy makers put forward as prerequisites and what is raised here as reasons for choosing a technology. Table 7.6 shows the reasons given and the percentage of responses received for each technology from the different categories of respondents.

Each of the reasons given will be briefly discussed in the next sub sections.

a) Accessibility of the technology

This refers to how easily students, tutors and managers in a distance education programme can have and use the technology. For example, the radio was selected for use because according to one tutor, ‘virtually all the students have access to radio’. The other issues of accessibility raised in this study include:

- The technology’s potential use for mass education. The radio and TV were for instance said to be suitable for this. Holmes et al. (1993:141), Perraton and Creed (2001:14) all say that radio and TV have been used for broadcast programmes in a number of distance education programmes.
- Access to the technology by those who live in the rural areas. Most rural areas do not have access to electricity but the radio and audiocassette can still be used in these areas unlike the TV that may not be easily accessible in the rural areas. This confirms what Thomas (2001:2) says, for according to him, ‘...*most people, even in the poorest rural areas, have access to radio...*’

- Flexibility in use. The audio and the video can be used at the learner's convenience without being limited by hours of transmission, as is the case with radio and TV programmes.
- Simplicity of the technology. Radio, audiocassette and print were said to be simple technologies that can be easily utilised unlike Internet that may require more complex knowledge and skills before a learner can utilise it.

So, according to the respondents in this study, the choice of a technology to be used should be dependant among other things on how accessible the technology is to all its users.

Table 7.6: Frequency of respondents' views on reasons for use of ICTs in the B.Ed (External)

Reason for Using ICT	ICT	Students	Prospective students	Tutors & Manager
		% of responses	% of responses	% of responses
Accessibility	Radio	7.69	7.14	55.56
	Audio	4.73	5.56	42.86
	TV	3.57	3.51	32.35
	Video	5.04	3.23	28.57
	Computer	0.86	0	-
	Internet	0	3.57	11.90
	Print	5.97	-	57.45
Acquisition of Information & Communication	Radio	49.11	35.71	13.33
	Audio	4.05	5.56	4.76
	TV	16.43	15.79	0
	Video	1.68	12.90	7.14
	Computer	0.86	0	-
	Internet	48.18	50	59.52
	Print	14.18	-	10.64
Enrichment and reinforcement of learning	Radio	22.49	14.29	13.33
	Audio	62.16	41.67	26.19
	TV	39.29	28.07	29.41
	Video	42.02	38.71	17.86
	Computer	18.97	9.09	-
	Internet	23.64	3.57	7.14
	Print	56.72	-	8.51
For special knowledge & skills	Radio	14.79	11.43	2.22
	Audio	20.95	5.58	4.76
	TV	27.86	15.79	11.76
	Video	36.13	12.90	25
	Computer	24.14	12.12	24.14
	Internet	7.27	0	2.38
	Print	5.22	-	2.13
Versatility	Radio	1.18	5.71	2.22
	Audio	2.70	13.89	14.29
	TV	3.57	5.26	20.59
	Video	9.24	6.45	21.43
	Computer	31.03	36.36	-
	Internet	10.34	25	16.67
	Print	9.70	-	6.38

b) Acquisition of Information and for Communication

In chapter six, information dissemination and communication were identified as an important element in any distance education programme. I believe it is for this reason that choice of the technology was said to be dependant on its potential for information dissemination and communication. With this regard, a high percentage of students, prospective students as well as tutors and managers were of the opinion that radio and the Internet could be used particularly for this purpose.

c) Enrich and reinforce learning

Technology chosen should be the kind that will support the course content and enable effective learning to take place. So the technology should not be used simply because it is available but because of the potential it has to enhance teaching/learning (Bates 2000:16, Juma, 2001:294, Meyer-Peyton 2000:84). According to Mcloughlin and Oliver (1999:37) different technologies can support and promote acquisition of different skills; and therefore choice should be dependant on the expected learner outcomes (see also figure 2.1).

In this study, a number of respondents likewise found this important and consider that it should be a reason indeed for choosing any ICT. According to the students, the audiocassette, TV, video and print should be used because these can enrich and reinforce learning. In the words of some tutors and managers, the radio would 'make learning more interesting and real', while with the TV, 'audio-visual impressions liven up study and make students feel they are in touch with the presenter'.

d) Acquisition of special knowledge and skills

According to Mcloughlin and Oliver (1999:37), different technologies can help promote different approaches to teaching and learning and can help achieve different learning outcomes. See also figure 2.1 for the relationship between technologies, teaching/learning approaches, and learning outcomes. In this study, whereas all the ICTs were chosen because they can be used to achieve special knowledge and skills, according to the students, the tutors and managers, the radio would be useful in the teaching of languages and communication skills, the video/TV for demonstrations and practical skills, and the computer for data processing, writing skills and information search.

e) Versatility

This refers to the ICTs flexibility or adaptability for use. For example, the computer and Internet were said to have a huge potential for multiple or varied use including 'keeping records', 'printing study materials', 'accessing international information' and 'analysis of information and data'. This confirms what Tschang (2001:20) says of Internet which, according to him, can be used to store and access vast quantities of knowledge.

The results of this study indicate that any ICTs can be used for teaching/learning but the choice of which ICT to use, should be dependant on how accessible and versatile the technology is and on what learning outcomes are expected from the teaching/learning experience. The technology should not be used simply because it is available.

7.4.3 Strategies for financing the integration of ICTs in the B.Ed

The cost of ICTs is one of the factors that affect choice of the ICTs and so it's financing must be carefully planned right from the initial planning for the course (Bates 2000:19, Berge 2001b:19, Meyer-Peyton 2000:85, Orivel 1994:1572). As already discussed in section 7.3.2c, according to the policy makers who participated in this study, funding is one of the prerequisites for the integration of ICTs in teacher education programmes run using distance education.

The B.Ed (External) relies almost entirely on student fees for the funding of all running costs of the programme and in it's budgeting, the Department allocates only 7% of its total funds to equipment like computers, printers, photocopiers, and their accessories. From income derived from the B.Ed (External) programme alone, this amounts to about US\$35,000. If therefore this were spent on computers alone, at the cost price of US\$1,000, only 35 computers would be purchased! However, according to the University ICT policy, '

it is the University Policy to ensure and require that all students, academic staff, administrative and support staff, and managerial staff are trained on a continuing basis to equip them with the requisite skills to fully exploit the ICT environment in their different functions' (Makerere University February 2001:18).

If this policy therefore is to be implemented, the Department needs a big Local and Wide Area Network of computers so as to effectively and efficiently reach its nearly 2,500 B.Ed (External) students many of who are scattered across the country. A challenge that the Department is unlikely to meet from the meagre income it earns from fees.

This clearly is a challenge and so, the respondents were asked to suggest ways in which this integration could be funded. From the list of options given, the highest number of respondents were of the view that this funding should come through government subsidies to the programme, from the donor community and from tuition fees already levied by Makerere University. The least number were of the view that additional charges could be introduced. See table 7.7 for details.

Table 7.7: Frequency of respondents' views on sources of funding for ICTs in the B.Ed (External)

Source of Funding	Students		Prospective students		Tutors & managers		Policy makers	
	F	%	F	%	F	%	F	%
Government subsidies	143	83.14	46	93.88	30	85.71	22	66.67
Donor community	141	81.50	36	73.47	30	85.71	19	57.58
Tuition fees	98	56.32	25	51.02	24	66.67	21	63.64
Local community support	67	38.95	17	34.69	17	48.57	10	30.30
Additional charges	21	12.21	8	16.33	16	45.71	18	54.55

In addition, a number of other strategies were identified and these are:

- Fundraising
- Performing Arts & exhibitions
- University savings
- Money generating projects
- Individual acquisition
- Schools
- Private sector
- Cooperative groups
- Loan schemes

These results reveal that funding of ICTs remains a challenge that Makerere University must carefully plan to deal with. Funding ICTs requires a lot of concerted effort by all stakeholders and a lot of creativity and innovation by Makerere University.

7.5 GENERAL COMMENTS

All respondents were asked to make any general comments with regard to the use of ICTs in the provision of teacher education programmes run in Uganda using distance education. These comments reinforce some of the issues that were specifically raised in the rest of the questions on ICTs. However, in particular, the general comments reiterate the points that:

- *ICTs have a huge potential in the country and this potential should be exploited.*
In particular, the ICTs have a potential to make teacher education much more

interactive, and enriching so 'for distance education to succeed, other media must be used'.

- *Funding and facilities for ICTs are needed.* Integration of ICTs cannot take place without adequate funding and without the necessary equipment and facilities. There must therefore be a 'willingness to invest in this area'.
- *Access to ICTs for both students and staff is vital for integration to be meaningful.*
- *There are a number of challenges* but these are not insurmountable and so Makerere needs to 'carefully plan' for the integration.

7.6 SUMMARY

Integration of ICTs is absolutely imperative in distance education. This chapter has shown that the ICTs have a huge potential in meeting a number of teaching/learning functions in the B.Ed (External) however, in Uganda, access to the ICTs, which is one of the prerequisites for the integration, is still a huge problem to students and staff of this programme. Personal ownership of the video, TV, computer and Internet is limited so programmes that presuppose personal ownership to ICTs cannot work effectively and efficiently. Alternative ways of ensuring access would have to be utilised and in this study, collaborative ventures, use of centres and government subsidies are some of the strategies that have been suggested. The same applies to financing of the integration; alternative sources of funding have to be solicited since existing tuition fee funding is inadequate. This should all be done bearing in mind the fact that technology should not be chosen and used simply because it is available but because of what it can add to the teaching/learning experience. It should be based on the tasks it will be expected to perform and the outcomes expected from the programme.