Exploring The Preference and Interest for Information Communication Technology (ICT) Usage Among Students of Allama Iqbal Open University

Babar Hussain Shah[*]

Abstract

This research study was conducted to discover use of ICT in Distance Education by exploring interest and preference of ICT between students of rural and urban background at Allama Iqbal Open University Islamabad Pakistan. The study was aimed to establish the differences between urban and rural students' interest and preference of ICT in general across the university. This research is based on survey of the respondents from Allama Iqbal Open University Islamabad Pakistan. In order to conduct research a closed-ended questionnaire was developed after studying related literature. The respondents of this study were selected from four faculties of the University by applying cluster sampling technique. Two important constructs; Interest and Preference related to ICT among rural-urban students were investigated. It was concluded from results of the study that most of the respondents from rural and urban areas both used ICT for education related purpose. It was also found that urban students were taking more interest in ICT usage than the rural ones.

Keywords: ICT, distance education, preference, interest.

[*] Lecturer, Mass Communication Department, Allama Iqbal Open University, Islamabad Pakistan. Email: babar.hussain@aiou.edu.pk

Introduction

In the dynamic world of today, changes are happening at the quickest and rapid pace. The world we live in today, has been squeezed into a global village. We cannot even think of a moment being without mobile, computer, internet or other gadgets of ICT. This all is the result of technological evolution and advancement in the present times. This is important to note that ICT has become an integral part of our routine lives. As a result of this our usage, reliance and relevance have increased manifolds as compared with the past. We rely on ICT from daily tasks of checking weather updates, seat reservations and online shopping to the extraordinary tasks of writing our dissertations and research papers. In fact we are surrounded by ICT 24/7 (Gurr, D. 2000).) This is quite evident that different gadgets of ICT like computers, mobiles, printers, multimedia projectors, scanners, and some other storage devices like portable hard-discs, USBs, CDs, DVDs, and now even online clouds have been proven helpful in systems related to information management. We can find our offices, homes, sub-ways and even roadways are totally surrounded by ICT and we can find its usage in every nook and corner of life. When we talk of ICT usage of ICT in the Distance Education the phenomenon becomes more important and pertinent as it has revolutionized the way Distance Education once it was perceived in the past. Application and usage of ICT in Distance Education, particularly in management, storage and transmission of information by using electronic networks through Internet has revolutionized and revitalized the core concept of distance education (Blurton C, 1999). Due to arrival of ICT students can now be connected with their teachers and universities via internet using computers, laptops, laptops and smart phones. The teachers once considered as primary source of information and knowledge seeking are also shifting their views from the old and traditional notion of education and teaching. In this scenario they do not opine about themselves as the only source of information. Now the role of teacher in imparting knowledge and information is that of a mediator who helps to facilitate the process of learning. Arrival of ICT in education has been proven helpful in enhancing the effectiveness of learning through creating interest in students and thus enhancing their drive for learning that at times seemed like an uphill task. Consequently, more participation of students has in the process of learning has become possible (Laurillard, 2000; Koller 2012).

In the context of above it is quite pertinent to explore the role of ICT in Allama Iqbal Open University, Islamabad Pakistan. Allama Iqbal Open University Islamabad, Pakistan is the pioneer university in the field of

Distance Education that is contributing its role and share since 1974 very effectively. The University is successfully catering academic needs of the students at their door-steps who are heterogeneously scattered not across Pakistan but across the globe. The distinction of the University is that it is different academic and vocational programs varying from basic education to PhD level programs. The University's flexible fee structure and teaching methodology makes it convenient for the students of all ages and gender to access it easily. It is pertinent to note that AIOU is providing education to marginalized segments of the society who due to some reasons cannot attend regular institutions. As far as teaching methodology of the University is concerned it uses different methods of imparting knowledge to its students. The students are not only provided with books in printed form but also in CD format with instructional material stored in it. The University also enjoys the existence of high-tech and state of the art Institute of Educational Technology that is aids in preparing media contents of all related courses of the university. The University also runs FM radio station bearing frequency 91.6 which broadcasts different educational programs for its students from dawn to dusk. In short, AIOU is effectively making use of different techniques, tools and gadgets of ICT to make delivery of information more useful, easily accessible and convenient as well.

ICT is quite helpful in Distance Education System for students who are spread in far flung areas of Pakistan. In fact, technology can play a role of facilitating learning in distance education. But the optimum use of ICT among the students of AIOU is a big issue. There are many reasons behind the optimum use of ICT among the students of AIOU. Few of the reasons are: Students' access to tools of ICT, their inability in using gadgets of ICT effectively, high prices of ICT related devices and last but not least the attitude of students towards usage and application of ICT is also a big hindrance. Basic problem that is a big obstacle in the proper utilization of ICTs in Distance Education is still a big challenge and it needs to be uncovered from different aspects. Allama Iqbal Open University, Islamabad is a leading university in Distance Education in Asia which is successfully catering the academic needs of more than 1 Million students weighs greater importance for comprehending the usage of ICT amongst its students. The above situation creates a problem for exploring ICT usage among its students who are geographically distributed as rural and urban. So there is a dire need to address the problem.

This research is important in the context that it will helpful to explore the extent and preference of ICT usage among its students. This is further

likely to be helpful for the policy makers to device their policies regarding ICT usage and its application in the institutions of Distance Education.

Literature Review

It is of prime importance to have a better understanding of Information Communication Technology (ICT), Distance Education and other concepts that are related to this research. The term ICT is abbreviated from Information Communication Technologies and different experts in the field define and elaborate it differently. Blurton C (1999) elaborates ICT as a broader set of technological devices that are aimed to receive, make, spread, store and to manage the information in an effective way.

It can also be defined as "ICT includes new technologies that are the result of convergence of Telecommunication networks and personal computer technology." (William, 1983, p315).

In the words of Boer, (2005) all those technologies are included in ICT that are used for the sake of manipulation of information and communication and also used for information management in any domain like education and management.

Collis, (1996, 26) describes that ICT is basically concerned primarily with practical application of arts and science as a whole in the overall process of learning.

Association for Educational Communications and Technology (AECT) Instructional Technology defines, "ICT is the theory and practice of design, development, application, management and evaluation of processes and resources for learning" (Seels & Richey, 1994).

According to Loveless and Dore (2002), and Law, N., Pelgrum, W. J., & Plomp, T. (Eds.). (2008) "ICT is basically using electronic information that is operated through array of applications via computer equipment, digital resources, mobile devices, CDs, DVDs, tutorial and general softwares, smart boards, system of learning management, internet, emails, modem, television and other high tech equipment of technology."

From above definitions of ICT it can be inferred that

1. ICT is an applied science.
2. It is a tool of information management.
3. It included all tools, resources and gadgets that are used for dissemination, management and storage of information.
4. Finally, it can be included that ICT is a catalyst that has been helpful in the whole phenomenon of education and Distance Education.

Different educationists across the globe offer different definitions of Distance Education. Simonson, (2006) elaborates that distance education has its basis in an institution just like formal education but in distance education students are separated from communicator and as a result this mode of education make use of different tools of communication in order to connect educators and learners. The above definitions of distance education (Simonson, 2006) aids in separating distance education from self-study because in this definition core concept of institution is included. (Threlkeld and Brzoska, 1994).

Shale (1988) is of view that distance education is not a distinct or different field of education. According to him overall process of education is same whether it is face-to-face mode or distance education in which students remain separated by time and space. He is of the view the teaching-learning process requires that teacher must educate and learner must be checked, evaluated and should be provided assistance and guideline by the teacher. The learner may be taught in such a way that he may be prepared for final examination. The whole activity of learning process ought to be accomplished by the process of two-way communication between teacher and student.

Keegan (1986) provides detailed definitions of Distance Education. After analyzing his definitions, the following points can be concluded about Distance Education.

1. There is perpetual separation between student and teacher. This characteristic of Distance Education makes it distinct from conventional education.
2. He is of the view that in the whole activity of distance education educational institution is found to have greater influence in all stages of education. This influence encompasses planning and execution of whole learning material to be taught.
3. In the process of distance education teaching strategy encompasses print and electronic media including computer in order to unite and connect learners and educators.
4. It also seeks for two-way of communication which makes it prominent from some other uses of technology in education. In short, technology is used in order to make learning process easier and convenient for both leaners and educators.
5. In this mode of education learning group is found permanently absent in the whole process of learning because individuals are imparted knowledge individually and not in groups like it happens in regular teaching classes.

In response to Keegan about above five mentioned elements Garrison and Shale (1987) concluded that his definition of Distance Education was too narrow. They offered their following points about phenomenon of Distance Education.

1. There occurs lots of communication between educator and learner non-contiguously.
2. There will be two way communication between educator(s) and learner(s) which will be purely meant for helping and fostering educational process for learners.
3. In the whole activity of distance education technology is purely used for the sake of mediating two communication between student(s) and teachers.

In the light of above given statements about Distance Education and ICT it can be concluded that there exists a symbiotic relationship between Distance Education and ICT and further it can be said that ICT is a catalyst to boost teaching learning in the whole process of Distance Education.

A handful of studies is available that proves that there exists differences in ICT usage and its preference of use between urban and rural students.

According to Girma, M. P. (2017); especially in developing countries where imparting formal education to all and sundry is not possible there information communication technologies provide an alternative for mass education to widespread students across the country.

The study of Khan et al., (2012) worked on differences in uses of ICT between rural and urban students. They have found a noteworthy difference in the rural and urban students concerning preference of ICT usage in distance education. They came to conclusion that urban students preferred the use and application of ICT in education than rural ones.

Leary & Berge, (2006) also supported that the students with urban background to use ICT than the students who are living in rural areas. They also discovered that e-learning is also spreading among rural masses yet it is taking time and will take time too.

Mulcahy and Barbour, (2010) elaborated there exists differences between the students with rural and urban background dealing with ICT being preferred in the teaching methodology. They explored that urban students were found preferring ICT in the whole activity of learning.

There exist disparities between rural-urban students as urban areas are enjoying electricity, telecommunication facilities and capabilities but rural areas are deprived of all such facilities partially or wholly. The result is that they remain disadvantaged and unconnected. The result is that there

will be less preference for ICT usage among the rural ones (Gulati,S. 2008).

Park, S. (2017) worked on the reasons of digital inequalities in rural Australia. He found that digital divide apart from rural-urban divide is also associated with socio-demographic factors like educational level and employment status.

Clark's study (2000) indicate that urban teachers in the U.S. have positive attitude towards integration of technology. Their findings concluded: 1. urban teachers are more confident in their ability to make effective use of ICT. 2. Urban teachers also believe that technology is an important and unavoidable part of their teaching methodology. 3. Urban teachers are mostly found seeking for new gadgets and updates soft-wares that are helpful in their teaching. There exists some other issues like the teachers in rural areas do not possess same capability, understanding and confidence in application and integration of ICT as the teachers in urban areas do have (Herselman, 2003). This is due to the fact the teachers as well as students in rural areas have less exposure of ICT than the urban students.

Liao, P. A., Chang, H. H., Wang, J. H., & Sun, L. C. (2016) have worked on determinants of rural-urban digital inequality among schoolchildren in Taiwan. They found students' digital efficacy results in 35% of rural-urban digital inequality. The other factors include computers availability at homes and schools, level of mother's education and also exposure to computers classes as well. The more the students are equipped with the gadgets of ICT the lesser inequality will be among rural and urban students

Research studies indicate that rural students secure poor grades on all internet inequality indicators including "digital access, autonomy in use, social support, use of Internet and self-efficacy") which ultimately results in low preference in usage of ICT gadgets and related soft-wares (Zhang, 2005).

ICT can result in creating interest in education by giving ease of usage and instant availability of information (Garrison and Kanuka 2004).

Hence can be concluded that urban students have more interest in using ICT in their education as they are equipped with more and better infrastructure of ICT. There also some other studies that deals with the interest in ICT in distance education between rural and urban students. (Leary &Berge, 2006; Mulcahy and Barbour, 2010).

Theoretical Framework

This research has its grounds in the below given two theories of mass communication.

Knowledge Gap Hypothesis

It is said that knowledge and information are also resources like other materialistic resources. Information has a greater worth in our lives as knowledge guides people in dos and don'ts of their lives. There is a statement, "Knowledge is power" and this means that certain things in life are linked with knowledge which grants you capability to accomplish certain things in the daily course of their lives. It can be observed that knowledge like all other sources and kinds of wealth is not e distributed uniformly and equally across the globe and throughout the whole society. The people who are struggling with poverty are also information-poor. This world has haves and have-nots with regard to finance as well and acquiring of information is also linked with finance and resources. In short, there is knowledge gap between rich and poor and technology is further widening this gap as poor segments of the society can't afford to buy this technology. This phenomenon is termed as Knowledge Gap hypothesis. Tichenor, P. J., Donohue, G. A., & Olien, C. N. (1970) first proposed the term of Knowledge Gap in a research article titled as "Mass Media Flow and Differential Growth in Knowledge". They defined it "as the infusion of mass media information into a social system increases higher socioeconomic status segments tend to acquire this information faster than lower socioeconomic status population segments so that gap in knowledge between the two tends to increase rather than decrease." It can be inferred that socio-economic status does play a significant role in increasing knowledge in the bank of knowledge which is already stored in it. The reason is that financially sound have more access to communication technologies than the poor ones and as a result this knowledge-gap further continues on broadening than reducing. There is a wide range of communication technologies is available and theoretically speaking these new technologies ought to be used to benefit individuals. It was further pointed out that there must be learning opportunities which may reduce the cost of education so that each member of society is able to access different learning opportunities that are available only to the people of higher socio-economic status. The rationale behind using this theory is that it will be helpful to explore the difference in optimum utilization of ICT between rural and urban students of the university.

Uses and Gratification Approach

This theory basically deals with power the audience members in the society do have to use a particular media and in the same way they can use technologies according to their choices and preference. A classic study named as 'Obstinate audience' opined that audiences are quite active. According to (Bryant & Street, 1988, p.162) the basic concept of active audience is rapidly gaining prominent status in the field of communication. The term uses and gratification was first elaborated in article by Elihu Katz (1959) in which he was responding to a claim by Bernard Berelson (1959) that field of Communication as research discipline seemed losing its importance. At that time Katz opposed by saying that that the field was waning was the study of Mass Communication as the subject of Persuasion. He opined that one thing could save Mass Communication i.e. to study it, "What people do to media?" Uses and Gratification was used by Blumler and McQuail (1969) in 1964 general election in Britain. The main idea behind the research was to look for the way that why people like to watch a party broadcast or avoid it, what uses they aspire from media and what are some alternatives they can find that compete with media while looking for gratification (pp.10-11). The researchers overall concluded that the overall motivation behind attending media was the surveillance of politics and political environment.

After few years in a research article, Katz, Blumler, and Gurevitch (1974) pointed out that Uses and Gratification are primarily concerned with: Social and sociological origins of need which generate expectation of mass media and that in turns lead to viewing of mass media, exposure to media usually results in need gratification and some other consequences as well; and these consequences are mostly unintended and not always aspired or desired ones. In simple words we get extra information as well. In the light of above discussion it can be concluded that media is in competition with the other sources of information to gratify audience needs. According to needs of the audience different typologies of needs have been developed by mass media scholars.

According to McQuail, Blumler, and Brown (1972) needs' categories can be grouped as: "Diversion, personal relationships, personal identity and surveillance." These categories of needs usually account for different needs which can be satisfied by using media.

Katz, Gurevitch and Haas (1973) have also developed different needs' typologies as: "Cognitive, affective, personal integrative, social integrative and tension release needs."

To conclude about this theory it can be documented that media serve as vehicle for audience members to seek the desired information and in the same fashion students use technology according to their needs.

Objectives

This research is aimed at:
1. To know about the usage of ICT among AIOU's students for various purposes.
2. To acquire information about the ICT gadgets that are used by the students for different purposes.
3. To discover the purpose of University website usage among the University's students
4. To compare the preference of ICT usage between the students having rural and urban residence.
5. To analyze the difference in interest of ICT usage between the students of AIOU with rural and urban background.

Research Questions

1. What are the different purposes of ICT usage among the students of AIOU?
2. What types of ICT gadgets are possessed by the students of the University?
3. How the website of the University is being used by the students?
4. Whether and to what extent students prefer using ICT?
5. Whether and to what extents students of AIOU take interest in usage of ICT for performing different tasks?

Hypotheses

After a comprehensive literature two significant hypotheses were developed.

Hypothesis 1 *There is more likelihood that students having urban background will prefer usage of ICT in comparison with the rural students.*

Hypothesis 2 *There is more likelihood that students with urban background will take more interest in usage of ICT in comparison with the rural students.*

Methodology

This study is a survey-based research. The students enrolled in four different faculties of Allama Iqbal Open University Islamabad were the respondents. A closed-ended questionnaire with five points Likert Scale was formulated after a comprehensive review of literature. Further, the questionnaire contained all related constructs (preference of ICT and interest in ICT) of the research study. The questionnaire was pretested by the researcher and after checking its reliability it was distributed among the respondents.

Population

As this study focused only AIOU so the population of this study consists of the students enrolled in M. Phil and Ph. D Programs of AIOU during the autumn 2014, spring 2015, autumn 2015 and spring 2016 semester. The overall population comprised of 6845 university students.

Sample

Due limitations of time and cost involved the sample was only confined to only M. Phil and Ph. D students enrolled in the specified semesters. When consulted with Morgan and Krejice (1970) a sample of 367 respondents was selected for survey.

Sampling Technique

According to nature and requirement of the research Cluster sampling technique was used. The 95% confidence level was used with a confidence interval of 5 while calculating sample size for this study. Krejcie and Morgan (1970) table was also consulted to acquire sample size as required according to the population of research study. The sample size is described briefly in the table provided below. Cluster sampling technique was used to finalize the sample according to which sample was chosen from four clusters of faculties namely: Faculty of Social Sciences and Humanities, faculty of Education and faculty of Arabic and Islamic Studies. The respondents were chosen according to their proportion in the whole population.

Data Collection

The questionnaires were personally distributed by the researcher during the teaching session. The questionnaires duly filled in by the respondents were returned by hand.

Table 1

Determination of Sample Size

Faculty Information	Population	Percentage	No. of Samples
SS&H	2333	34.08	122.7042
Science	2305	33.6	122.5266
Education	1004	14.66	47.05733
Arabic and Islamic std.	1203	17.5	57.71182
Total	6845	100	367

After consulting Morgin and Krejice (1970), the respondents were chosen according to proportion of their whole population as shown in the above table.

Results

Q1. What are the different purposes of ICT usage among the students of AIOU?

The table below elaborates the answer to above question which includes purpose of using ICT.

Table 2

Purpose of Using ICT

Purpose of Using ICT	Frequency	Percentage
Education	250	74.9
Information	211	63.2
Entertainment	99	29.6
Any other	19	5.7

From above table it is concluded that educational use of ICT is most common amongst the students of AIOU (74.9%). It was also found that a greater number of students used ICT for the sake of acquiring information

(63.2%). The students were also found using ICT for entertainment related purposes but its percentage was not so higher (29.6%). There were some other purposes like surveillance, infotainment, edutainment that were not mentioned in the close-ended responses but students wrote them in the column of any other and percentage of those purposes was found (5.7%).

Q2. What types of ICT gadgets are used by the students of the University?

Table 2 elaborates answer to Q.2 which asks about ICT gadgets under the use of the students.

Table 3

ICT Gadgets

Device	Frequency	Percentage
Desktop	120	35.9
Laptop	213	63.8
Smart phones	155	46.4
Printer	58	17.4
Scanner	27	8.1
Other devices	14	8.1

It can be observed from above table that students of AIOU own different ICT gadgets that they were using for different purposes. It can be observed that majority of the students almost (63.8%) were found having their own laptops. The number of students with the desktop was (35.9%). It was also noted that a great number of students was having smartphones (46.4%). The other devices that students owned included: Printer (17.4%), scanner (8.1%) and other devices (8.1%).

Q3. How the website of the University is being used by the students?

According to Table 04 result of above question can be found in the illustration given below

Table 4

Purpose of Using Official Website of AIOU

Tasks for Using ICT	Frequency	Percentage
Academic Result Checking	235	70.4
Downloading Assignments	56	16.8
Downloading Exam. Forms	96	27.8
Course Registration	38	11.4
Downloading Course Material	103	29.9
Reviewing Faculty Information	55	16.5
Downloading Videos/Audios	32	9.6
AIOU Live (Radio/ TV)	26	7.8
Tutors' Particulars	110	32.3
Any Other	22	6.6

The above given table elaborates different tasks/purposes for the sake of which the students of AIOU were using the website of the university. The most common use of the website was for the sake of Checking Academic Results (70.4%). It was also encouraging to note that students were also using website for downloading course material (29.9%). The other uses included downloading assignments (16.8 %,) course registration (11.45 %,) reviewing faculty information (16.5%), downloading videos/audios (9.6%), knowing about tutors' particulars (32.3%) and other uses were (6.6%). From description of above table it is very much evident that academic results checking and finding tutors' particulars are the two important tasks that are fulfilled by visiting the University's website.

Tests of Reliability

For the purpose of testing the reliability of questionnaire's items Cronbach's alpha test was used. Normally Cronbach's alpha coefficient reliability ranges from 0 to 1. For the sake of having greater reliability its value must be closer to 1. The formula for Cronbach's alpha is = rk / [1 + (k -1) r] .The following rules of thumb were provided by George and Mallery (2003) "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable" (p. 231). For the variable of interest value of Cronbach's Alphas was 0.854 and for preference the value of Cronbach's was 0.8. The both values are clear depiction that questionnaire is reliable.

Q4. Whether and to what extent students prefer using ICT?

Results for preference of ICT usage also indicate that students from both rural and urban background prefer using ICT as mean value for both independent groups is above 3. Below table 6 clearly elaborates the results.

Table 5

Descriptive Statistics

Variables	Area of Residence	Min	Max	N	Mean	Std. Deviation	Std. Error Mean
Interest	Rural	1	5	101	3.4084	.83496	.08308
	Urban	1	5	129	3.5581	.88692	.07809
Preference	Rural	1	5	105	3.6571	.90754	.08857
	Urban	1	5	121	3.6405	.89727	.08157

Results of above table indicate that respondents take interest in ICT usage as mean value for both rural and urban respondents is above 3. Similarly results for preference of ICT usage also indicate that students from both rural and urban background prefer using ICT as mean value for both independent groups is above 3.

Q.5 Whether and to what extents students of AIOU take interest in usage of ICT for performing different tasks?

Results from table 6 indicate that respondents take great interest in ICT usage as mean value for both rural and urban respondents is above 3

Tests of Hypotheses

For comparative analysis of preference of students from rural and urban background, t-test was applied.

Table 6

Independent Sample T-Test for Preference of ICT Usage

Preference of ICT Usage	N	Mean	SD	t	r
Rural Students	105	3.6571	.90754	.138	.890
Urban Students	121	3.6405	.89727		

The table 6 shows the descriptive statistics of Independent Sample t-test of two groups i.e. student from rural areas and students from urban areas. The mean of these two groups are different. Preference of ICT usage in studies is slightly different for the students of rural areas and urban areas. Furthermore; standard deviations of the groups are also different. Same is the case is with standard error of mean where there is slight difference for the groups. Hence, the researcher rejected the hypothesis.

Table 7

Independent Sample T-Test for Interest of ICT Usage

Interest for ICT Usage	N	Mean	SD	t	r
Rural Students	101	3.4084	.83496	-1.303	.194
Urban Students	129	3.5581	.88692		

The table above shows the descriptive statistics of independent sample t-test of two groups i.e. student from rural areas and students from urban areas. The means of these two groups are different. Interest in ICT is slightly different for the students of rural areas and urban areas. Furthermore; standard deviations of the groups are also different. Same is the case is with standard error of mean where there is slight difference for the groups. However, t-test result was not significant. Hence, H2: not accepted made during the study.

H2: Students with urban background take greater interest in ICT usage than rural students. (Unsupported)

Conclusion

This research was based on Allama Iqbal Open University, Islamabad Pakistan. Results show that majority of the University's students (74.9%) were using ICT for educational purposes. It was also noted that (63.8%) were also using laptop for different purposes. Overall it was concluded that students of AIOU were interested in ICT usage in their studies and were making effective use of different gadgets of ICT. It was also encouraging to note that the students of AIOU were also using the University's website for different tasks ranging from finding their tutors to downloading course material as well. It was explored that urban students took more interest in the usage of ICT than the rural ones. Overall findings of the study indicate that knowledge-gap hypothesis was partially supported.

Recommendations

Throughout conducting this research one point was very clearly evident; application has really expedited and accelerated the phenomenon of Distance Education and education overall. Few are the recommendations for future researchers. It is suggested to study the usage patterns of ICT between rural and urban students at school level. There is a dire need to compare application of ICT usage in teaching process between teachers of rural and urban areas.

References

Berelson, B. (1959). The state of communication research. *Public opinion quarterly*, *23*(1), 1-2.

Berge, Z., & Leary, J. (2006). Trends and challenges of eLearning in national and international agricultural development. *International journal of education and development using ICT*, *2*(2).

Blumler, J. G., & McQuail, D. (1969). *Television in politics: Its uses and influence*. University of Chicago Press.

Blurton, C. (1999). New directions of ICT-use in education. Retrieved from http://www.unesco.org/education/educprog/lwf/dl/edict.pdf on 28th March. 2018

Boer, P. (2005). Towards education for all: The critical role of open and distance learning in national development Paper presented at the First open and distance learning conference in Namibia, Namibia. Retrieved from http://www.col.org/resources/speeches/2005 presentations/Pages/2005-08-30.aspxs on March 20, 2018

Bryant, J. (1988). {From Reactivity to Activity and Action: An Evolving Concept and Weltanschauung in Mass and Interpersonal Communication}.

Bryman, A. (2008). Social Research Methods. (3rd ed). New York: Oxford University Press Inc.

Clark, Richard E. "Media will never influence learning." *Educational technology research and development* 42, no. 2 (1994): 21-29.

Collis, Betty. (1996). *Tele-learning in a Digital World: The Future of Distance Learning*.

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The internet and higher education*, *7*(2), 95-105.

Garrison, D. R., & Shale, D. (1987). Mapping the boundaries of distance education: Problems in defining the field. *American Journal of Distance Education*, *1*(1), 7-13.

Gulati, S. (2008). Technology-enhanced learning in developing nations: A review. *The International Review of Research in Open and Distributed Learning*, *9*(1).

Girma, M. P. (2017). The Roles of Information and Communication Technology (ICT) Development in Open and Distance Education: Achievements, Prospects and Challenges.

Gurr, D. (2000). The impact of information and communication technology on the work of school principals. *Leading & Managing*, *6*(1), 60-73

Herselman, M. E. (2003). ICT in rural areas in South Africa: various case studies. *Informing Science Proceedings*, 945-955.

Katz, E. (1959). Mass communications research and the study of popular culture: An editorial note on a possible future for this journal. Studies in public communication, 2, 1.

Katz, E., Blumler, J., & Gurevitch, M. (1974). The use of mass communication. Beverly Hills.

Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American sociological review, 164-181*

Keegan, D. (1988). Concepts: Problems in defining the field of distance education. *American Journal of Distance Education*, *2*(2), 4-11.

Khan, M., Hossain, S., Hasan, M., & Clement, C. K. (2012). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. *Online Submission*, *5*(2), 61-80.

Khan, S. A., Bhatti, R., & Ahmad Khan, A. (2011). Use of ICT by Students: A Survey of Faculty of Education at IUB.

Koller D. (2012). "What we're learning from Online Education." Retrieved from http://www.youtube.com/watch?v=U6FvJ6jMGHU,\ on April, 2018.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, *30*(3), 607-610.

Kumar and Ranjit (2005). Research Methodology-A Step-by-Step Guide for Beginners, (2nd.ed), Singapore, Pearson Education).

Laurillard, D. (2000). 8 New Technologies, Students and the Curriculum. *Higher education re-formed*, 133.

Law, N., Pelgrum, W. J., & Plomp, T. (Eds.). (2008). *Pedagogy and ICT use in schools around the world: Findings from the IEA SITES 2006 study* (Vol. 23). Springer Science & Business Media.

Liao, P. A., Chang, H. H., Wang, J. H., & Sun, L. C. (2016). What are the determinants of rural-urban digital inequality among schoolchildren in

Taiwan? Insights from Blinder-Oaxaca decomposition. *Computers & Education*, *95*, 123-133.

Loveless, A., & Dore, B. (2002). *ICT in the Primary School: Learning and teaching with ICT*. New York: NY: McGraw-Hill

McQuail, D., Blumler, J. G., & Brown, J. R. (1972). The television audience: A revised perspective. *Media studies: A reader*, *271*, 284.

Mulcahy, D., & Barbour, M. K. (2010). Duck and cover: Are rural students taking basic courses to avoid taking them online. In *annual meeting of the American Educational Research Association, Denver, CO*.

Parker, Edwin B., and Donald A. Dunn. "Information technology: Its social potential." *Science* 176.4042 (1972): 1392-1399.

Park, S. (2017). Digital inequalities in rural Australia: A double jeopardy of remoteness and social exclusion. *Journal of Rural Studies*, *54*, 399-407.

Seels, B. B., & Richey, R. C. (1994). Teknologi pembelajaran: Definisi dan kawasannya. *Penerjemah Dewi S. Prawiradilaga dkk. Jakarta: Kerjasama IPTPI LPTK UNJ*.

Shale, D. (1988). Concepts: Toward a reconceptualization of distance education. *American journal of distance education*, *2*(3), 25-35.

Simonson, M. (2006). DESIGN-BASED RESEARCH Applications for Distance Education.

Small-Sample Techniques. *The NEA Research Bulletin*, Vol. 38 (December, 1960), p. 99.

Tichenor, P. J., Donohue, G. A., & Olien, C. N. (1970). Mass media flow and differential growth in Knowledge. *Public opinion quarterly*, *34*(2), 159-170.

Threlkeld, R., & Brzoska, K. (1994). Research in distance education. *Distance education: Strategies and tools*, 41-66.

Williams, R. (1983). Keywords. London: Fontana.

Zhang, X., & Kanbur, R. (2005). Spatial inequality in education and health care in China. *China economic review*, *16*(2), 189-204.