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USING MOBILE PHONE TECHNOLOGY TO ENHANCE PARTICIPATION OF PAKISTANI WOMEN IN HIGHER EDUCATION: An Experimental Study

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ABSTRACT

The present study aimed at finding out effect of mobile phone on the participation rate of women in higher education.

The objectives of the study were to find out effect of mobile phone to;

- **encourage women to participate in higher programmes,**
- **guide the students during the course, and**
- **prevent these students from leaving the programmes uncompleted.**

It was expected that mobile phone would increase students' participation and decrease dropout. This experimental study consisted of two groups- experimental group and control group, each comprised of 200 women who passed the BA (14 years education) in 2007 and did not continue their further education. The women were selected by convenient sampling method. The experimental group was further divided into four sub-groups. The study was delimited to the district Muzaffargarh of Punjab province of Pakistan. It was found that the use of mobile phones;

- **increases the participation rate of the women into institutions of higher education,**
- **decreases the drop out ratio of enrolled students, and**
- **enhances the performance of students of the higher education institutions.**

Keywords: **Mobile phone, distance education, women's enrolment.**

INTRODUCTION

The 21st century is marked with swift developments and changes more than ever before. It is because of the gap between the theory and its application has been reduced considerably. People can now retrieve information and knowledge from any location and at anytime. Challenging the role of education it has made "the relationships between education, society and technology" "more dynamic" (Traxler, 2009, p. 10). People are also effectively using the technological inventions in almost every activity of their life. It is also a fact that sphere of people's activities has expanded geographically too much.

Now people live far away from their home cities or countries. Therefore, they need and are efficiently using mobile technology for mutual interaction, shopping, business transaction, and learning, and electronic mobile devices are now "radically transforming societal notions of discourse and knowledge, and are responsible for new forms of art, employment, language, commerce, deprivation, and crime, as well as learning" (Traxler, 2007, p. 2). Ally (2009, p. 1) contends that considerable expansion in the use of mobile tools by people in every part of the world, ever increasing use of mobile phones by the people for socialization and to accomplish routine tasks, conducting business transactions by the mobile technology, and probable demand of the people to have access to learning resources through mobile technology convey a message that "education and training have no other choice but to deliver learning materials on mobile devices," so that "the twenty-first century learner and worker," particularly the nomadic who have to travel much, will be able to "learn from anywhere and at anytime using mobile technology" (p.2).

REVIEW OF LITERATURE

The number of users of mobile phones is continuously increasing throughout the world. The wide of variety of prices of the mobile phones, ease of accessibility, and its multiple usages have contributed much in rapid rise in the figures of its users on massive scale. The mobile phone manufacturing industry and the mobile phone telecom companies are continuously expanding not only in developed countries but also in the developing countries. Khanna and Singh (2011, p. 399) rightly assert that:

> ***Mobile phones have changed the entire communication scenario of the World. They have become multipurpose tools which are being used for communication, education and gaming or accessing information. Development practitioners and communication experts see mobile phones as important tools in the hands of all communities for social development.***

Mobile education provides personalized learning. Personalized learning accepts the individual differences among the learners and employs diverse learning styles and variety of approaches keeping in view the varied needs of the learners.

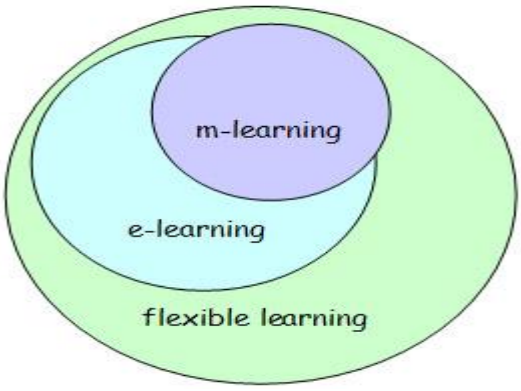

Figure 1.
The 'just enough, just in time, just for me' model of flexible learning
(Adopted from Peters, 2007, p. 3)

Mobile education is also much helpful in situated learning or on the job learning or learning in the field. It is also a good means for authentic learning which is learning that addresses real-world problems relevant to the learners or community. Peters (2007, p. 1)

suggests that mobile learning lies within the framework of flexible learning and the e-learning, so it fits to "directly to the 'just enough, just in time, just for me' model of flexible learning". Fig. 1 illustrates his model of mobile learning as flexible learning.

Mobile technology has the potential for transmitting the information and conducting instruction to the people of inaccessible areas, it can reach the areas where there are no educational facilities. Thus the students, workers, businessmen can benefit from it without leaving their homes or work place. Kurubacak (2007, p.222) conducted research to identify research priorities and needs in mobile learning technologies for distance education employing Delphi technique and 72 experts of distance education said that mobile learning is "very important" because of;

1. **Changing roles**
2. **Multicultural curriculum**
3. **Global patterns influenced by mobile learning technologies**
4. **Interactive synchronous communications**
5. **cultural biases and stereotypes**
6. **The philosophy of mobile learning**
7. **Current trends that influence the technological managements and leaderships**
8. **Global values, ethics and norms**
9. **Trends outside of the organizations**
10. **Stakeholder involvements**

Traxler (2007) mentions following categories of mobile learning:

- **Technology-driven mobile learning (Use of new technology in an educational setting for pedagogy)**
- **Miniature but portable e-learning (Using mobile technology to modernize conventional e-learning, e.g. adding Virtual Learning Environment [VLE])**
- **Connected classroom learning (use of mobile technology in classroom for collaborative interaction and learning, e.g. interactive whiteboards)**
- **Informal, personalized, situated mobile learning (Providing the new technology for learning opportunities which are impossible otherwise, e.g. location awareness or video-capture)**
- **Mobile training/ performance support (Using technology for professional development and just-in-time on the job support of mobile workers)**
- **Remote/rural/development mobile learning (Using mobile technology where conventional e-learning technologies would fail) (pp. 3-4)**

Keegan (2005) rightly claims that distance education is going to be wireless because of the rapid pace as well as deep penetration of mobile technology in the world.

The alacrity with which the people are using this technology forces the educators of the distance education to accept the challenge of harnessing the maximum utilization of the mobile devices for pedagogy as well as andragogy.

Russell (2005) [as mentioned in Rekkedal & Dye, 2007, p. 18] advocates that mobile technologies can provide following services in distance teaching-learning programme;

- **Password retrieval for students who have forgotten their password**
- **Welcome message to students (containing their user name, password, guiding tips, a permission request for interaction with the student via mobile phone)**

- **The introductory course**
- **Reminders to students who fall behind their studies**
- **Reminders to students to register and enroll for exams via mobile phones**
- **Delivery of interactive quizzes**
- **Delivery of notification to teachers**
- **Delivery of notifications related to assignments and grade posted**
- **Development of a Web interface that allows teachers and administrators to send SMS messages to students, and allows students to send messages to other students**
- **Allow students to upload pictures and text to their presentation**
- **Allow students to upload pictures and text to their blog**

Researches by Ragus (2004), Deviney and Koschembahr (2004) prove that mobile learning can be effectively used for training managers, teachers, ground staff, new sales associates, and apprentices.

It reduces the "formality of the learning experience", engages the "reluctant learners", and raises the "self-confidence" of learners (Attewell, 2004). Peters (2007) asked seven mobile providers in his study entitled "M-Learning: Positioning educators for a mobile, connected future" and found following students were eager to use mobile for learning because;

- **Mobile phones are used for interaction with parents for example SMS about attendance and performance**
- **Students already have mobile phones and it would be good if they were used more for learning**
- **Some colleges use mobile phones for communicating with students using text reminders**
- **SMS is already in place but the opportunities to use it for learning have not been considered in great depth**
- **Resourceful teachers are incorporating SMS because young people are using it anyway, it's a great motivational tool**
- **M-Learning allows students to get a response quickly, at all hours. (pp. 10-11)**

In a study, Hayes, Stephen and Hall (n.d., p.3) found that students identified that receiving text messaging support was:

- **Very useful to inform students of class changes or cancellations**
- **It makes the lecturer more accessible and approachable**
- **Good to advise students of topics to be covered in upcoming lectures**
- **Could be used to summarize lectures or note important points to remember**
- **Helps consolidate knowledge by asking questions to get students thinking about what they have just learned and remember it.**
- **Helps to motivate students and remind them of assignments/homework to be done.**
- **Useful to recommend extra reading or websites for further information.**
- **Builds rapport between lecturers and students.**

CHALLENGES TO MOBILE LEARNING

As we are undergoing through the "first generation of truly portable information and communications technology" (Peters, 2007, p. 1), several problems and different issues have arisen that need to be addressed. In addition to the problems that are associated

with the use of technology such as cost and maintenance, followings are the major problems and issues with particular reference to the use of mobile phones in education;

Small Screen

the mobile phones usually have too small screens to allow availability of all information on it (Rekkedal & Dye, 2007, p. 2). It has limited space.

Limited Data Transfer Rate

"When people use a mobile device with Internet connectivity, the connection speed is traditionally lower than, for instance, that of a traditional mobile phone" (Rekkedal & Dye, 2007, p. 2).

Partially Explored

Although mobiles phones have been used effectively for educating the people, yet its full potentials in the teaching-learning process have not been achieved. It is still challenge for the researchers and educational experts to find out the areas where the mobiles phones can more successfully be used.

SITUATION IN PAKISTAN

In Pakistan the enrolment rate for higher education is only 4.9% (Lynd, 2007, pp.11-12) and rate of enrolment of women is even less than that.

Despite improvements during the last one decade, access to education and particularly higher education remains a problem for women in Pakistan.

In Pakistan social, cultural, economic and historical factors have directly and indirectly affected the status and rights of women at every level and in all sectors, and have negatively impacted on their integration in development.

Financial constraints, unavailability of institutions of higher education in the neighborhood, social taboos, and lack of market demand oriented programmes are some of the factors which are responsible for this less participation rate in higher education level in Pakistan.

However, lack of proper guidance and unawareness of available opportunities for higher are also accountable for non-entrance of Pakistani women into institutions of higher education.

About 70% (131 millions) of Pakistani population are the mobile phone users (Dawn, 2011). This offers an excellent potential for utilizing the mobile phones for educational purposes for the country like Pakistan which has meager resources for human capital development.

The present study is an effort for utilizing the mobile phones for guidance, encouragement, and teaching the women of Pakistan.

The study would be helpful for the administrators of higher education to see possibilities of mobile phone for enhancing enrolment of women. Moreover it would be also helpful authorities of universities with distance learning programmes to use mobile phone for providing guidance to their present and potential students.

THE STUDY

The present study aimed at finding out effect of mobile phone on the participation rate of women in higher education. The objectives of the study were to find out effect of mobile phone to; encourage women to participate in higher programmes, guide the students during the course and prevent these students from leaving the programmes uncompleted.

The study is based on the Anderson's (2003) "learning equivalency theory" which he developed to give a theoretical ground for the learning process from emerging technologies.

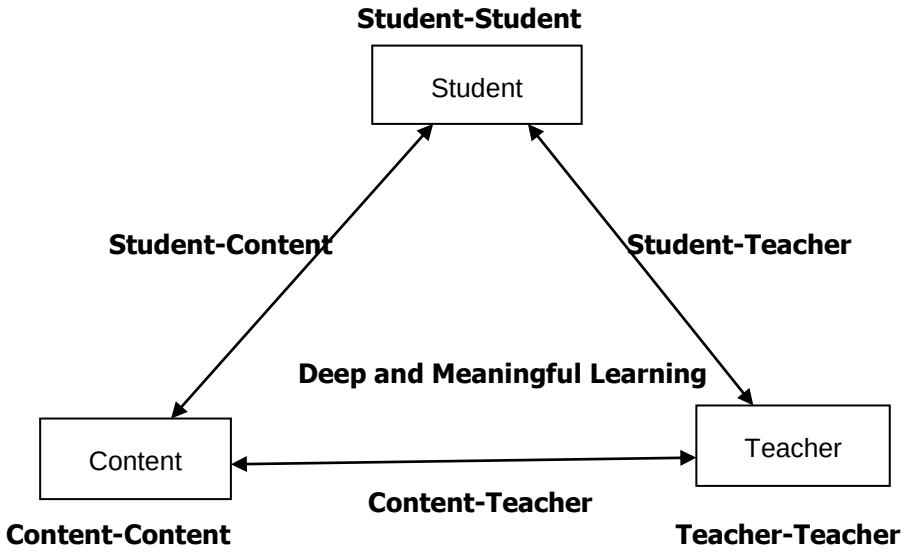

Figure 2.
Learning interactions

Anderson (2010, p. 24) suggests that out of these interactions, "any one type of interaction would be sufficient to create a high-quality learning experience".

In the present study two interactions that is Student-teacher, and student-student interactions were employed as shown in fig. 3 below.

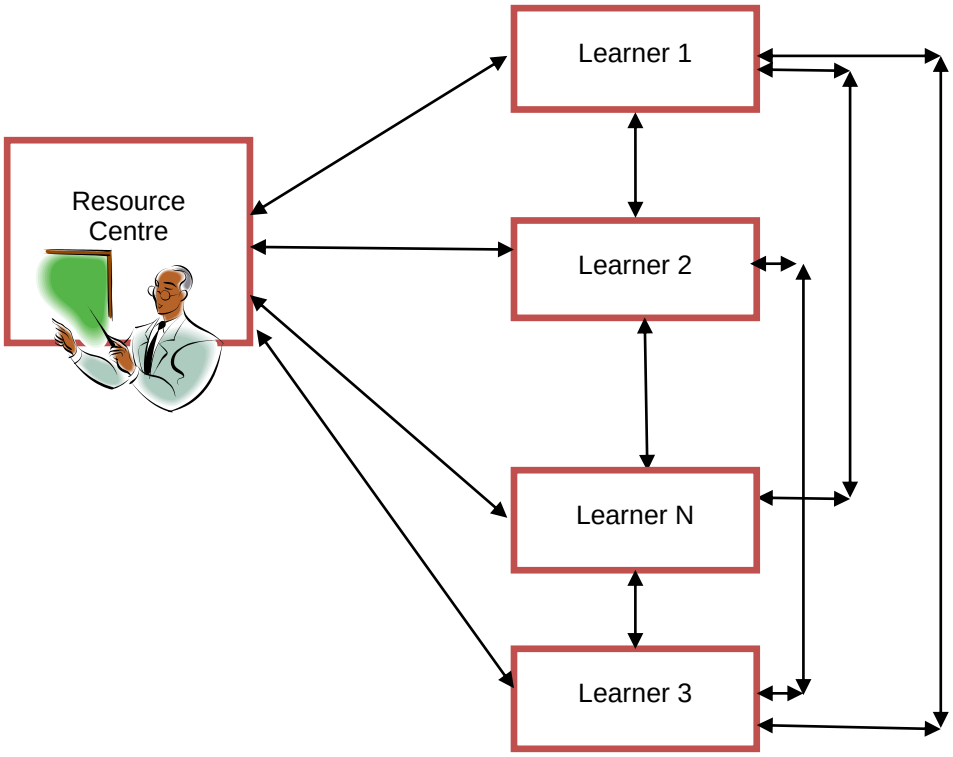

Figure 3.
Interactions of the participants in the study

Definition of Variables and Terms

Bachelor Programme

Two years programme after 12 years of schooling.
Contact: Here contact refers to communication by mobile phone either by direct call or through SMS.

Mobile Phone

A Portable telephone device that does not require the use of landlines.
Postgraduate Programme: After bachelor, a one year diploma or two years masters programme.

Resource Center

The researchers' mobile phone to which the students made calls which were answered by the researchers or their associates. This mobile phone also had the function to divert the call to a particular teacher so that he may guide the student.

Hypothesis

H_1: The students' participation into programmes of higher education can be increased by using the mobile phone
H_2: The use of mobile phone would decrease dropout ratio of students.

Sample

This experimental study consisted of two groups- experimental group and control group, each comprised of 200 women who passed their bachelor programme in 2007 and did not continue their further education.

The experimental group was further subdivided into sub-experimental and sub-control groups. The women were selected by convenient sampling method. The study was delimited to the tehsil Muzaffargarh of Punjab province of Pakistan.

METHOD

The list of female students who passed the B.A. examination as regular or private students was got from the examination department Bahauddin Zakaria University Multan was got along with the contact numbers.

Keeping in mind the social constraints (many people think it unethical that an unknown person contacts/talks to even on phone a person of opposite sex), the researchers got services of an educated woman to talk to the students.

They were contacted through mobile phone call, congratulated on success in the examination, and requested to participate in the research. In this way, a list of 200 students was completed. Initially the students were divided into two groups by random sampling method. The names of the groups were;

1. **"A" (The experimental group consisting of 100 members)**
2. **"B" (The Control group consisting of 100 members)**

The members of the group *A* were contacted and they were informed about the dates of admission into the universities for master degree programmes.

They were also encouraged to take into some programme by explaining them the advantages of the higher education.

The parents of the students who wanted to take admission but their parents were unwilling to allow them were also contacted. 68 members of group A got admission into post graduate programmes, out of which 18 got admission in formal education institutions of higher education while 50 members got admission in distance education programmes different universities.

These 68 students who had got admission were divided into two groups that are Ax and Ay. Ax group consisted of 18 students who got admission in institutions of formal education and Ay consisted of 50 students who got admission in distance education institutions. These two groups were further subdivided into two more groups of each by random sampling method so that following subgroups were formed

- **Ax1 (Consisting of nine students studying in formal education institutions)**
- **Ax2 (Consisting of nine students studying in formal education institutions)**
- **Ay1 (Consisting of 25 students studying in distance education institutions)**
- **Ay2 (Consisting of 25 students studying in distance education institutions)**

Ax1 and Ay1 were the treatment groups while the Ax2 and the Ay2 were the control group. Every one of the students of Ax1 group was given the mobile number of other eight members of the group.

Similarly, every one of the students of Ay1 group was given the mobile number of other 24 members of the group. The students of the treatment group were asked to contact with one another or the resource centre in case of any problem concerning their studies.

At the resource centre the researcher had arranged the teachers of relevant field to properly answer the queries of the students and provide them guidance.

The students of the treatment group were contacted off and on, asked about their academic progress, and were encouraged to study. So, the students of the treatment group were in contact with one another and with the resource centre. While the students of control group, after the admission, were neither contacted by the resource centre nor they were given the contact numbers of other students by the resource centre. However, they themselves might know or had contact with one another.

This support was provided to the students for approximately two years- the duration necessary for the completion of their postgraduate programmes. During this period the performance of the students of all the groups (Ax1, Ax2, Ay1, and Ay2) in their respective institution was recorded.

FINDINGS

1. Table 1. shows that more students from group A (68%) continued their studies than those of group B (31%). There was no difference in the percentage of the students successfully completing their programmer between the two sub-groups.

Ay1 and Ay2. The Sub-group Ax1 had the highest (96%) success percentage of others. The successful completion percentage of group A was higher (91%) than that of B (55%).

Table: 1
The success rate of the students

Group	Total No. of students in group	The of students who got admission		Group	Total No. of students in group	The students who successfully completed	
		Number	Percentage			Number	Percentage
A	100	68	68	Ax1	25	24	96
				Ay1	9	8	89
				Ax2	25	15	60
				Ay2	9	8	89
B	100	31	31	B	31	17	55

2. The Fig. 4 shows that net success percentage of group A was much higher (81%) than that of group B (55%).

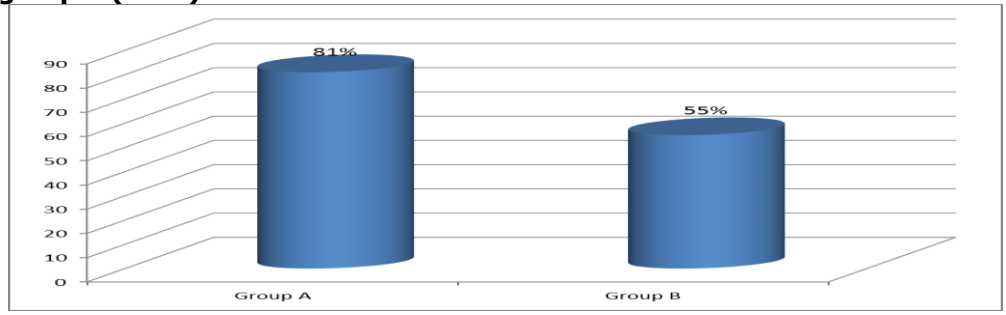

Figure: 4
Net Success percentages of the students

3. Table 2 shows that the students of the Ax1 made significantly more contacts (about five contacts per student per month) with the resource centre as compared to those of the Ay1 group. The students of Ax2 and Ay2 never contacted the resource center.

Table 2.
Number of contacts per month made by the students with the resource centre

Group	Total No. of students in group	Number of Contacts initiated by the students	Average contact per student
Ax1	25	119	4.76
Ay1	9	17	1.89
Ax2	25	0	0
Ay2	9	0	0

4. Fig. 5 shows that the students of Ax1 group had the highest (64) average than those of other groups. The average score of the Ax1 was better than that of Ax2 and the average score of Ay1 was better than that of Ay2.

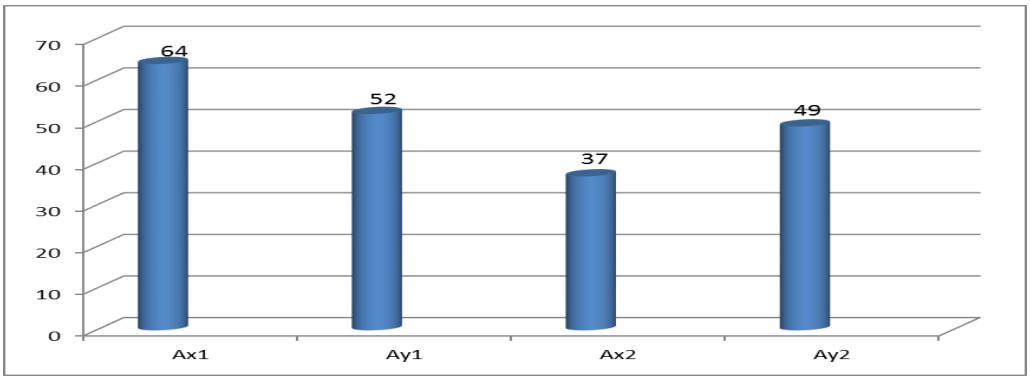

Figure 5.
Average marks of the students in final transcript

CONCLUSIONS AND DISCUSSION

It is clear that the participation rate in higher education of the students who were guided and encouraged through the mobile phone was significantly greater than those who were not guided.
Similarly, there was a marked difference in the rate of successful completion of the programmers between the distance-learners who had been continuously contacted and the distance learners who were not contacted. However, the contacts did not contributed much to the success of the students of the formal education institutions. The net success percentage of group A was much higher (81%) than that of group B (55%). It shows that the contacts through mobile phones have a positive effect on the enrolment and the success of the students.

The students of distance education institutions contacted more than the students of the formal institutions. It means that the distance education students need more help and they can be effectively guided through the use of mobile phones. The performance of the students who got continuous help through the mobile phones was significantly better than those who did not. This difference was greater (27%) between the students of distance education institutions and comparatively less (3%) between the students of the formal institutions.

The drop out ratio of the students who were guided through the mobile phone contacts was significantly less (19%) than those who were not guided (49%). Similarly, there was a remarkable difference (36%) of drop out ratio between the distance students who were provided continuous guidance (4%) and those of who were not provided (40%). There was no difference of drop out ratio between the students of formal institutions.

BIODATA AND CONTACT ADDRESSES OF THE AUTHORS

Professor Dr. N. B. JUMANI is working as Professor, Department of Education, Faculty of Social Science, International Islamic University Islamabad, Pakistan. Prof. Jumani has acquired his academic credentials for B.Ed, M.Ed., M.Phil., Ph.D., and Post Doc. His areas of study and specialization have been Teacher Education, Curriculum Development, and Distance Education. Having studied and researched in traditional education and distance education fields, he has acquired relevant competencies to deal with formal face-to-face education and distance education systems.

Prof. Jumani has been in the field of education for over 25 years and dealt with different levels of educational systems from Secondary to University level as well as in policy making organization- Curriculum Wing of Federal Ministry of Education Pakistan. Moreover, he carries an expertise of working in internal projects i.e Teacher Training Project assisted by Asian Development Bank and Pre-Service Teacher Education Program assisted by USAID.

For his Post Doctorate he has undergone training at Deakin University, Australia and for Modern Distance Education technology, he underwent training at Jilin University, China. This international exposure has enabled him to apply the acquired knowledge to the modern educational systems.

Prof.Dr. Jumani has been widely published in different journals of repute both within Pakistan and outside. He has been publishing his research with highly reputed and recognized research journals over a decade. His work has got space in the International Journals published not only in Pakistan, also from India, USA, Turkey, Japan, South Africa and Azerbaijan etc. He has written a good number of chapters/units/books on education in general and teacher training in particular.

Moreover, has also written and reviewed a lot of scripts of educational programs/teacher education programs for radio and T.V. He is member of national curriculum review committee of Higher Education Commission as well as Federal Ministry of Education Pakistan.

Prof. Jumani is on the Editorial Board of Journals of high standards, like IRRODL (International Review of Research in Open and Distance Learning – published from Canada), TOJDE (Turkish online Journal of Distance Education – published from Turkey), Turkish Online Journal of Education Technology (published from Turkey) EJEL (Electronic Journal of E-Learning – published from United Kingdom), Quarterly Review of Distance Education (published by Information Age Publishing, USA), CIER (Contemporary Issues in Education Research – published from USA) etc, in addition to being on the Board for Pakistan Journal of Education and Asian Journal of Distance Education published from Japan. These journals are very reputed and publish papers from authors after thorough and robust review process. He has also a privilege of being on the technical/advisory panel of many international conferences. Moreover, He is member of different national and international professional organizations/ associations in the field of education and

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Prof. Dr. Jumani has visited countries like Canada, Greece, Australia, China and Kingdom of Saudi Arabia. These countries reflect different cultures and degree of development. Interactions with other academics in those countries have provided him an understanding for international cooperation and cultures. Prof. Dr. Jumani is interested in extra-curricular activities too, like having won Education Talent Award in 1996, Outstanding performance in English Essays in 1992-93, attending training of teachers in formal and non-formal education conducted by Ministry of Education, Govt. of Pakistan and Commonwealth Secretariat, London, online discussion to the Australia/Pakistan/Iran Education Project in 2007etc indicate his diverse abilities and interests.

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