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Barriers to Successful Integration of ICT in Education in Baltistan Region

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A B S T R A C T

Education is the backbone of any nation and nowadays ICT is becoming the backbone of the education system of any country. The government of Pakistan's efforts of Integration ICT can be seen in Pakistan's three policy documents; National Education Policy (2009), National Professional Standard for Teachers in Pakistan (NPSTP) and National ICT strategy. The integration of ICT in Education is inevitable for the survival of teachers in this information society. In the whole country, these policies are not producing the desired educational results and the performance remained unsatisfactory. This research paper was formulated with the intention to acquire the basic hurdle persist behind not acquiring the required anticipated result of ICT specifically in Gilgit Baltistan. In order to get into the severity of this matter different methodology of facts findings were adopted and for this specific matter, Questionnaire/interview method was practiced. As per Quantitative methodology of questionnaires the finding shows a positive perception of age 30-39 towards the use of ICT, more than 90% of all ages believed in the importance of ICT integration in classrooms. Teachers voted for electricity and infrastructure problems and lack of technical support by authorities as main barriers while some female teachers were found with the thoughts that social/cultural/ethical values are barriers for them to integrate ICT in their courses. These finding will help to propose some strategies to improve successful ICTs integration in Gilgit Baltistan

KEYWORDS: NPSTP, ICT, National Education Policy, Barriers

1. INTRODUCTION

As per Asian development Bank report ICT has the potential to "bridge the knowledge gap in terms of improving quality of education, increasing the quantity of quality educational opportunities, making knowledge building possible through borderless and boundless accessibility to resources and people, and reaching populations

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in remote areas to satisfy their basic right to education" (ADB, 2009). Government of Pakistan has realized the potential impact of ICT on teaching and learning, and committed to enhancing the teaching and learning of teacher by incorporating ICT as a useful tool. In ten standards of National Professional Standard for Teachers in Pakistan (NPSTP), point no seven "Effective communication and proficient use of Information Communication Technologies" shows the seriousness of ICT integration in education. 3 National Education Policy 2009 emphasized that "Use of Information Communication Technologies (ICTs) in Education shall be promoted in line with Ministry of Education's "National Information and Communication Technology Strategy for Education in Pakistan" (NEP, August 01`, 2009). Policy Action No. 7 & 8 of Section 6.2 Curriculum Reform, of above mentioned policy highlighted importance in such a way that "ICTs shall be utilized creatively to assist teachers and students with a wide range of abilities and from varied socio-economic backgrounds" and "ICTs shall be used to strengthen the quality of teaching and educational management." (NEP, August 01, 2009). Government's effort towards implementation of ICT in education is admiring but the results are not achieved as per expectations of the policymakers. The integration of ICT in Education can be helpful in achieving the objectives of education by resolving all the conflicting issues of learning/teaching and the environment of the society. Adina Alexandru, Ed. D. examines that 88% of educators considered that technology is essential to teaching and learning while 95% believe that student's learning improves through technology. Yet only 32% of educator use technology to instruct the student. Computers are used for instruction once or twice in a year, but several times weekly for preparation of lesson (Adina Alexandru, July 2012). This cited situation is of the developed countries, and someone can easily understand the situation of developing countries like Pakistan, especially in Gilgit, Baltistan, where the climate and the geographical situation is harder than other areas of Pakistan to implement and integrate ICT in teaching and learning. According to NPSTP, to become a professional and proficient teacher, he/she must be able to integrate ICT in the classroom. Hadi and Zainab Salihi say that "the process of using ICT in everyday education is very complicated. The opportunities provided by ICT to support teaching and learning are not problem-free. The virtually limitless

opportunities of access to information in an educational context can pose a real danger of information overload if the teachers do not have the skills in filtering information for relevance, or are unable to establish a coherent organizing principle" (Salihi & Salihi, February 2012). Use of ICT in education is increasing in Pakistan rapidly and Gilgit Baltistan slowly, because of the geographical circumstances. Teachers are not integrating ICT into their teaching and learning practices. What are the hurdles and barriers the teachers of GB are facing is open to discussion? Except for geographical and climatic barriers, some other hurdles may discourage teachers to incorporate ICT into the classroom and keep away them to integrate ICT during the process of teaching. Exploration of these hurdles can help the teachers to overcome the barriers and integrate the ICT in teaching and learning process.

Purpose of the study:

ADB report says that "in a number of countries, the ICT for education plan is isolated from the national ICT policy. ICT for education plans are often disjointed, as they are developed without considering the infrastructure, costing, and development as defined by the national ICT policy." (ADB, 2009). Pakistan National Education Policy (2009) and NICT strategies are according to the world standards but in practical ICT is not integrating into school as per defined policies or strategies. The purpose of this paper is to find the barrier or hurdles faced by teachers of Gilgit Baltistan, the causes due to which teachers are not incorporating ICT in classroom, teachers views about ICT assimilation in education and recommendations for teachers to integrate ICT in educational institutes of Gilgit Baltistan to make the teachers professional and standardized as per Pakistan's three policy documents i.e. National Education Policy, NPSTP and NICT strategies.

2. LITERATURE REVIEW

It is common standpoint of the nations that ICT is the backbone of this communication era, and a best medium or tool to reform our pupils into dynamic, informative and skilled professionals of this information age. Pelgrum stated that in the late 1990s, many governments have developed plans to increase their investments regarding ICT in education. The rapid developments of the Internet and worldwide web

diverted the attention towards the provision of these facilities in all school in a short period of time. (Pelgrum, 2001). Konstantinos stated that "technological progress, combined with a parallel evolution of pedagogical sciences, results in the belief that the integration of Information and Communication Technologies – ICT – into learning interaction may bring about a new era in the educational practice." (Konstantinos, 2013). Schoepp (2005) defines "barriers" as the difficulties faced during the complicated process of integration of ICTs into teaching and learning. A barrier is defined as "anything that restrains or obstructs progress, access, etc.:" (Dictionary.com) many researchers like Ertmer, York categorized barriers as extrinsic and intrinsic barriers. Goktas argued that Ertmer, Ottenbreit-Leftwich, and York (2006–2007) classified hardware/software access and quality, Internet, technical, administrative, and peer support as extrinsic enablers/barriers while intrinsic enablers/barriers might be personal beliefs, previous success with technology, and self-efficacy (Goktas, Soner, & Yildirim, 2009). Schoepp understood the barrier in a way that "its removal acts as an aid towards the achievement of the objective. Therefore, the study of barriers as they pertain to technology integration is essential because this knowledge could provide guidance for ways to enhance technology integration." (Schoepp). Ertmer used term first-order for extrinsic and second-order for intrinsic barriers respectively and says that "first-order barriers to technology integration are being extrinsic to teacher and include lack of access to computer and software, insufficient time to plan instruction, and inadequate technical and administrative staff and second-order barriers are intrinsic to teachers and include beliefs about teaching, beliefs about computer, establish classroom practices, and unwillingness to change." (Ertmer, 1999) Khalid Bingimlas classified the barriers into two categories i.e. teacher-level barrier and school level barriers.(Bingimlas, 2009). The individual characteristics which includes lack of time, lack of confidence and resistance to change while in school level barriers having institutional characteristics like lack of training and lack of access to resources etc. Khalid Bingimlas also cited Blanskat (2006) with three other categories which are micro level, meso level and macro level barrier including teacher's attitude and approach to ICT, institutional context, and wider education framework respectively. To find out the solutions for barriers faced by teachers and

institutes, different studies are being conducted in globe. Taimur-ul-Hassan & Sajid believes that ICT integration can be result oriented, valuable and beneficial for the education sector especially secondary level learning improvement. But Teachers' training, provision of basic infrastructure, up gradated curriculum must be focused. (Taimur-ul-Hassan, 2013). While (Ertmer, 1999) declared that success will be more likely, if teachers are prepared to confront both first and second order barriers. Schoepp Kevin brings to a close finding that the faculty feels they have more than enough technologies but they are not being supported, guided or rewarded in their attempt to integrate technology into their teaching. (Schoepp). On the other hand, in-service training, technical support, role models and technology plans are main barriers of Yuksel Goktas findings. Hadi Salihi & Zainab Salihi wrap up their findings that insufficient technical supports at schools and little access to Internet and ICT, shortage of class time and time needed to learn using ICT prevent teachers to use ICT in the classroom. (Salihi & Salihi, February 2012) After surveying 26 countries of word wide Pelgrum concluded that "The major obstacles were: lack of computers and lack of knowledge among teachers still 40% of the educational practitioners indicated that a lack of hardware was a major obstacle." (Pelgrum, 2001)

3. METHODOLOGY

The intention of this study is to investigate the barriers in the incorporation of Information and Communication Technologies (ICTs) at secondary schools of Baltistan division. Sequential mixed method design is used in this study to answer the research questions. Quantitative method is used to conduct this research.

The population of the study: Teachers of different levels at Primary, middle and High School of 4 districts of Baltistan division were the focusing areas i.e. district Skardu, district Kharmang, district Shigar, and Khaplu district.

Sample: The researcher used disproportional stratified sampling method and selected 2 government schools of each 4 district of Baltistan division with different age groups, qualification, service duration, subject, genders and school level.

Instrumentation: A questionnaire was distributed among the population and collected data was carefully examined. Due to the complexity of questionnaire the researcher

preferred to use Administration method of the questionnaire.

Research Questions: The sample teachers were surveyed through a questionnaire with 2 minor questions to judge their familiarity with ICT, previous practices of ICT integration in their respective subjects and ICT training.

1. Since how many years you are using ICT?
2. Since how many years you are integration ICT in your subject?
3. Did you participate in any ICT training/course?

The questionnaire was framed with two major questions to know the teacher's view about ICT integration and barriers to incorporate ICT into teaching and learning.

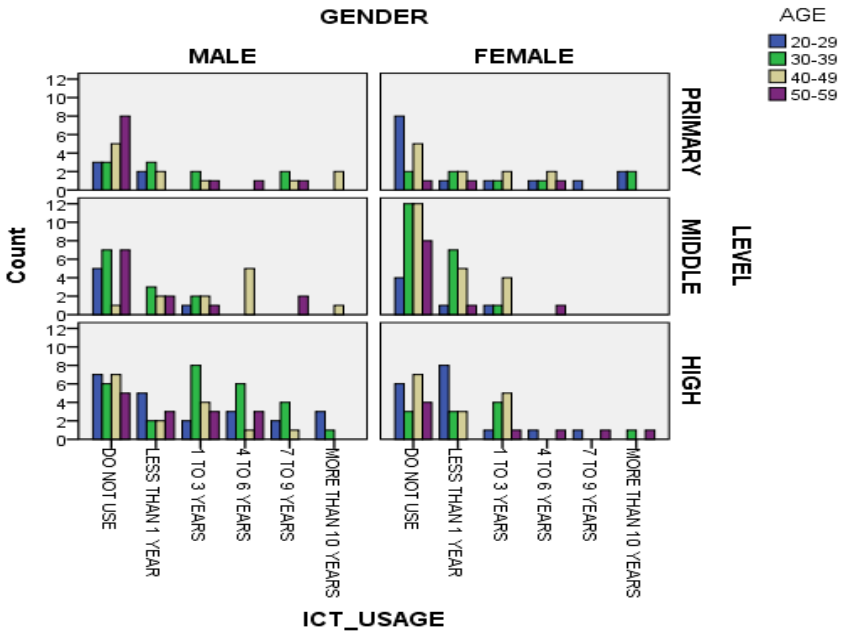
1. What is your view on the Integration of ICT into Teaching-Learning Process?
2. What is your view on the barrier in the incorporation of ICT into Teaching-Learning Process?

Data analysis: 156 male and 144 female teachers of different age group, level, subject and service duration were selected as a sample and distributed 300 questionnaires among them and 100% filled questionnaires were returned. Social Sciences (SPSS) software was used to analyze the gathered data and questionnaire is scrutinized, checked and templates were developed using SPSS. Prior to feeding data into software, variables are coded as 0 for male and 1 for a female in gender variable while codes were assigned 0,1,2 and 3 for 20-29, 30-39, 40-49 and 50-59 of age groups respectively. In service duration variable 0 is assigned for service duration 1-5, 1 to 6-10, 2 to 11-15, 3 to 16-20 and 4 to more than 21. The subject variable was allotted code no 0, 1,2,3,4 and 5 for Math, Science, English, Urdu, Social Studies and others respectively. In SPSS the values of variable „level" were coded as 0 for primary, 1 for middle and 2 for High classes. Standard deviations mean, and the median was computed to see different properties of data.

Teacher knowledge about ICT and usage of ICT in the classroom were examined through questionnaires and the shocking response was found in the primary level where 26% male teachers and 21.9% female teachers were illiterate in term of ICT, while in Middle level 20.4% male and 36.7% female teachers were not using ICT. At a high level, 19.4% and 15.5% for male and female respectively were not using ICT and total 45.3% sampled population was not using ICT. (Table.01).

GENDER * ICT_USAGE * LEVEL Cross tabulation

LEVEL				ICT_USAGE						Total
				DO NOT USE	LESS THAN 1 YEAR	1 TO 3 YEARS	4 TO 6 YEARS	7 TO 9 YEARS	MORE THAN 10 YEARS	
PRIMARY	GENDER	MALE	Count	19	7	4	1	4	2	37
			% of Total	26.0%	9.6%	5.5%	1.4%	5.5%	2.7%	50.7%
		FEMALE	Count	16	6	4	5	1	4	36
			% of Total	21.9%	8.2%	5.5%	6.8%	1.4%	5.5%	49.3%
	Total		Count	35	13	8	6	5	6	73
			% of Total	47.9%	17.8%	11.0%	8.2%	6.8%	8.2%	100.0 %
MIDDLE	GENDER	MALE	Count	20	7	6	5	2	1	41
			% of Total	20.4%	7.1%	6.1%	5.1%	2.0%	1.0%	41.8%
		FEMALE	Count	36	14	6	1	0	0	57
			% of Total	36.7%	14.3%	6.1%	1.0%	0.0%	0.0%	58.2%
	Total		Count	56	21	12	6	2	1	98
			% of Total	57.1%	21.4%	12.2%	6.1%	2.0%	1.0%	100.0 %
HIGH	GENDER	MALE	Count	25	12	17	13	7	4	78
			% of Total	19.4%	9.3%	13.2%	10.1%	5.4%	3.1%	60.5%
		FEMALE	Count	20	14	11	2	2	2	51
			% of Total	15.5%	10.9%	8.5%	1.6%	1.6%	1.6%	39.5%
	Total		Count	45	26	28	15	9	6	129
			% of Total	34.9%	20.2%	21.7%	11.6%	7.0%	4.7%	100.0 %
Total	GENDER	MALE	Count	64	26	27	19	13	7	156
			% of Total	21.3%	8.7%	9.0%	6.3%	4.3%	2.3%	52.0%
		FEMALE	Count	72	34	21	8	3	6	144
			% of Total	24.0%	11.3%	7.0%	2.7%	1.0%	2.0%	48.0%
	Total		Count	136	60	48	27	16	13	300
			% of Total	45.3%	20.0%	16.0%	9.0%	5.3%	4.3%	100.0 %

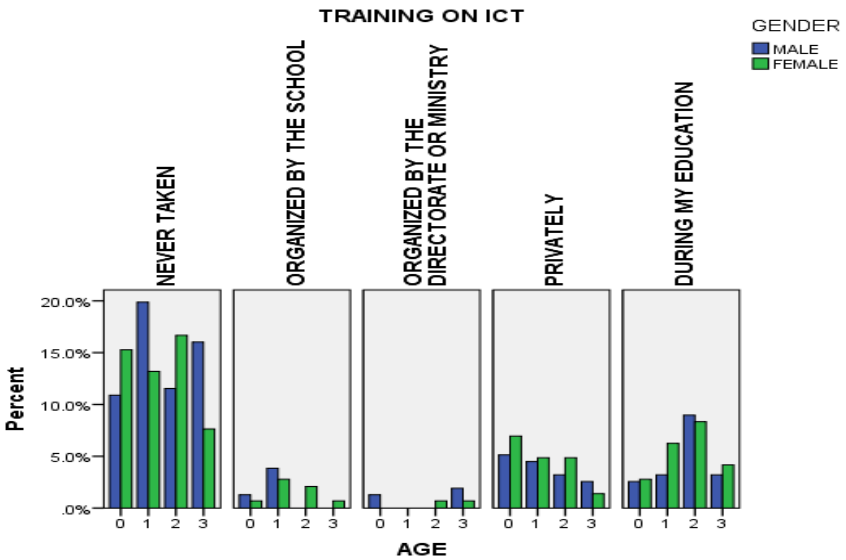


The Table 2, Age and level cross tabulation attribute of ICT usage "Do Not Use ICT" shows the highest reading, where 47.4% at primary, 57.1% at Middle and 34.9% at a High level with all age level are not using ICT in their educational life

AGE * ICT_USAGE * LEVEL Crosstabulation								
LEVEL	AGE	ICT_USAGE						Total
		DO NOT USE	LESS THAN 1 YEAR	1 TO 3 YEARS	4 TO 6 YEARS	7 TO 9 YEARS	MORE THAN 10 YEARS	
PRIMARY	20-29	15.1%	4.1%	1.4%	1.4%	1.4%	2.7%	26.0%
	30-39	6.8%	6.8%	4.1%	1.4%	2.7%	2.7%	24.7%
	40-49	13.7%	5.5%	4.1%	2.7%	1.4%	2.7%	30.1%
	50-59	12.3%	1.4%	1.4%	2.7%	1.4%		19.2%
	Total	**47.9%**	**17.8%**	**11.0%**	**8.2%**	**6.8%**	**8.2%**	**100.0 %**
MIDDLE	20-29	9.2%	1.0%	2.0%				12.2%
	30-39	19.4%	10.2%	3.1%				32.7%
	40-49	13.3%	7.1%	6.1%	5.1%		1.0%	32.7%
	50-59	15.3%	3.1%	1.0%	1.0%	2.0%		22.4%
	Total	**57.1%**	**21.4%**	**12.2%**	**6.1%**	**2.0%**	**1.0%**	**100.0 %**
HIGH	20-29	10.1%	10.1%	2.3%	3.1%	2.3%	2.3%	30.2%
	30-39	7.0%	3.9%	9.3%	4.7%	3.1%	1.6%	29.5%
	40-49	10.9%	3.9%	7.0%	.8%	.8%		23.3%
	50-59	7.0%	2.3%	3.1%	3.1%	.8%	.8%	17.1%

	Total	**34.9%**	**20.2%**	**21.7%**	**11.6%**	**7.0%**	**4.7%**	**100.0 %**
Total	20-29	11.0%	5.7%	2.0%	1.7%	1.3%	1.7%	23.3%
	30-39	11.0%	6.7%	6.0%	2.3%	2.0%	1.3%	29.3%
	40-49	12.3%	5.3%	6.0%	2.7%	.7%	1.0%	28.0%
	50-59	11.0%	2.3%	2.0%	2.3%	1.3%	.3%	19.3%
	Total	**45.3%**	**20.0%**	**16.0%**	**9.0%**	**5.3%**	**4.3%**	**100.0 %**

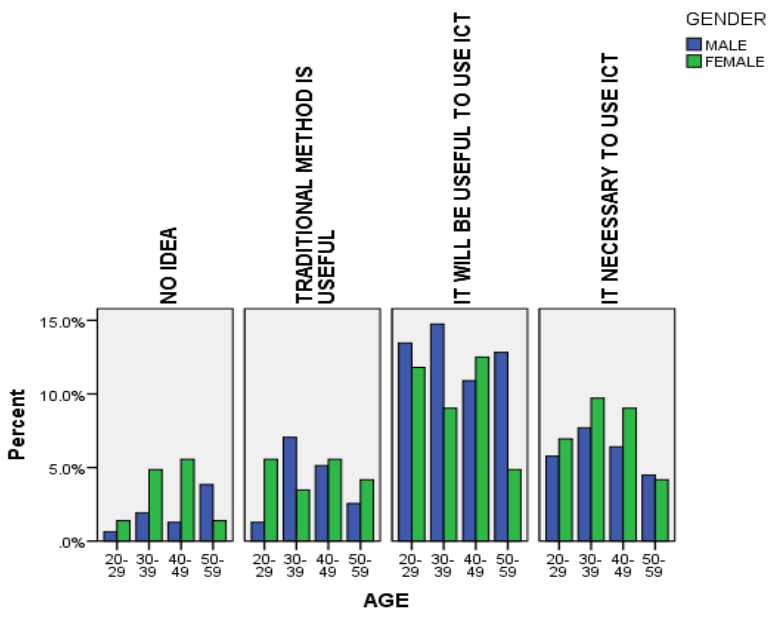
The second question was about the training conducted by participants. In SPSS, labeling the variable with 1 for "never taken", 2 for "organized by the school", 3 for "Organized by the Directorate", 4 for "privately" and 5 for "During the education life". Table 3 Table3 and graph 1 shows the replies of the respondents regard training of ICT and the highest response is notified in "Never taken" column which demands the attention of the policymakers or the implementing authorities. The alarming response of "training organized by the school" and "training organized by Directorate or Ministry" depicts the flaws prevailed in the true implementation of ICT and also shows that much more improvement or work has to be done on behalf of the policymakers to achieve the desired goals or objectives.



Graph 1

GENDER * TRAINING ON ICT * LEVEL Crosstabulation

LEVEL		TRAINING ON ICT					Total
		NEVER TAKEN	ORGANIZED BY THE SCHOOL	ORGANIZED DIRECTORATE/ MINISTRY	PRIVATELY	DURING MY EDUCATION	
PRIMARY	MALE	13			11	13	37
	FEMALE	18			11	7	36
	TOTAL	**31**			**22**	**20**	**73**
MIDDLE	MALE	20	2	1	6	12	41
	FEMALE	25	3	0	9	20	57
	TOTAL	**45**	**5**	**1**	**15**	**32**	**98**
HIGH	MALE	58	6	4	7	3	78
	FEMALE	33	6	2	6	4	51
	TOTAL	**91**	**12**	**6**	**13**	**7**	**129**
Total	MALE	91	8	5	24	28	156
	FEMALE	76	9	2	26	31	144
	TOTAL	**167**	**17**	**7**	**50**	**59**	**300**



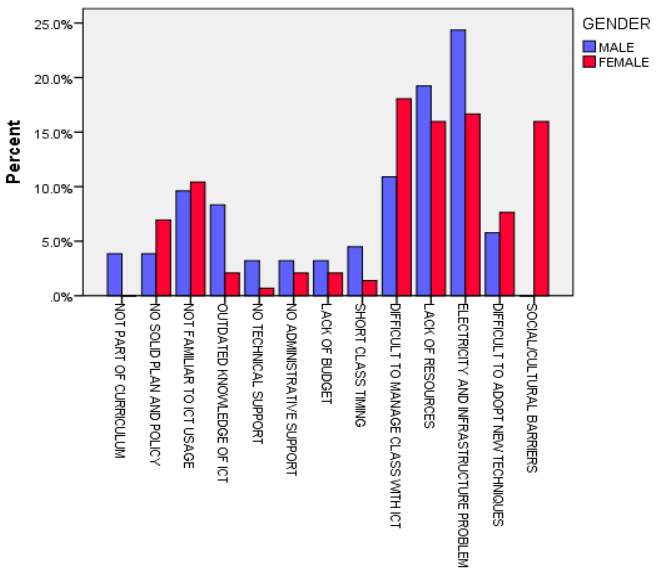
Graph 2: Views of Teacher about the use of ICT in Education

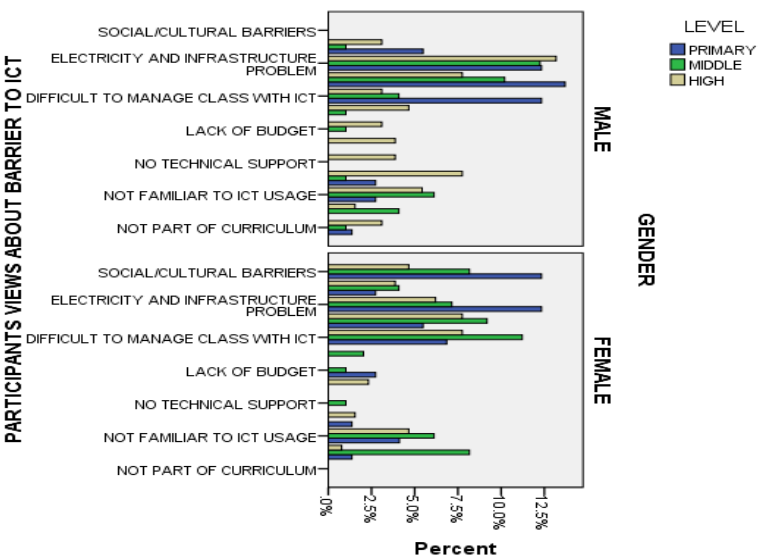
A positive response from both male and female respondents can be seen for the "views of teachers about the integration of ICT in education", which proves the usefulness of ICT in education and most of them seemed interested in the use ICT in education. Barriers which are affecting ICT integration in the classroom were questioned to respondents through questionnaire and analyzed through SPSS. Variables s were coded with 1 for "not part of curriculum", 2 for No solid plan and Policy", 3 for "Not familiar to ICT usage", 4 for "outdated knowledge of ICT", 5 for "No technical support", 6 for "No administrative support, 7 for "lack of budget", 8 for "short class timing" 9 for "difficult to manage class with ICT", 10 for "Lack of resources" 11 for "Electricity and infrastructure problem", 12 for "difficult to adopt new techniques", 13 for "social cultural barriers" and 14 for "others".

GENDER * PARTICIPANTS VIEWS ABOUT BARRIER TO ICT * AGE Crosstabulation

AGE		PARTICIPANTS VIEWS ABOUT BARRIER TO ICT													Total
		NOT PART OF CURRICULUM	NO SOLID PLAN/POLICY	NOT FAMILIAR WITH ICT USAGE	OUTDATED ICT KNOWLEDGE	NO TECH SUPPORT	NO ADM SUPPORT	LACK OF BUDGET	SHORT CLASS TIMING	DIFF MANAGE CLASS	LACK OF RESOURCES	ELECTRICITY/ INFRASTRUCTURE PROBLEM	DIFFICULT TO ADOPT NEW TECHNIQUES	SOCIAL/CULTURAL BARRIERS	
20-29	M	2.9 %	2.9 %	4.3 %	2.9 %		1.4 %	5.7 %	4.3 %	4.3 %	2.9 %	12.9 %	2.9%		47.1%
	F		4.3 %	7.1 %				2.9 %		8.6 %	8.6 %	8.6%	4.3%	8.6 %	52.9%
	Total	**2.9 %**	**7.1 %**	**11.4%**	**2.9 %**		**1.4 %**	**8.6 %**	**4.3 %**	**12.9 %**	**11.4 %**	**21.4 %**	**7.1 %**	**8.6 %**	**100.0 %**
30-39	M		2.3 %	1.1 %	6.8 %	4.5 %	3.4 %		4.5 %	4.5 %	9.1 %	14.8 %	4.5%		55.7%
	F		3.4 %	2.3 %	1.1 %			1.1 %	1.1 %	6.8 %	9.1 %	9.1%		10.2 %	44.3%
	Total		**5.7 %**	**3.4 %**	**8.0 %**	**4.5 %**	**3.4 %**	**1.1 %**	**5.7 %**	**11.4 %**	**18.2 %**	**23.9 %**	**4.5 %**	**10.2 %**	**100.0 %**
40-49	M	4.8 %	2.4 %	8.3 %		1.2 %				6.0 %	9.5 %	8.3%	3.6%		44.0%
	F		2.4 %	7.1 %	2.4 %	1.2 %	2.4 %			11.9 %	8.3 %	8.3%	7.1%	4.8 %	56.0%
	Total	4.8 %	4.8 %	15.5%	2.4 %	2.4 %	2.4 %			17.9 %	17.9 %	16.7 %	10.7 %	4.8 %	100.0 %
50-59	M			6.9 %	8.6 %		1.7 %	1.7 %		8.6 %	20.7 %	15.5 %			63.8%
	F		3.4 %	3.4 %			1.7 %		1.7 %	6.9 %	3.4 %	5.2%	3.4%	6.9 %	36.2%

	Total		**3.4 %**	**10.3%**	**8.6 %**		**3.4 %**	**1.7 %**	**1.7 %**	**15.5 %**	**24.1 %**	**20.7 %**	**3.4 %**	**6.9 %**	**100.0 %**
Total	M	2.0 %	2.0 %	5.0 %	4.3 %	1.7 %	1.7 %	1.7 %	2.3 %	5.7 %	10.0 %	12.7 %	3.0%		52.0%
	F		3.3 %	5.0 %	1.0 %	.3%	1.0 %	1.0 %	.7%	8.7 %	7.7 %	8.0%	3.7%	7.7 %	48.0%
	Total	**2.0 %**	**5.3 %**	**10.0%**	**5.3 %**	**2.0 %**	**2.7 %**	**2.7 %**	**3.0 %**	**14.3 %**	**17.7 %**	**20.7 %**	**6.7 %**	**7.7 %**	**100.0 %**





According to the finding of this research, there is a number of barriers to integrating ICT in education. 20.7% teachers responded that electricity and infrastructures are the main hurdles, while 17.7% point out that lack of resources are major barriers, 14.4% teachers noticed with the notion that it is difficult to manage the class if they use ICT, 10% of whole sample teachers confessed that they are not familiar with use of ICT in classroom and it is the main hurdle for them to incorporate ICT in their respective subjects. The gender-based difference can be seen in second last option "social/cultural barriers", where 7.7% female teachers responded in favor of this attribute, while 0% response from the male teacher which shows that there are cultural and social issues with female teachers at home, in schools or in the whole society. 3.% male and 3.7% female teachers say that they find it difficult to adopt new techniques and technologies. 5.3% respondents accepted that their knowledge/skills of ICT are outdated, in-service teacher training for ICT usage; no solid plan and policy of technology integration in their schools are a major barrier for them to incorporate ICT in classrooms. 3% of the whole sample declared that class timing is too short to use ICT in classrooms, while 2.7% blamed that their school administration does not support them to incorporate ICT into their classrooms. Only 2.0% stated that they do not get any technical support from the authorities/school administration 15 when required and ICT is not part of the curriculum, so they feel difficult to incorporate ICT in their classrooms.

4. CONCLUSION

Importance of ICT is not hidden from the eyes of policymaker of education in Pakistan. NPSTP emphasizes the proficient and effective use of ICT by teachers but the goal is not achieving as per desired. Teachers serving in far furlong remote areas of Gilgit-Baltistan are confronted with communication and transport issue due to the drastic climatic condition of the area. Teachers were the main stakeholders of this research study who were surveyed through questionnaires. Teacher's knowledge about ICT, training and their views about ICT integration and barriers to incorporate ICT in education were focused. The majority of respondents were illiterate in term of ICT and lacks ICT training was found in respondents. The research found that teachers have a positive view and strong desire to integrate ICT in education. The resultant of the research paper are the

barriers like power issues, infrastructure, lack of resources and training for integration of ICT in education and the social /cultural implication over the use of ICT regarding some female individuals.

Recommendation:

The researcher believes that these barriers can be removed by:

- Making ICT as part of the curriculum and solid plan and policy of technology integration in schools has to be made.
- Making the teachers familiar with ICT and its usage in teaching through different in-service training programs.
- Making the policy to implement ICT at grass root level.
- Providing technical support for the authorities/school administration.
- Supporting the administration to incorporate ICT into the classroom.
- Allocating special budget to purchase ICT equipment.
- Providing resources such as a computer, Internet etc. in the schools.
- Arranging alternative solutions for power generation/shortage.
- Preparing and aware teachers to adopt new techniques and technologies.
- Creating an awareness campaign in collaboration with other stakeholders

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