Diffusion of ICT in Rural Areas Community for Socio-Economic Development under the Platform of E-CLRC

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Abstract
This research study proposed a framework for Community Learning and Resources Center for ICTs literacy, awareness, skills and use in disadvantage and rural areas of developing countries, in order to improve the quality of education and socio-economic in youth using the artistic use of ICTs towards accomplishing the goal such as "No child Left Behind" owing to lack of access and monetary resources in rural and remote areas. The study conducted with tie relationship with National ICT strategy (NICTS) and Education for All(World Education forum Dakar 2000 (WEF2k)) , it compares and lists the benefits of E-CLRC in context of NICT strategy and WEF 2000, A series of seminars, workshops and group discussion conducted in selected areas of Gilgit-Baltistan of Pakistan including schools, communities and parents. This was a voluntarily initiated by youth to start an ICT awareness campaign in the rural areas of Pakistan. It also aims to find out the current ICT implementation level in schools and other educational Institutions. This E-CLRC will increase access to valuable information that gratifies diversified needs of various segments such as ICTs, socio-economic development and team work capability of native populace.
Keywords: Information and communication technologies, E-Community Learning Resources Center, World Education Forum, CBES.

1. Introduction

The advancement of ICT, its efficiency and effective utilization in education has increased demands, and also develop socio-economic status of the Nation, the way ICT can be used to strengthen the education and how to provide quality of education is a task of experts, ADB(2004, 2008b). ICT has lead to many learning and teaching techniques such as Open distance learning(ODL), computer assisted instruction(CAI), personal learning(PL), and virtual learning(VL) which remove space and time from students and teachers, and most communication occur through electronic medium such as radio, internet, TV etc, therefore to achieve personal goals, social status, education, and careers in emerging market place the information literacy is very important factor, which empower individual use , information creation and assessment oneself, therefore, the information literacy is basic human rights in the world of digital age, UNESCO Doc(2008b). ICT also provides environment for teachers, learner as well as positive effects on their career, critical thinking, problem solving, and collaborative learning (Michael, 2010; M. Semih, 2010; Dj. Kadijevich, 2008)

The traditional learning and teaching environment has been changed to new learning environment such as learner centered environment, where students actively learn and construct knowledge rather than receive information (Tsungjuang 2009). ICT also promote opportunity to use interactive and collaborative technology to team centered pedagogy, but main focus is appropriate learning environment and style. Availability of Information and Communication Technology (ICT) infrastructure in schools and its integration with teaching and learning processes is coming under greater focus as the country looks towards addressing the change of emerging as a knowledge economy. The current situation of Pakistan's financial position and social status in the world is decreasing, because of, war against terrorism and political situation. Therefore, it is a social responsibility of community members to play their role in creation of civil society (Vahid Motamedia, 2010; Jaime, 2010; Liang 2009).

E-Community Learning and Resource Center (E-CLRC), is a community oriented initiative for school going youngsters, drop out youth and parents through a Community Based Education Society (CBES), to encourage the utilization of information and Communication Technologies (ICTs) to enhance output from all academic and socio-economic activities initiated by the community with sturdy support from community and youth(Farida, 2010). This initiative is exclusive in its approach towards sustaining ICT based initiatives in rural

areas with a major focus on diversification of activities to fulfill the learning needs of a range of stakeholders within and around rural areas. Inspired by the successful instigation of the initiative and a positive response from the village/area community (Jung, 2005), we are in the process of escalating the scope of our activities by strengthening our current facilities and services. This research based project setup cost in one E-CLRC was 0.5 million rupees contributed by community and effort by youth to form funding sources to extend the versatile learning experiences of rural populace of the area. We have a tendency to progress to invest in enhancing our services especially, public library, computer learning, and access to information through internet and secondary language improvement to different villages in the area to ensure sustainability and increase ICTs literacy in rural and neglected areas.

The purpose of this research study is to initiate an awfully innovative approach towards using technologies in order to enable academic an socio-economic changes in the youth and community of rural areas

within their reach with minimal sustenance/incurring costs for the facility. The multidimensional approach towards the solution of the problem of knowledge gap along with lack of quality in academic activities in native areas institutions can focus on self-sustainability through diversification of services offered through Community Learning and Resource Center(Hazita , 2008). Provision of internet, AV Library and computer lab facility for which this study is made are going to be a valuable addition to the present list of services offered by the respective community centers (Uduak 2009).

Community based education societies has been actively engaged in conceptualization, implementation and sustenance of initiatives to satisfy diversified needs of communities, with a special focus of educating youth within the best approaches (Kseniya, 2010).

2. Background

2.1. Area Context

The Gilgit- Baltistan is the northernmost part of Pakistan, its borders connect with Pakistan's Khyber Pukhtunkhwan province is to west, the wakhan corridor of Afghanistan to the north, the Xijiang Province of China east and northern, Pakistan administered Azad Kashmir to southwest, and Indian administered Jammu and Kashmir to the southeast(DoE website). Gilgit-Baltistan covers an area of 72,971 km² (28,174 mi²) and is highly mountainous. The projected population of 2010 is 1.25million. The overall literacy rate of GB according to National Commission for Human Development (NCHD-GB) is 53% (projected 2010), whereas male and female literacy rate is 64% and 41 % respectively. The table 1 shows detail about population, literacy rate and ICT centers in area (NCHD, retrieved at June 10, 2012).

Table : 1 Population, Institutions and ICTs Centers in Gilgit-Baltistan.

Districts	Population	Male %	Female %	Institutions Private andGovt	ICTs centers	Internet in no of schools
Ghizer	164225	36.5	37.4	362	13	3
Gilgit	334203	56.2	48.7	505	15	7
Ghanche	121141	38.1	35.7	326	13	3
Astor	157678	26.6	23.4	192	10	2
Diamer	181838	36.1	34.5	213	11	2
Skardu	296889	39.6	34.3	621	17	11

2.1. ICT context

There are many factors involving in integration of ICT in education, so it is key responsibility of Government to provide a clear framework for ICT in education. These are some factors which have to be considering in policy and strategy, these factor we learned and faced by our working experience during establishing of E-CLRC.

➢ Sufficient Funding and skill personnel to introduce ICT in education

➢ Provide hardware in cost effective manner, student computer ratio, placement and configuration of ICT facilities, technical support for students and teachers.

➢ Software for teaching and learning

➢ Teachers ICT training, computer facilities, and professional support

➢ School curriculum integrate ICT, as a teaching and learning tool, activities, critical thinking, and problem solving based

➢ Staff support computers and related technologies in schools Infrastructure for teachers, students and other staffs to acquire knowledge and share information

3. National ICT Strategy

The challenges and issues in Pakistan regarding education is low enrollment rate and dropout students, to overcome these issues the Government of Pakistan needs to adopt a more innovative, cost effective and scalable solution in its National educational and ICT for education policies. The MoE, in collaboration with other agencies such as USAID education Sector reform Assistance, MoIT, and provincial education departments formulate a National ICT strategy for Education (Diana ,2006; Jolly, 2010; MoE website, retrieved at 2012, MoIT, retrieved at june 5, 2012). A brief discussion of the NICT strategy and its six elements are as following.

3.1. Element 1. Use ICT to extend the reach of educational opportunity

There are many challenges and barriers to reach educational opportunity in rural areas, such as geophysical, lack of schools, context, gender, age and financial based differences, the MOE proposed approaches such as open and distance learning, educational television, Interactive radio, and computer Assisted Instructions, invest on good ICT practice models, in context and need of students, educators and citizens, and also research use of ICT mechanism and generate funds for these programs (Diana ,2006; Lorrae, 2002).

3.2. Element 2. Apply ICT to strengthen the quality of teaching and educational management

To achieve and strengthen the quality of learning and education management by using ICT, there should be a learner centred context and continue learning environment, instead of lecture centred or teacher's centred environment, and also create instructional practice, best content knowledge and curriculum support. The local resources develop practitioners communities provide online resources, ODL, IR, television programs, emails, blogs, chat, bulletin boards and online learning communities. It provides ICT tools such as (for developing local materials in national and regional languages) CD ROM based software, internet connectivity (in professional development centers), listserv and Taped or broadcast TV, DVD or web based TV. Selection of a best ICT blend of professional development model that support teachers professional development, training, resources, follow up and support; teach with ICT, use ICTs; and educational portal; teachers can produce their own materials from training and available resources.

3.3. Element 3. Employ ICT to enhance student learning

To enhance in students learning using ICTs is an emerging field of education, but need to concentrate on the effective and efficient use of ICT in curriculum enrichment, provide supplementary materials, alternative assessments and effective instructional method is a very important (Mojgan, 2012), this can be achieve by integrating ICT in curriculum for all levels of education, provide CD ROM based contents, introduce web based activities, launch TV, Radio based programs (e.g dramas, games shows, and interactive lectures), tool, projects demonstration, and performance based assessments, students centred learning method, independent, collaborative and team based learning, and students freedom to interact, there needs to take some action such as a reform curriculum, good learning content resources and a best exam system can improve student's quality of learner centred instruction environment(Vahid Motamedia, 2010).

3.4. Element 4. Develop complementary approaches to using ICT in education

Develop curricula that will motivate students to solve sophisticated problem, think critically and develop creativity skills. This can be achieve by technically literate and integrate ICT into classroom for teaching, learning and assessments with learning about technology and learning through technology (Nikleia , 2008; Musabbir 2009).

3.5. Element 5. Build on the current experiences of existing and successful ICT programmes

This will carry through official clearing house, which will be responsible for gather and distribute effective ICTs information to and from stakeholders. It also encourages international exchange of effective ICTs programmes, a best approach will be used to monitor and evaluate the ICT projects in Pakistan. The focus areas will be international and national ICT best practices, universal based research Network, courses through television network, teacher training for professional development, innovative projects in computer, establish community centers and provide funding to upgrade citizens literacy. This can be achieve by using a several approach such as collect examples of ICTs schools project around the world, research on that models and use them in education; establish computer labs in every schools, digital libraries in national levels, videoconferencing, Coursework through television, radio and CD-ROMs(AIOU), Distance education based on Hard and soft copies of resources, CD-ROM, Interactive online based and Television (VU), Technology training for teachers professional development and to use for teaching and learning purposes, PTV telecast, tele-lessons, Two hundred viewing centres (ABES), TV broadcast for child care facilities for parents and children at home(SSiU), Social network for teachers and youth, Interactive and online sites, Experts should Set standards for evaluating ICT projects, Replicate local successful projects, encourage schools and community centers to apply for grants for successful

projects implementation (MoE, AIOU websites).

3.6. Element 6. Develop capacity at the federal and provincial department of education levels
Form a technical committee and sub committees which will carry out the MoE mission, which can be Technical Implementation Unit for ICT in education, National ICT in education council, technical teams having specialization in ICT and council to assist the national efforts group include from NGOs, Educational Institutions, private and Govt sectors(Sabit , 2011).

4. Literature Review
4.1. Factors Influence ICT Integration in Teaching and Learning
There are two types of factors, Internal such as teachers, students and External such as infrastructure, leadership, and cost. Technology integration in education is not a new concept for educators, teachers, researchers and educational Institutions since advent of chalkboard and printing press, many developing and developed country have invested a huge amount on ICT integration in education, the new and emerging ICTs such as internet applications, video technology, various computer software, and CD ROMS have not just changed in technical nature but also in structural nature (Michael, 2010). Universities, colleges and schools have changed the ways of teaching, learning, research and management but effective integration has always been a key issues. According to Vahid(2010), in Bozeman (1999) there are five components of technology application such as planning for appropriate curriculum, administration, teachers adequate training, hardware and software ready to access and support of technology(Vahid 2010). In 21st century countries around the world have set ICT on the top of their priorities in education as a force for last three decades for schools innovation, but few developing countries are still in infancy stage of ICT integration and use in education, for instance in Pakistan very small percentage of private and NGOs based schools have embedded ICT into teaching, learning and curriculum, but they also lack in effective pedagogical prospective of ICT. The digital divide between urban and rural areas of developing countries are critical factors, due to many reasons and causes such that the lack ICT in rural areas, for instance, lack of concentration, lack of coordination among rural schools (Mansotra 2009), high cost, infrastructure, human capacity, literacy level, cultural, attitudes and ignorance, students' lack of computer skills and knowledge, perceive difficulties of ICT integration in education. But the three pillars of country such as Government, academics and industry can play an effective and efficient role to produce better result of ICT in education to overcome these issues with tie coordination among schools which have resources and share the resources with each other so that cost will be reduced and this is also key responsibility of Government to provide infrastructure to both private and Government schools(Diana, 2006).

The equity and social justice with respect to ICT in rural schools is also one of the factors of the current policies of developing countries and appear to be injustice in particularly for girls and those living in rural areas, in these areas, there are lack of technical qualified professionals; therefore, consideration must be on the ICT skills, and meaningful use of ICT in teaching and learning through activities that should be authentic for young people of country (Jolly , 2011).

4.2. Leadership in ICT Integration in Education
It's very important to integrate ICT in education, in this regards community and organizational leaders can play a very important role especially transformational leaders contribute great efforts. The leaders must have computer competence, skills to use and vision to integrate in education (Otto, 2002).

In the successful integration of ICT in education has some critical factors, which can play a key role such as teacher and leaders etc. the visionary leaders can overcome all the challenges occur in education ICT integration by a good plan, policy and strategy and in most organizations ICT projects have been failed due to lack of leadership capacity. The effective utilization of technology can play an important role to engage educational leaders to share their knowledge in collaborative environment which can enhance leadership capacity to contribute a successful ICT integration in schools.

The principal is one of the leader in school, who can influence the teachers and other staff members to integrate ICT in schools, most researchers have not given very attention in this factors, besides these some other factor can influence ICT integration in schools such as good technology planning, policies, proper resources, technical and Instructional support, professional development, community involvement, and budget (M. Semih ,2010). No doubt support of administration in integration ICT is a successful factor and also influences other factors in the process of ICT integration such as insufficient teacher understanding for technology integration methods into curriculum, lack of computer, software integration in curriculum and lack of technical support.

5. Objectives of CLRC
The objectives of the E-CLRC is very wide and it has tremendous potential for an environment, where youth are

deprived and disadvantage from a modern technology education, the Government has also lack of concentration on these rural areas due to country's war against terrorism and bad economy condition. Meantime the community members took their responsibilities to provide an emerging educational environment and efficient learning and teaching system to their children. E-CLRC has the five primary objectives to bring quality in academic activities under the supervision of CBES Oshikhandass.

- ➢ Raising ICTs skills and proper use these skill in lifelong learning,
- ➢ Raising academic achievement amongst rural/Village students,
- ➢ Nurturing a Love for Learning using ICTs that extends beyond the school day and school walls
- ➢ Extending literacy efforts in youth to include parents and other community members, and
- ➢ Use ICTs for increase creativity and significant thinking in Youth

These objectives fully support national ICT strategy and policy as well as World education forum's six goals. The fund raising is one of the key elements of national ICT policy and implement ICT projects in schools, this project also raising funds from community and with different means and sources, mentioned in below section. According to (ADB 2009) the public provide partnership can play an important role, so the project also establishes a partnership with different communities, Institutions, and local Government community development funding. Besides these factors, this project has implemented free and open sources software (FOSS) for learning and management (Seugnet , 2006).

5.1. Raising ICTs Skills and Proper Use these Skills in Lifelong Learning

With robust changing in ICT and connectivity infrastructure with cheaper computers and other portable devices made easy for learners to access, learn and develop the ability at anytime, anywhere. Besides these facilities it has also provide virtual mentors or teachers, as well as peer and self paced learning opportunities.The most vital task of this E-CLRC is to boost the ICTs skills in youth for lifelong learning. This can be new begin to enhance ICTs in youth and parents, therefore, the ICTs training has been divided into four components,

- ➢ Basic ICT skills and utilization in work place
- ➢ Learning and teaching using ICTs courses,
- ➢ ICT awareness and domestication for community members and parents
- ➢ Administrative task using ICTs.

A curriculum has been designed for learning and teaching ICTs for above four components, which is out of scope of this research.

5.2. Raising Academic Achievement Amongst Villages Students

Through an enhanced ICTs resources and services assortment in E-CLRC, students, teachers, and parents can have the required online, and non-print resources to enrich classroom instruction, extend learning beyond the classroom, and provide the means to educate parents on their role in helping their children achieve and excel in their studies? A local research conducted by our experts provides sufficient proof to point that whereas students in our local schools scored above the 79% in mathematics and general science, they scored below the 50% mark in both ICTs theory and practical. Results on ICTs skills are much bellow the mark and need our special attention. We believe; this is due in large part to the fact that (i) students have few computers available in labs, (ii) those they have computer in schools have no time table or instructor to teach them, and (iii) students don't have ICTs facilities at home (computer, internet), and (iv) those who have ICTs facilities at home, parents do not model ICTs usage at home. Thus, a key part of our literacy effort is to create an environment, where youngsters can go to realize these high-interest, grade-level-appropriate ICTs resources, services and relevant academic E-material with active parental involvement. E-CLRC also provides students with ICTs instructional sessions that show them the way to use the computer lab and AV library, the way to access available resources to search out information, and how to develop strategies to satisfy different dimensions of ICTs practice on teaching.

5.3. Nurturing a Love for Learning Using ICTs

Many countries have revised their educational policy like Pakistan education Vision 2025, and rethinking the learning environment of class and out site of the class which can foster the collaborative, students centered, and cross disciplinary learning environment (Mojgan , 2012). There are many factors involve such as circular tables, class size, light and color of classroom, project based classes, and individual space for teacher and students. But the role of ICT in teaching and learning cannot be ignored which is means of changes in 21st century's education, (NICTE, 2004). Therefore CLRC can play an important role in this regards, so local school teachers can use the resources of the computer lab and Audio-Visual section of the CLRC to work with students during the school day to boost ICTs and English competency achievement levels. However the proposed program (YLIP) seeks to not only raise ICTs and English language proficiency but to foster a love for learn using ICTs resources. For this to take place, the program's literacy effort must extend beyond the school day and the school walls to involve parents and the community [24]. Research has shown that the foremost successful way to

improve the learning achievement of youngsters is to extend their access to resources. The most effective way to do this is to establish the AV library and other resources/services available to them as much as possible.

5.3. Parental/Community Leaders Literacy

Special consideration is given to incorporate parents in their children's academic activities by allocating extended time slots for sessions where parents work along with their children. These academic activities designed in a manner that not only assist school youngsters in excelling in their curricular achievement however at the same time enhance parent educational competency and a social change. To encourage a culture of lifelong learning, YLIP is serving as a source of information and guidance for parents in four key ways: (i) to encourage them to work with their children to foster a love for learning ICTs and using ICTs for learning, (ii) to inspire them to become better, more motivated learners themselves, (iii) to interact with other people during sessions and make groups for further educational and social activities and (iv) ICTs domestication awareness.

5.4. Use ICTs for Increase Creativity and Critical Thinking in Youth

When learning is merely a task of memorizing and reciting, the use of learning technology is not a desirable component. The students are asked to search and work collaboratively; it provides a sound learning opportunity and high thinking ability. These collaborative opportunities enhance self esteem, social interactions and team working capabilities, which facilitates youth increase creativity. In advancement of ICT and its integration in education has provided a student centered learning, which supports greater critical and analytical thinking, problem solving skills in youth.

The traditional way of teaching such as teacher teach and student listen can transfer only information, but students centered learning environment provide opportunity to students to construct knowledge and compete knowledge base economy. These kinds of learning environment can develop informational reasoning skills, communication skills, and higher order thinking skills in students because students have freedom to interact with world in the ways using ICT to promote their creativity and problem solving skills. There is little evidence to prove in support of these beliefs.

6. Challenges to Establish the E-CLRC

Gilgit-Baltistan is remote rural and hilly area, where communication gap between urban and rural area is very crucial scenario in terms of internet. To access proper information and resources for E-CLRC was a challenging task for youth, who were engaged on this project. Throughout this project the team members faced several challenges.

- ➢ Community and youth Motivation for project and funding
- ➢ Research and data collection
- ➢ Curriculum and Technical issues
- ➢ Infrastructure
- ➢ Political

6.1. Community and Youth Motivation for Project and Funding

In rural areas education and poverty are two critical issues than urban areas, so it is very difficult for youth to collect funds and motivate community to establish a new project, but youth find out many ways to collect the funds such as collect the waste and recycle materials from home, food festival for fund raising, curricular and co-curricular activities, permanent donors on monthly bases of $1 per job holder, drugs and bad habit penalty from all community members, membership card, new year activities and festival calendars, and many other resources, which brought community in a platform and easily participate in all activities and share their issues, resources, expertise with other community members in E-CLRC.

6.2. Research and Data Collection

Census data, schools and students' information data are still in manual form, to search relevant record is a time consuming task and little chance to fine proper record from a bundle of files. The Gilgit-Baltistan is scattered in a wide area and due to poor communication infrastructure, lack of transport facilities, which was very difficult for youth to conduct seminars, workshops and group discussions.

6.3. Curriculum and Technical Issues

It was a very challenging task for youth to design a strategy that solve both problems such as technical and curriculum design. Some other related issues such quality of equipments against their costs, transportation cost is incredibly high due to remote area,

Besides these other factors such as appropriate building and rooms to house technology, proper wiring

of electricity, internet cables, telephone lines available, ventilation, security and safety

6.4. Infrastructure

Lack of communication infrastructure such as landline, wireless communications, WWL, the communication issues in terms of internet is very crucial due to monopoly of SCO and high internet price of wireless communication system, A digital divide between urban and rural area is much more than other part of the rural areas (SCO website).

6.5. Political

Due to diversified communities and belong to different background, the team members face challenges to motivate them in project funding and initiating, so leadership skills and potential are very necessary elements in such a project.

7. Method of Survey

The methods of survey, we have followed in this research are seminars, workshops, and group discussion with schools principals, ICT experts, teachers, students and parents in rural areas of Pakistan, the initial purpose of this study was to campaign about ICT awareness in youth only, later on, we extended this to leadership, parents and community members on their demand. The great enhancement of this campaign was that many schools took part and parents appreciated to launch such campaigns in very quarter in a year. The program coordinator of E-CLRC arrange these campaigns and coordinate with all schools and parents, which made us easy to determine potential ICT support and development strategies to enhance effectiveness in the future with other community members of the area[directorate of education [MoE website34].

This campaign also aim to search out the ICTs access facility and centers for learning and teaching in schools, this campaign initially conducted in two districts of Gilgit Baltistan, where private and Government schools offer education to youth. The table 1 shows populations of seven districts and male, female percentage and Institutions in these districts with available facilities of ICTs and internet available in seven districts(gilgitbaltistan website and gbdoe website).
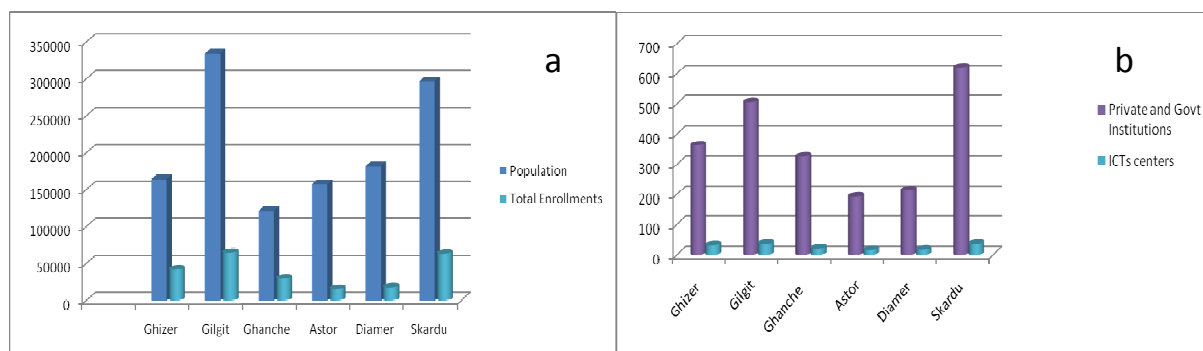

Figure 1: Comparison total population with total enrolments of children in schools in "a" and total Institution with ICTs centers in "b"

The enrollment in Government Institutions is 68% from 76 % schools and 24% from 32% private institutions. The fig 1 charts "a" shows that the ratio of population and enrollments in Institution is very low, so Government needs to plan a policy for enrollment. This because of financial constrains, distance from school to home, quality of teaching and modern education system. The ratio in context of ICTs education is quite low, which has been shown in fig 1 chart "b", this chart compares the Institution and ICTs centers in Institution in every district.

These comparisons show some unrealistic results regarding ICTs centers in Schools. Therefore communities taking steps to establish community based educations societies (CBES) to provide modern education to their children beyond school time, school days and school walls. CBES becoming very famous in these areas and communities try to consult with other communities to set up more effective and learning centered E-CRLCs on the base of joint ventures.

8. E-CLRC Framework

The community leaders must be technology leaders, because, it is demand of 21st century, they must understand the vision for technology and community culture to establish E-CLRC, general knowledge about hardware, software, and other technology tools to apply in community development.
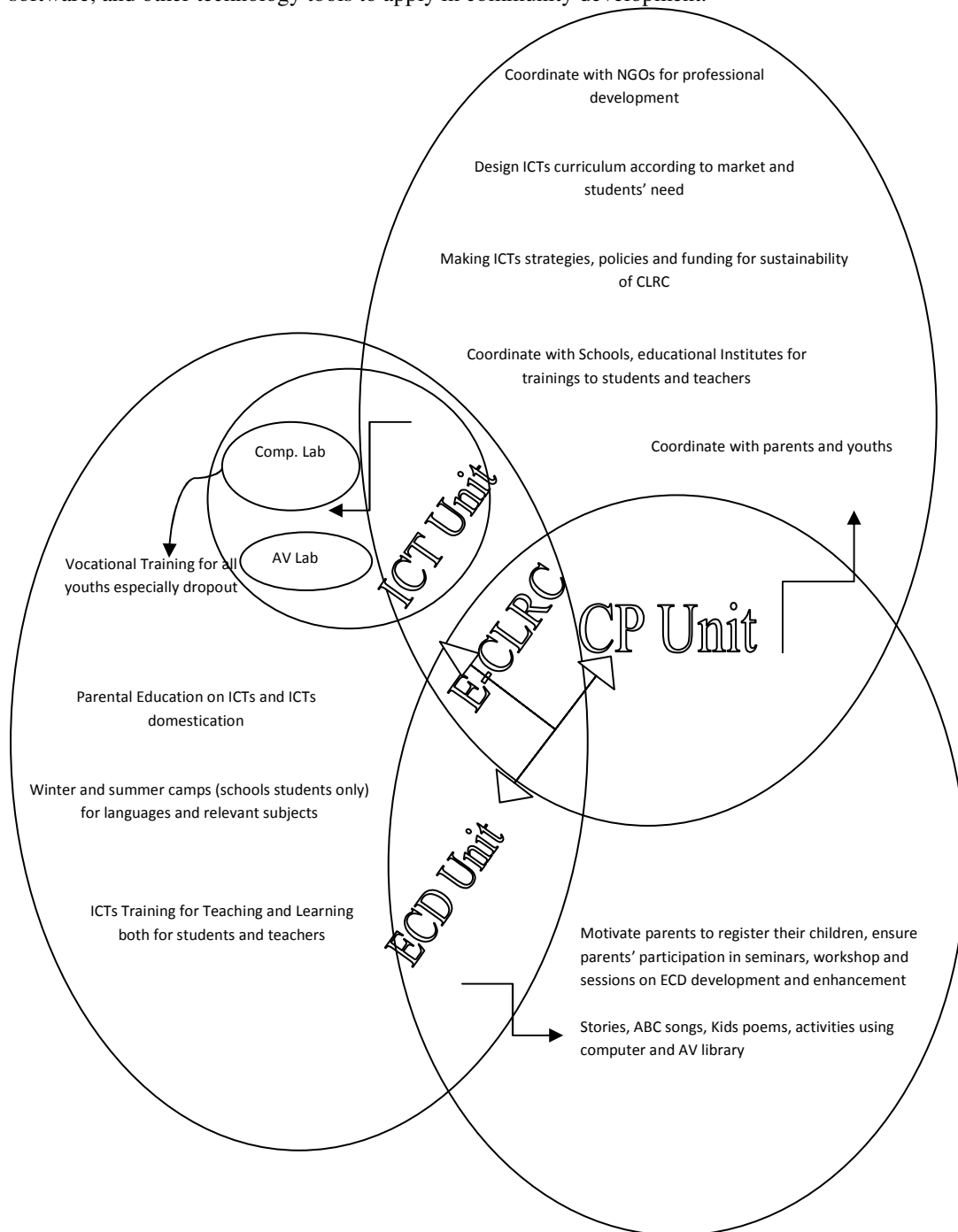

Figure 2: The CLRC framework for community of rural areas

The E-CLRC Oshikhandass is a center for excellence for youth's academic reform with support of local community leaders, where youth can practice and learn ICTs skills shown in figure 2. It also teach local, national and foreign languages such as Shina, Buroshiski, (native), Urdu (National), English, Chinese (foreign), in addition it conducts online discussion with other communities residing in urban areas or even abroad, online session on education, ICTs and its socio-economical reform in youth, videoconference using Skype on emerging topics of education and ICTs.

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8.1. Open Sources Software for E-CLRC

The developing countries facing financial constraints, the only option to solve this problem is free and open source software, which available free of cost such as LMS (Moodle) for teaching and learning (Liang , 2009). Moodle is also known as virtual learning environment, or course management system, or learning management system.

Modular Object oriented dynamic learning environment (Moodle) is an open sources software that support both class room learning and virtual learning environment, which has wide variety of tools to support pedagogy and classroom management. Moodle is consisted on activities and resources; such activities are chatting, forums, glossaries, quizzes, assignments, SCORM players, databases and wikis, these activities can be in groups and sequences. The other tools such as reports, grading, participant lists messaging, and blogs. There are many plug-in that provide a dynamic learning environment for teachers and learner. The modular of Moodle allows teachers to add learning components to enhance learning (moodle retrieve at June, 2012).

The tools and their use in pedagogical, assessment, admin and communication uses have been mentioned in table 2,

Table 2: Moodle tools and activities for E-CLRC

Tools	admin	Teaching	Assessment	Independent	Collaborative
Add Resource	X	X			
Assignment			X	X	
Forum			X		X
Wiki			X		X
Chatting			X		X
Lesson		X	X	X	

8.2. Teaching Tools

Three types of teaching tools have been proposed in this research study, the first is adding resources; the second is lesson and third is gradebook.

8.2.1. Add Resources

Resources are the key items of teachers, which can support teaching and learning, these resources can be files or any internal or external links. Resources can be appeared in many types of formats such as file (PDF, picture, Word processing, spreadsheet, audio and video files), folder (organizes file and other folders), pages, label, URL (facebook, twitter, flickers, or any other web page).

➢ Course format: - Moodle provides four types of course format, such as SCORM, Weekly, topic and final is social format, in the E-CRLC, social format has been proposed, because, E-CLRC follow collaborative learning environment based on social activities, so the course category has been depicted in figure 3.
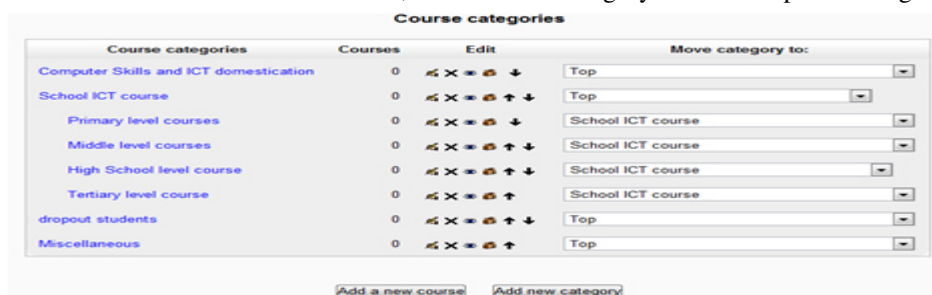

Figure 3: Moodle course categories

➢ *Lesson*

A lesson is consisted of web pages, which includes six components such as pages, a question, a branch table,

cluster, end of cluster, and end of branch. It is very useful tool for automated content, it has small amount of text, which follow by a question that can be graded. There are basically two types of lesson module; choice and navigation, the choice may be content page of question page, so the first is question page, where students can enter the answer, and can see teacher's response, the second is branch page, which has option to select the branch, it does not have correct or incorrect answer for every response, therefore, students' selections do not impact on the grade. (moodle retrieve at june, 2012).

➢ *Gradebooks*

The grade book is one of the key tools in assessment of students, where students can see and review their progress in the area they need to concentrate, a teacher has easy way to organize the grades and particular concentration on students who have lack on particular area.

➢ *Assessment tools*

o Formative assessment: - To raise students' attainment, improve their ability to learn, increase their learning outcomes, make them active participant in the class and learning; and confident in collaborative and independent learning environment. The students are being involved in the process of teaching and learning as a partner, which builds skills both in self and peer assessment through an effective learning strategy. There are many methods to assess students in formative assessment such as constant feedback to students, provide information about students' progress and modify their submitted assignments or instruction shown on table 3.

Table 3: Assessment tool and parameters

Assessment tools	Demonstration	Collaborative learning	Quizzes	Practical skills	Problem Solving		Self Assessment	peer	learning entry	and podcast
					Project	Activities				
Quiz			X							
Assignment	X								X	
Forum		X			X	X		X		X
Wiki							X			X
Chatting		X							X	X
Lesson				X	X					
Glossary						X		X	X	X
Cohorts		X								

8.3. Communication for learning

The communication tools have been divided into two main categories such as independent learning tools and collaborative learning tools.

8.3.1 Independent learning

➢ *Assignments:-* The teacher/tutors assign or specify a task that require students to prepare some digital contents and upload in Moodle server, the assignment may include easy, projects, reports, there are four types of moodle assignment, first is offline activity, teachers mostly assign task to students with due date, which will be solved outside of Moodle environment, the second type is online activity, where students can type directly in moodle environment and will be added in gradebook, the text box will be appeared and students can type on it, after finish the assignment they can submit it, teacher will see the assignment, assign grades and feedback on the assignment, the third one is upload a single file, in the assignment students can type their assignment in any types of text editor or that can use audio and video files, word processing, power point presentation , and graphics, teachers can view the assignment, grade it and feedback to students.

➢ Lesson: - the lesson has been discussed in above section; the main purpose of using lesson is to know the knowledge of student prior to teaching the relevant course, so that a teacher can properly plan as per students knowledge.

➢ Glossary: - in this activity students/learners can create a list of definitions and also maintain this list like a dictionary, there are many different formats of entries, it has also key feature to export entries and automatically create entries from other glossary and throughout the course.

➢ Quizzes:- This activity module provide an environment for teachers to design and set tests, which can be multiple choices, short answer, true/false with the option of multiple attempts. It has grading facility. In this

study we have used quizzes as formative assessment, which will help us to aid the learning process, performance of students, knowledge assessing and actively participate in learning.

8.3.2. Collaborative learning

➢ Forum: - The most discussion is being taken place in forum, it can be included in peer rating, a user can attach any file and can see posting in many formats, subscription can be received my users in their email also. In E-CLRC we have setup standard forum because it is open where anyone can start a new topic, whenever they want to start. We have added four groups in this forum, such as parents, teachers, students, and volunteers, these groups can start any topic about ICT, social issues, volunteerism, E-CLRC suggestions and comments; teaching development, training and resources creation; and any emerging field they want. The group members can be restricted to assign on a specifics discussion forum by tutor/teacher. Beside this a discussion forum can be graded by teacher this has a similar options of grading as assignment. The forum includes introductory, group projects, and general question forums.

➢ Wiki: - it means "super fast" in the Hawaiian Language, it allows working in a collaborative environment of participations on web pages, where they can add, expand and change the content. Each participant can add pages which follow one front page. There are many effective uses of wiki, in E-CLRC, we have used for syllabus, online news, peer feedback, chapter summary, and reflections. The following groups of users have been added in wiki, Primary school students, Middle school students, High school students and Tertiary students.

➢ Chatting: - it is tool to have a real time synchronous discussion via the web, which provides an environment to understand each other via a useful topic. The chatting is an effective tool for small group work where student have a small project and working on it in a team, the second is briefing about exercises, where student can discuss their assignments and exercise with teacher, so that a cut, copy and paste chances will ne reduce, the third is a session based on weekly which provide an environment for students to learn from any other speaker who will join the session and teacher will also be available during the session.

➢ Cohort: - Collection of users which are independent to teachers, such as communities groups, when users are spread over more than one course, we can use cohort. Cohort can be created system wide or course wide. It can be allocated to other course but group and grouping cannot.
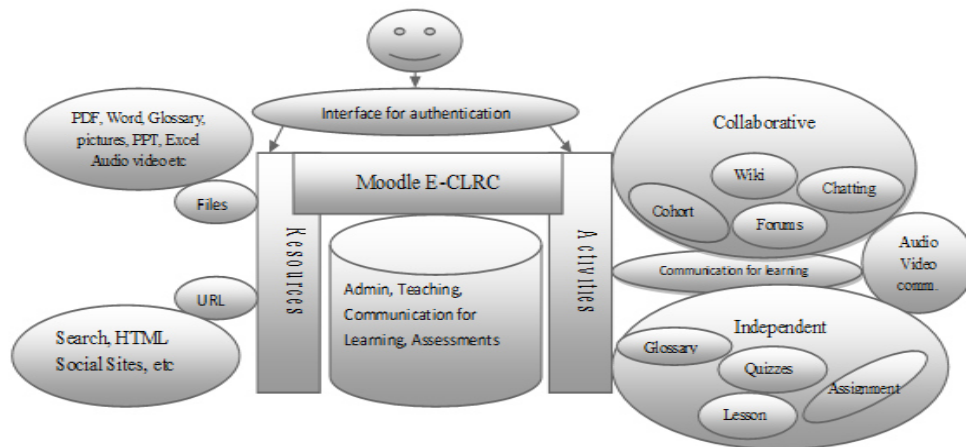

Fig. 4: Moodle E-CLRC prototype for teaching, learning and communication

9. Education for All Goals (World Education Forum Dakar, 2000), NICT strategy and E-CLRC Contribution

The education for all and free education up to high school level is aim of Pakistani Government, which provides opportunity to low income individuals to get education. This E-CLRC facilitates the students for quality and modern ICTs education free of cost. The E-CLRC provides ICTs training and other subjects coaching using ICTs for teaching and learning resources that are not available at schools, because of, monetary constraints. The Coordination and Planning unit collects funds from different sources such as NGOs, parent's donations, Job holder's special donation and fund from festivals, programs and sports activities and distribute this fund amongst poor family and invest on E-CLRC. EFA goals, NICT strategy elements and E-CLRC contribution, has been depicted in table 4.

Table 4: EFA goals, NICT strategy elements and E-CLRC contribution

Goals	WEF Dakar 2000	Elements	NICT strategy	Description	E-CLRC tools and activities
1	Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children	1	Use ICT to extend the reach of educational opportunity	ICT can provide a better environment for construction of knowledge and opportunity for educational Institutions and parents as well as for youth in different contexts and based on learner's experience to improve and extend every field of life	E-CLRC ECD unit and FOSS as a tool for teaching and learning
2	Ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to, and complete, free and compulsory primary education of good quality.	2	Apply ICT to strengthen the quality of teaching and educational management	To provide quality of education for citizens, a teacher can play a vital role, so ICT can strengthen the teachers professional skills to construct require knowledge, and provide environment to collaborative and independent learning to solve critical situation, problem solving, and creativity	Moodle teachers resources such as Grade books, add resources, lesson
3	Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life-skills programmes	3	Employ ICT to enhance student learning	ICT provides a learner centered environment instead of lecture or teachers centered, so student can increase their confidence in both collaborative and independent environment and strengthen their ability, creative thinking and problem solving ability and team work capability by equally opportunity of access information and resources by male and female	Assignments, forums, wikis, glossaries, quizzes, Teacher and peer assessment
4	Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults.	4	Develop complementary approaches to using ICT in education	The use of ICT in education must be a robust, reliable and dynamic approach so that all citizen, male and female can access information and resources in equal opportunity to compete market place for socio-economic development	Moodle as a social and teaching learning tool for youth, community and parents
5	Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality	5	Build on the current experiences of existing and successful ICT programmes	The ICT frameworks and programs which provide opportunity and educational environment for both male and female must implement in education so that gender disparity will be eliminated to access educational opportunity	E-CLRC for teaching, learning and social interaction with youth, parents and other community members
6	Improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills	6	Develop capacity at the federal and provincial department of education levels	Evaluation, monitoring, and assessment of projects running in education are very important to maintain quality of education and sustainability of projects, so that a fruitful learning outcomes will be achieved	Develop a local community based learning center where all kinds of educational activities, information and digital resources are available in no cost base

10. Discussion and Conclusion

The impact of ICTs in crime control, monitoring and public safety cannot be ignored (Rahim 2011), beside this ICTs play a vital role in the development of economic, social, culture, behavioral, and education as well and there are some general perceptions that ICTs can empower teaching and learning (Mansotra 2009).

An effective, efficient and successful integration of ICT in community learning resources center requires better strategy and planning with a great cooperation of community members, commandments from volunteers, and sense of responsibility of leaders, strong financial support with a partnership strategy with NGOs, Government and other responsible organizations, a best assessment and monitoring system and dedicated youth for creating a collaborative learning environment and promote socio-economic development. ICT fosters and changes the skills of learners and teachers, this because of a wide range of ICTs service, applications and technologies (sabit, 2011). The ICTs plays enormous roles to reduce the poverty and empower people by provide quality of services (Siriginidi, 2009). Students attitudes towards ICTs and digital competence, the use of ICTs in classroom and out of classroom, teachers ICTs use in and out of classroom, pedagogical attitude of teachers

towards ICTs, parents and community attitude towards ICTs for learning and domestication, attitudes of community leadership' towards ICTs are the key consideration of E-CLRC. The youth felt development in their creativity and positive thinking for sustainability and change in learning environment, team working capabilities, in interpersonal skill, confidence and self esteem amongst other communities in the area.

CBES, Oshikhandass has created a literacy-filled environment in its E-CLRC. A research based study has been conducted in the area and results show that ICTs awareness in the area is in very crucial stage, and youth of rural area are still deprive from modern education. To promote further, it must have the necessary resources and place for learning activities. Relevant, high-quality digital materials along with high speed DSL internet connection. If we have not utilized these resources and materials properly (and children cannot access them easily), it doesn't matter how many materials, resources and software packages we purchases was a vast of time and money of poor people from a backward and remote area. Finally must do something for sustainability of E-CLRC and provide more financial aids to promote such E-CLRC in other location of this village.

11. Suggestion and future works

- ➢ ICT awareness level in the area is very low especially in Government schools; therefore, Government should take serious action and with involvement of community.
- ➢ By our observation the few Government schools have computer with old infrastructure, which need much attention to upgrade.
- ➢ With compare to Government schools, community resources centers and Aga Khan Education service schools provide much better ICT facility; the Government should enhance strategy of cooperation with private and Aga Khan Schools to upgrade the systems.
- ➢ Financial constraints is one of the key factor in rural areas, so Government must divert the attention of International funding agencies towards rural areas and provide infrastructure to all private and Government schools, as well as a strong funding utilization policy must be introduce with a better monitoring and assessment system of projects.
- ➢ Training for volunteers to plan and manage more E-CLRCs in area with effective and efficient activities and
- ➢ Cloud computing as a service for E-CLRC in rural areas

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