

Challenges in Introducing ICT in Professional Academic Programmes of a Distance Education University

Introduction

The distance education started in 1840's when shorthand courses were taught with the help of correspondence using postal system. This process was streamlined with inception of British Open University in 1971. During 1970s, a number of substitutes to traditional higher education established particularly in the developed countries because of rapidly increasing costs of traditional education, interest in informal and non-traditional education, lack of the capacity of the educational infrastructure to meet ever increasing demands, an increasingly itinerant population, necessity of learning new competencies and the early success of Britain's Open University. Distance education is characterized by the fact that there is separation between teachers and learners. This gap is bridged using postal systems, telephone, TV, Radio, and recently with help of web based learning management systems.

Allama Iqbal Open University (AIOU) is the first Open University in Asia, established in May 1974 with "Education for all" as the motto. AIOU was established with the main objectives of providing educational opportunities to masses and to address the demand supply gap of educational provision. The university is striving to provide open and distance learning experience to students seeking education from basic literacy to PhD level. It has numerous programs at different levels serving students living in Pakistan and abroad. AIOU strives to use technology to realize its mission; especial focus has been given to Information and Communication Technology (ICT) usage to extend the university's already streamlined educational facilities.

In 2003, AIOU and Commonwealth of Learning launched a joint venture for providing MBA/MPA program tailored for existing and future executives. The programme was aimed at high potential Managers and Executives who wanted to further develop knowledge, skills, competencies and tools they need to face management challenges in the global services industry of today and tomorrow. Since its inception Commonwealth Executive MBA/MPA (CEMBA/CEMPA) programme produced almost 2400 alumni, most from the high end organizations of the country.

Initially CEMBA/CEMPA program was started in ODL mode but face-to-face component was purposely kept on comparatively higher side due to professional and quantitative nature of several courses. The moderate face-to-face component has two requirements for effective transfer of knowledge. Firstly the students should spare time to attend tutorial sessions at the weekends. Secondly there should be viable groups of students with appreciable numbers. The initial feedback from the students indicated that the arrangement for learners support was appropriate for vast majority of the executive students. However, it was noticed that about 30% students either did not spare time out of their pressing official and personal commitments to participate at the weekend sessions or they live at remote locations where sufficient number of students are not available to make a formal viable group for face-to-face component. It was also noticed that due to these problems the university was able to offer the programme at the eleven urban cities of Pakistan which represent approx. 38% population. This implied that the programme is not effectively serving about 62% of rural areas despite the fact that they have good ICT infrastructure. The university decided to address this challenge with the backing of ICT to enable these disadvantage segments of executive to reap the benefits of this programme.

Higher education institutions are adopting ICT teaching/learning technologies to create collaborative learning environment and share resources (Ifinedo, 2006). AIOU also took the help of technology, and started investigating various cost effective tools available to make CEMBA/CEMPA program as interactive as possible using World Wide Web, various alternate Learning Management System (LMS) solutions (Docebo , eFront, ILIAS, .LRN, Sakai, Blackboard and Moodle) were examined and open source Moodle (Modular Object Oriented Dynamic Learning Environment) was chosen. Initially Moodle 1.6 was used for uploading courses and engaging students in a chat like environment where the tutor and student could involve in more productive learning scheme eliminating spatial gap. It was decided to add the online mode of the programme. All the course related material was uploaded to specially created website based on Moodle, which provided a central repository for students and tutor to share material, categorized as various resources. In essence Moodle is designed to encourage creative collaborative learning, online assessment, and an easy way to communicate schedule of online classes. Moodle forums enable students to discuss topic of interest among their classmates. Moodle document sharing ability makes it easy to share any kind of document from anywhere in the world provided one has a decent Internet connection. Online mode on these moderate features was added in 2008. Later on three surveys were conducted amongst the online students in 2009, 2010 and 2011 to assess whether the university was able to curtail the challenges and difficulties of the disadvantaged groups of online programmes. The surveys indicated that the initial moderate online arrangements were able to resolve most of the above stated issues of the learners. However, latest survey indicated that the learners need much more features from online programmes. They particularly pointed out lack of participation due to absence of class room like learning environment.

The room for improvement is always there, the students and tutors suggested more or less a model which could mimic a classroom like environment and again AIOU researched various technologies (Dimdim, OpenMeetings, BigBlueButton, and WebHuddle). Finally open source BigBlueButton was selected, this technology is based upon a bunch of open source and free components. BigBlueButton supports multiple audio and video sharing, presentations with extended whiteboard capabilities, public and private chat, desktop sharing, integrated VoIP using FreeSWITCH, and support for presentation of PDF documents and Microsoft Office documents. Moreover, users may enter the conference in one of two roles: viewer or moderator. Meanwhile Moodle community had developed a lot, so it was decided to upgrade hosted version of Moodle (2.4) as well. After successful testing, the online classes were shifted to virtual classrooms by linking upgraded moodle version with BigBlueButton. The latest research was conducted in 2013 which indicates that model attained maturity. However virtual classroom model faced the some challenges like infrastructural developments, stakeholders' training/adoption/motivation.

STATEMENT OF THE PROBLEM

Progress in ICT has influenced every part of life, the advances in ICT have had a huge impact on the world economy, corporate management and globalization trends, and they have huge potential to shake the nature of study environments of both conventional and distance learning. Most people call ICT based education as new generation of distance learning. However ICT medication poses greater challenges to all the stakeholders in form of time and efforts to adapt to new technologies. Additionally institutions must also invest in up-grading their ICT infrastructure. This article unearths these challenges in introducing ICT into CEMBA/CEMPA programme of AIOU.

Limitations of the study

The current study was confined only to the CEMBA/CEMPA program at AIOU; no other program from the university was targeted. Data collected for the study was only implored through, the questionnaire and personal interviews which despite have been subjected to scrutiny, could have its own weakness. There is scope for further research on this important topic.

Literature review

Many universities are interested in using ICT based tools to aid to their existing infrastructure. (Fiona, Antoinette, & Mark, Vol 36 No 3 2005). While the use of ICT medication in distance education is way to go, it is noted that there is a trend in higher education to use ICT based distance education to improve the learning facilities for students. Nevertheless, installing networks and buying computers do not guarantee successful or productive ICT medication (Guari-Rosenblit, 2005). Universities should consider that ICT medication in education is complex, and must be guided by some kind of philosophy, curricular requirements, and the proliferation of ICT in society at large (Guari-Rosenblit, 2005). Increase use of instructional technology exhibits that the use of the ICT medication in education would motivate students and teachers, increase student interaction in the classroom, and prove that students are more active in learning (Guari-Rosenblit, 2005). How, what, and why ICT should be implemented is a million dollar question. Greenhalgh cited in (Guari-Rosenblit, 2005) notes that ICT medication is often taken without a theory and universities do not plan and research on trying to understand the challenges and impact of ICT to their existing system; they just follow it as a fashion statement and a marketing attraction, resulting in doubt on the success and cost effectiveness of such medications. Teacher/student's attitude must be considered before advocating ICT use. Teachers' attitudes are a major predictor and success factor in adopting new technologies in educational settings (Albirini, 2006). A study on use of technology (Harley, Henke, Lawrence, Macher, Gawlik, & Muller, 2002) found 84% of student gave preference to face-to-face mode of learning. Use of ICT medication in education has been made subject of many researches to highlight factors that influence the likelihood of success in educational. There is also emerging trend in using GSM mobile technology as a platform for implementing distance education (Mir, 2009).

Methodology

This study used the method of descriptive survey design, to measure the perception of students of the professional programme about the challenges they feel obstructed the learning experience using ICT based education and the infrastructural hitches which needs to be rectified. A questionnaire served as a tool to implore the data from students. The population under the study consisted of AIOU's professional

programmes, especially programmes that used ICT medication as tool to deliver education, notably CE-MBA/CEMPA programme which distinguished it by providing 80% of its classes via online mode. The questionnaire was designed to excerpt the challenges of learners on personal level as well as infrastructural challenges. The study also took into account the age, educational background, computer attitude and formal computer education of the learners to find out the relationship of the above factors with contentment level of students. From a sample 225 students and alumni's, 78% responded.

DATA PRESENTATION AND DISCUSSION

The following are the results of the questionnaires.

Questions	Response	
	Yes (%)	No (%)
1. Do you have formal computer education?	74.5	25.5
2. Do you have time limitations in face-to-face mode of learning?	79.4	20.6
3. Do you have space limitations in face-to-face mode of learning?	63.7	36.3
4. Do you use Internet based communication channels?	82.6	17.4
5. Do you want to study using technology based learning material?	62.3	37.7
6. Do you have aptitude to learn new technologies for education?	56	44
7. Are you aware of term ICT?	93.7	6.3
8. Do you really think ICT can sharpen the learning curve for a particular subject matter?	78	22
9. Do you think that ICT based education can replace traditional or distance education?	43.8	56.2
10. Do you think Pakistan have enough general infrastructure for implementing a full-fledged ICT enabled education?	35.1	64.9
11. Do you think your city of residence have enough general infrastructure for implementing a full-fledged ICT enabled education?	56	44
12. Is it a good idea to implement blind folded (implementation without planning and research) ICT solutions for education sector?	14.5	85.5
13. Do you feel socially isolated when using ICT based education?	89	11
14. Do you think ICT is just a supplementing tool for education?	75.3	24.7
15. Do you have educational background that influence you to participate in an ICT based educational environment.	86	14
16. Do you think age is any kind of hindrance in using ICT based education?	93.2	6.8
17. Do you feel satisfied when using ICT as an aid to learn new concepts?	73	27
18. Do you think a well-designed digital course is an extraordinary supplementary material?	80.9	19.1
19. Do you think ICT based education is ideal tool for busy professionals?	94.3	5.7
20. Do you think formal training is necessary for using ICT based educational facilities?	97	03
21. Do you think lack of training of teachers in using ICT facilities could hamper learning?	92.8	7.2
22. Do you think lack of training of students in using ICT based education is main cause of privation of interest?	95	05
23. Do you feel that teaching in video based environment has by and large same communication impact as that of traditional classroom teaching?	74.5	25.5
24. Did you felt degradation in quality of virtual classroom setup as number of students increased?	73.7	26.3
25. Are you satisfied with current video sharing facilities in virtual classroom?	45	55
26. Do you want full video sharing in virtual classroom setup?	67	33
27. How many times power outages interrupted your class participation?	93	07

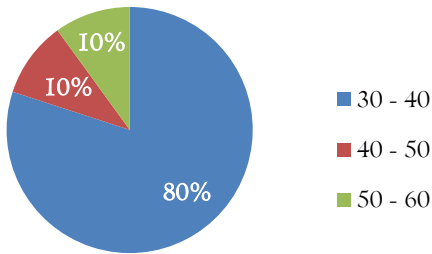
The table shows that 74.5% of the students have formal computer education, hence they made the choice for ICT based education, 25.5% were willing to learn computer but due to age, or educational background

were unable to educate on their own. The majority of the students (79.4%) opted for ICT based education due to some kind of time limitation while working on their professional domains. 63.7% opted for ICT based learning due to geographical difficulties. 82.6% used Internet based communication channels (Skype, Facebook, yahoo messenger etc.) regularly, again the age, educational background dictated their Internet usage. 62.3% were willing to use ICT as aid to learn. When asked about learning new technologies 56% showed willingness to learn, while 44% responded no due to their lack of technical educational background, and dearth computer skills. 93.7% acknowledged the term ICT. 78% replied positive when asked about understanding of particular concept using ICT based education. Majority (56.2%) of the students implied that ICT based education cannot replace traditional education, but is only a tool to facilitate the traditional education. When asked about the readiness of their country for large scale ICT based education, 64.9% showed reservations and stated that the country need more infrastructural facilities. 56% implied that their cities have enough infrastructural frameworks to reap the benefits of ICT based learning. 85.5% suggested that institutions must plan and research before implementing ICT based solutions. 89% students felt social isolation while using this system. 75.3% thought that it is a supplementing tool. 86% stated that a related educational background is a must for using ICT based educational facilities, thus showing that there exists a functional relationship between the educational backgrounds and learning contentment. Similar observations were made when relating age with ease of technology usage, 93.2% stated that age is a major factor in fulfilment of learning activity in technology driven learning, hence exhibiting an inversely proportional relationship between age and ease of technology base education. 73% showed satisfaction when using ICT based mechanism to learn new concepts. 80.9% appreciated the use of digital courseware. 94.3% endorsed that ICT based learning is the way to go for busy individuals. 97% notified that training is essential activity for using ICT based educational facilities. Majority agreed that lack of training for teachers or students is the major factor in success of ICT based education. 74.5% replied that teaching in video based teaching environment has same effects as of traditional mode of teaching. Regarding the issue of system performance, 73.7% observed that virtual classroom tends to slow down when more student join the lecture, indicating that the students number should not exceed to a certain optimum level to maintain the quality of the system. This also invites attention of the university to acquire of additional bandwidth and better server hardware for the system. When asked about satisfaction of video sharing facility 45% indicated that it is an excellent feature. Similarly majority (67%) indicated that full video sharing of both learner and tutor should be supported, again specifying the refinement and up-gradation in infrastructure. The overall power crises in Pakistan also impacted this system and 93% students were disturbed by this during the course of their learning experience. Nevertheless, majority of them made arrangements to fix this problem at their end.

The issue of overall satisfaction of the students was examined in detail. Although 75% students were by and large satisfied but following the true spirit of research, we need to further analyse the remaining 15% moderately satisfied and 10% dissatisfied as well. For this purpose demographic data of these three segments was deeply examined to ascertain possible reasons of this behaviour. Thus results were further drilled down according to age, educational background and computer aptitude of the responded.

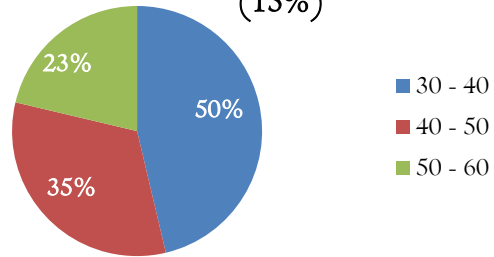
The following graphs show the relationship between age, education background and computer aptitude with contentment level of students while learning with help of technology.

Satisfied students (75%)



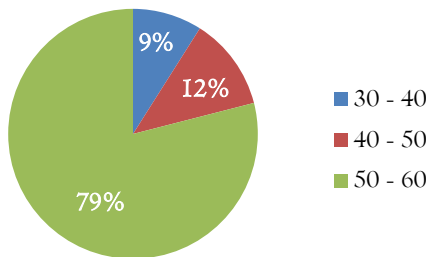
Age wise breakdown

Moderately satisfied students (15%)



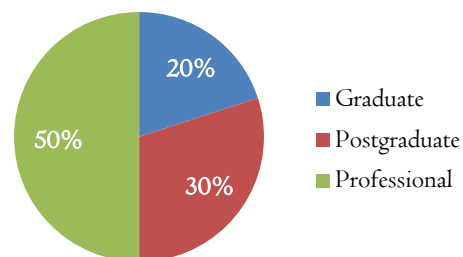
Age wise breakdown

Disatisfied students (10%)



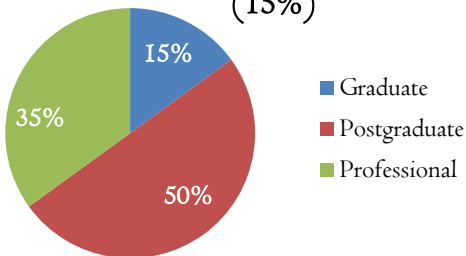
Age wise breakdown

Satisfied students (75%)



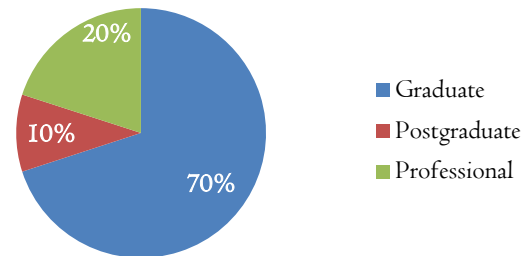
Breakdown: Educational background

Moderately satisfied students (15%)



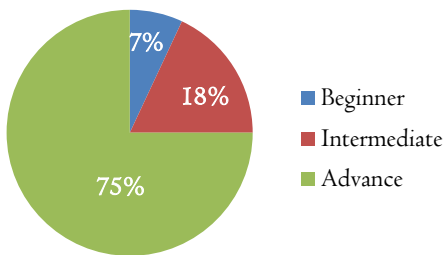
Breakdown: Educational background

Disatisfied students (10%)



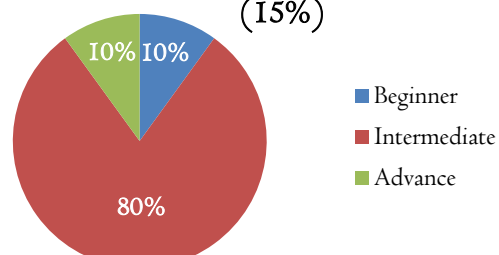
Breakdown: Educational background

Satisfied students (75%)

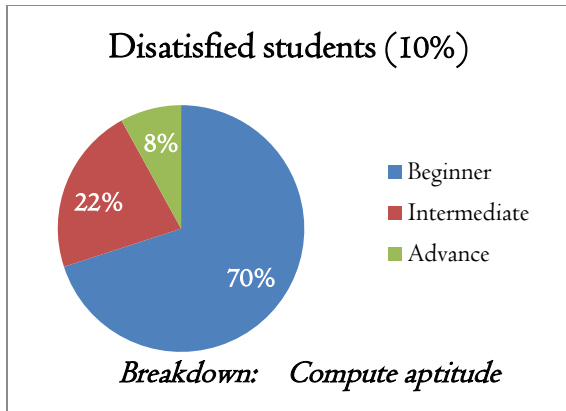


Breakdown: Compute aptitude

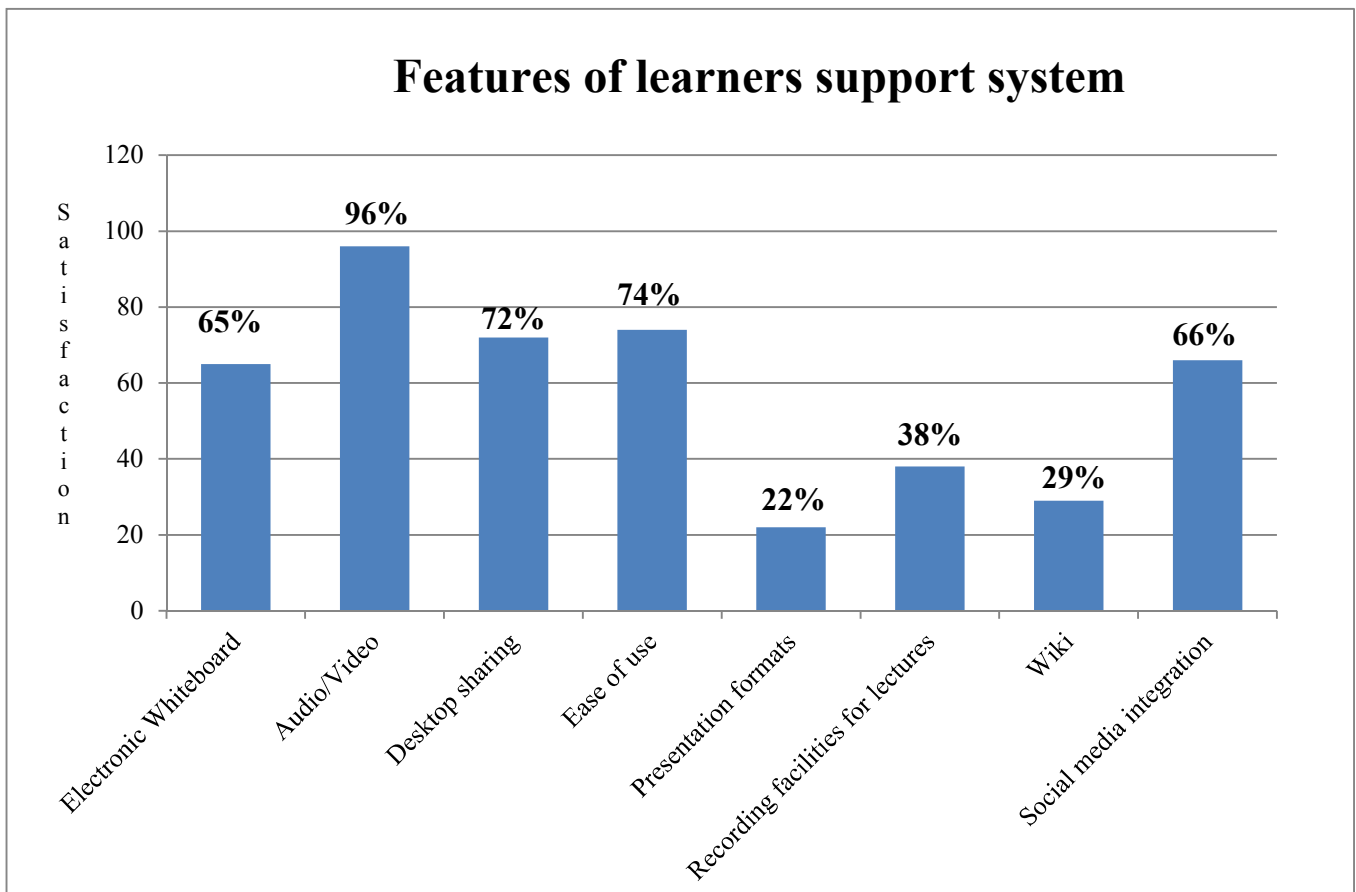
Moderately satisfied students (15%)



Breakdown: Compute aptitude



The learners were asked about the various features of the current learners' support system and their satisfaction level. The graph showing level of satisfaction is given below.



Major finding of the study

Based on results of above study, the following challenges could be noted by interpreting the data.

1. There is general conscious among learners that ICT based education solves many of the problems which can be used as supporting tool for overall setup of professional programmes in distance education.
2. The learners also felt that infrastructural challenges existed and needed to be solved for future growth of the system.
3. The challenges as faced by learners are related to age, educational background, and computer literacy and learning of new technologies.
4. OER/ICT based supplementary courseware is the way forward for learning in new cyber age.
5. Satisfaction level of online students is related to abundant of the technological features that bring the learner closes to the traditional educational experience, overcoming time, space and pace barriers.
6. It was found that age, educational background and computer aptitude of the learner plays a major role in success of his/her usage of technological based tool. A general trend was observed that students from younger age groups were more willing and eager to use new tools for learning as compared to older age group. The educational level and computer related aptitude assumes a critical percentage in measuring learners' ability to use ICT based learning systems. Generally, the more educated the individual the more he/she has fervour to adopt to new learning methods. Similar trends was indicated by the study relating to the computer aptitude of the students, as the ICT based systems require more computer propensity, the learners that were more familiar with use of computer based technologies tend to learn the new method more easily.

Conclusions

This study was done to measure the difficulties and challenges faced by students and the university while adopting ICT medication to its CEMBA/CEMPA programme. It also measures the contentment level of the learners with regard to the usage of the system; special emphasis has been given to the relationship of learners' satisfaction with the age, educational background, computer literacy.

ICT medication of the CEMBA/CEMPA programme was done to eliminate time and space barriers faced by many students. At every level of this mediation, feedback was taken from the stakeholders, based on their suggestions, the system was upgraded. Now as it is in a matured stage it would be appropriate to share this experience and draw lessons.

In general the learners' were satisfied with reforms undertaken to up-grade LMS/virtual classroom. However the room for improvement still exists in terms of training of stakeholders, enhancements in infrastructure, development of instructional contents.

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