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ARTICLES

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In the last many days there is a lot of noise in all the mass media – print and electronic about Rohingya migrants moving out of their living place in Myanmar to other countries including India. Some people have shown sympathy to them and request the government to treat them as migrants and some others speak against them for having connection with extremists due to which they will be security risk for the country. India is always known for accepting migrants coming in large number from other countries due to atrocities in their place of residence but this time in the case of Rohingya India also is dragging its feet due to the needle of suspicion about the migrants who may be security risk for the country because of their suspected association with the known extremist groups who work against India. Also the great worry is that Assam is already facing a huge problem of Bengali speaking migrants for many years due to non-acceptance of them as Indians by the local people. Periodic clashes between the local Assamese and migrated Bengalis are increasingly becoming a law and order problem and the political parties taking sides only for votes in elections without bothering the national security.

Who are these Rohingya? Rohingya are largely Muslims and also an ethnic group predominantly live in Rokhine Province of Myanmar. Their language is a dialect of Bengali while Burmese is the national language of Myanmar. Though, Rohingya live in Myanmar for generations they are always considered as migrants during the colonial rule and hence, they are not granted the country's citizenship till date. As per Burmese Citizenship Law, 1982 a Rohingya can get citizenship only if proof is provided about the ancestors living in that country prior to 1823 or otherwise they are classified as "resident foreigners" or "associate citizens". This applies even if a parent is a Myanmar citizen. Unfortunately, the non-citizens can move only within Rokhine state and are not entitled to be part of civil service.

As per Union Home Ministry already India has around 40,000 Rohingya living in India. They have reportedly reached our country from Bangladesh through the land route over the years. The Home Ministry informed the Parliament that Rohingya in India are illegal migrants and will be deported as early as possible. The Ministry also issued an advisory to the states that "infiltration from Rokhine state of Myanmar into Indian territory..... besides being burden on the limited resource of the country also aggravates the security challenges posed in the country".

In this regard a case is also pending with the Supreme Court of India in which the petitioner has asked the Government of India to stop deportation plans of Rohingya from India.

If one analyse Rohingya problem one can understand that it is a humanitarian crisis. Whatever may be the religion they belong and whatever the language they

speak, they are human beings and have the right to live peacefully which must be respected. The ill-treatment given in Myanmar to Rohingya has now become an international problem and the burden is more on India and Bangladesh. This cannot be prolonged for long and Myanmar has to take a proactive role in solving the problem as early as possible.

Already the Human Right Activists all over the world started criticizing Ms. Aung San Suu Kyi who fought for democracy and human rights for her country men even when she was put under house arrest for long by the military regime is not opening her mouth today though she is having full power in her country as the State Counsellor of Myanmar and can easily solve the problem of Rohingya. Her silence has already dented the image who won The Nobel Peace Prize 1991 for her non-violent struggle for democracy and human rights. The opposition to her silence over her role in Myanmar's humanitarian crisis is so strong that the Oxford College in which she studied as undergraduate has already removed her portrait from public display and placed in storage.

India must use its goodwill with Myanmar to settle Rohingya ethnic problem once and for all so that South-East Asia is peaceful in the time to come as traditionally India is a friendly country to Myanmar and Ms. Suu Kyi is also well known in India as she lived in New Delhi when her father was a serving diplomat.

Dr.V.Mohankumar

A Journey of Technology Enhanced Language Learning-
Quality, Scale and Variety

Sridhar Chimalakonda
Kesav V. Nori

Introduction

India has the highest number of adult illiterates in this world amounting to 37% (287 million) on this globe. The need for customization of *e*Learning Systems for 22 Indian Languages with varied teaching process, content, evaluation, user interface and so on makes it an enormous task. In addition, the demand for having varied instructional designs for a large scale and variety of *e*Learning Systems make it a *Grand Challenge* for the Technology Enhanced Learning and Software Engineering communities. We have tried to address this challenge for the last seven years by designing several technology-driven solutions. In this article, we present the journey of our research focusing on different generations of research in Technology Enhanced Language Learning (TELL). We also discuss the key stakeholders during this research and their perspectives. We briefly emphasize design of TEL as an interdisciplinary research followed by discussion and conclusions. In essence, the main purpose of this article is to present several research directions during the design of a TELL, specifically for adult literacy in India and provide key lessons learnt for the TEL community.

A whopping 774 million adults across the globe are unable to read or write even in the digital era [1]despite massive penetration of mobile phone usage. Surprisingly, India itself has 37% of these adult illiterates, amounting to 287 million people [1]and making it a major roadblock for the development of the nation. The National Literacy Mission (NLM) of Government of India (GoI) has been thriving to address this challenge since 1988[2]. The journey of adult literacy and adult education in India can be traced through a classic journal of adult education since 1939 [3]. There were tremendous efforts of using technology to aid adult literacy worldwide [4][5]. Researchers have used radio, television and even mobiles to reach adult illiterates in India [4][6][7][8]. A computer based functional literacy (CBFL) program has made around 1,20,000 people literate [9] whilst using laptops has helped around 60,000 people [10]. However, Adult Literacy is still an unaddressed grand challenge with sparse research on TELL for Adult Literacy.

For the last seven years, we have been working on creating several technological aids to address adult literacy challenge in India with our research spanning across Educational Technologies [11][12], Software Engineering[13] and Human Computer Interaction (HCI) [14]. The focus of our research was to create societal impact

through research in computer science specifically, advancing and applying software engineering approaches to accelerate the design and customization of educational technologies based on well-established learning methodologies [15]. We have very briefly summarized some of these different perspectives in [12]. Our initial focus was on automating the development of a family of eLearning systems for adult literacy using TALES approach [16]. We then proposed GAMBLE framework as a way to align learning technologies with learning methodologies [17]. We then designed an ontology-based framework to systematically model different aspects of instructional design [18]. In our recent research efforts, we took a holistic perspective and designed a patterns-based approach to model Instructional Design and TEL systems [19]. We have also developed a Software Product Line (SPL) approach to model a family of instructional designs that can (semi-)automatically generate TELL systems for varied instructional designs [15]. A software product line is a systematic approach to produce a family of similar but distinct products by capitalizing on the commonality that software products share in a particular domain [20] and we have been employing SPLs in the domain of educational technologies for the last seven years[13][15][16][21][22].

The main thrust of this article is to summarize our journey towards a synthesis of these experiences as a way to understand the architecture for design of TEL systems. Even though this journey is a specific case of TELL for Adult Literacy in India, we believe that the experiences and lessons learnt are important and applicable to other areas of education as well. The rest of the article is as follows: We then discuss the key stakeholders and their perspectives in *Section2*.We present our journey of TELL for adult literacy in *Section3* discussing the key generations of technologies followed (*Figure1*) by an interdisciplinary view of TEL in *Section4*. We then briefly present our evaluation in *Section 5*and finally end with conclusions.

1.   The Key Stakeholders and their Perspectives

Understanding key stakeholders and addressing their concerns is a critical aspect during the design of TELL. In our journey of seven years, we have interacted with several stakeholders and captured their perspectives as shown in Table-I.

(i) Adult Learners - "I don't need literacy unless it helps me improve my life" says *Ramya*, a 28 year old servant maid, who stopped formal education at the age of 8– It is a tough challenge to motivate adult illiterates to pursue education at their age mostly as they are busy working for their lives. During our interviews with 40 women adult learners, we found that they cannot take the pain to come and attend classes to learn how to read and write unless they see a direct value add for them. They can guide their children, read news papers, sign boards, feel more confident but this was not enough to pursue them to study again. Skill based literacy and income based value-add are two most important criteria to motivate learners. TELL must focus on

motivating their learners and sustaining their interest using technology. Earning money through mobile-based data entry is an example for attracting them towards literacy.

Table-I
Stakeholders in Technology Enhanced Language Learning

Stakeholder	Role
Teachers (Preraks)	Who are responsible for teaching with no or minimal knowledge of computers
Learners	*Adult Illiterates* - People who can speak their language but cannot read or write
Subject Matter Expert	Who knows the content to be delivered to learners
Language Experts	Experts who handle the linguistic aspects of TELL system
Psychology Experts	Who decide learning methodologies from cognitive and psychological aspects
Learning Experts	Who are aware of various learning methodologies and adapt them appropriately for the current context
Instructional Designers	Who use instructional strategies to enrich the experience of teachers and learners
Instructional Technologists	Who develop and deploy educational technologies to aid instructional strategies
Software Developers	Who actually implement and use technologies to develop TELL system
Maintenance Engineers	Who maintain the instructional software for evolving requirements
Usability Experts	Who asses and improve the system from usability and HCI perspective
Field Experts	Who deploy TELL system on the field and evaluate technology
Government Authorities	People at multiple levels in Government are involved including decision makers, managers, administrators and volunteers at grass root level
Voluntary Organizations	Who support deployment of TELL system on the field
Researchers	Who pose important research challenges from learning methodologies, learning technologies, software engineering and HCI perspectives

Source: Adapted from[23]

(ii) Teachers (Preraks)- Can we get teachers for 600,000 villages in India? Even if we get, can we ensure the quality of instruction? The teachers *(Preraks)* for adult literacy in India are often trained for a couple of days and then facilitate a *class* using NLM's instructional material. The key contribution of technology for teachers is to capture best teachers' teaching process into technologies such that the essentials of teaching adult illiterates is taken care by technology and the teachers can experiment with their own ideas. Our approach in *Section3.4* and ID*ont* framework are driven by this need.

(iii) Instructional Designers and Content Developers - Designing a learning methodology for working adult illiterates is a complex task and more so if it has to work for 22 Indian Languages and their variants whilst providing scope for customization for every specific instance. Instructional designers at state level have followed NLM's IPCL methodology and created instructional material as per the guidelines for all Indian Languages[24]. However, most of the times, the instructional designers of

adult literacy were not aware of technology and only created instructional material manually. The embedded experience of instructional designers in process and material makes it difficult to synchronize TELL with learning methodologies. In our approach, we used Pattern Oriented Instructional Design, ID*ont* and ontologies to capture different aspects of *Adult Literacy Instructional Design*. A major challenge here is to provide instructional designers with tools that ease the process of creating instructional designs using ontologies.

(iv) Software Developers - TELL requires software developers to finally develop *e*Learning systems based on *Adult Literacy Instructional Design*. However, a lack of emphasis by software developers to align TELL with underlying learning methodologies leads to technologies that do not support the ultimate cause of enhanced learning. So, it is critical to design TELL based on Instructional Design, which is the main focus of our approach discussed in *Section 3.3* (POID"!TELL Systems).

(v) Researchers - TELL is an interdisciplinary area requiring researchers from multiple disciplines to collaborate and contribute to a solution. There is a need for researchers to investigate ways to enhance learning of adult learners along with design of novel and innovative educational technologies. Software engineering researchers can help in reducing technological effort for creation and maintenance of TELL systems while HCI researchers can focus on improving usability aspects of technologies, tools and *e*Learning systems for teachers, learners and others.

(vi) Government of India (GoI) - It is not possible for individuals, NGOs and corporate to reach 287 million adult illiterates spread across India without the support of GoI. GoI has necessary infrastructure, administration, funding and huge network to reach to the masses. Even though there is a strong need for ICTs in Adult Literacy, one major worry is to provide necessary infrastructure and get adult illiterates to the class. *"Unless we get our infrastructure and other problems sorted, what is the use of technology?"* – A senior GoI official revealed us when asked about his reaction to use of technology for adult literacy. Additionally, most of the people working in adult literacy have limited computer proficiency and fear losing their jobs if technology is used to support adult literacy.

There are several other stakeholders in the context of adult literacy in India [23]. In that article, we discussed the critical issue of enhancing *communication, collaboration, cooperation and coordination (C4)* among all stakeholders of TELL along with potential solutions. We have also exploited the ideas of *patterns* and *ontologies* as a basis for fostering *C4* between various stakeholders.

2.   A Journey of TELL for Adult Literacy In India

India has a long history of using technologies for adult literacy[4][6][7][8] with several initiatives at national level by NLM [2]and UNESCO at international level[5]. A

radio forum to reach adult learners was experimented as early as 1976 and satellite televisions are used in [6] with computer and laptop based solutions for literacy in [9] and [10] respectively. TCS, an Indian Software House has been contributing to adult literacy since 2001 [10]. We were closely associated with this initiative during the early stages of our research [16]. In this section, we present different generations of technologies for adult literacy in India, which we briefly discussed in[12]. *Figure 1* shows the role and progression of our research during the design of technologies for adult literacy in India. We consciously relented from devising our own learning methodologies and material but rather relied on well-established ones such as NLM.

Teaching reading skills by using same language subtitling of songs on television increased motivation of learners [25][26] but does not support interaction. Initiatives that aimed at children include *The Bridges to the Future Initiative (BFI)* and *Hole-in-the-Wall* project [27].Mobile-based solutions for adult literacy have shown potentially positive results [28]. However, a detailed literature review of mobile technologies for adult literacy has shown the need for extensive research to validate the effectiveness of mobile solutions for adult literacy [28][29]. An experiment of using mobile phone for adult literacy showed promises as well as several challenges[30], mainly in terms of developing the mobile apps for varied languages.
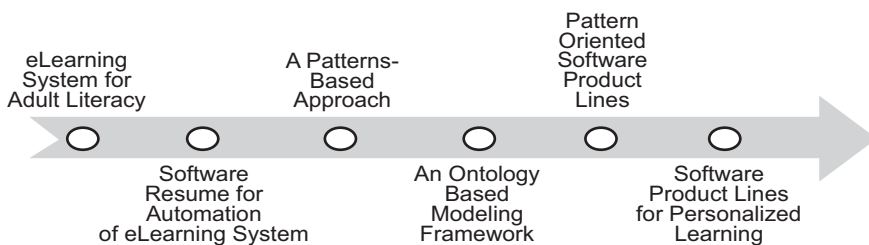
Figure-1: Design of educational technologies for scale and variety – A research journey

Visibility of alphabets on low-end mobile phones is another issue with use of mobile phones in the context of adult literacy even though it can be addressed if smart phones are available at lower cost in the future. The effectiveness of solutions that use their own instructional material is yet to be evaluated as they might not work for all Indian languages [31].A review of tablet software for improving adult literacy suggests the use of games for increasing learner engagement [32] but the tablet software is designed for *English* and requires significant development effort if it has to be designed for the scale and variety of adult literacy in India. A report from Indian journal of adult education summarizes the use of ICTs for adult literacy and their inadequacy for mass scale of India [7].

A study based on 2011 census data emphasizes the inadequacy of current programmes for adult literacy in India and anticipates that it might take 2050 to achieve 100% literacy rate using current approaches [33]. A research agenda post-2015 for literacy lists 10 key priorities emphasizing the need for technology to be available in the local language of instruction particularly in developing countries [34]. The article also underlines the need for basis of pedagogy for ICT-based solutions to improve quality of instruction in literacy[34], which is severely lacking in most of the current technologies [34].On the other hand, an analysis of the literature on technologies for adult literacy alleviates several concerns (i) teaching adult illiterates requires a different pedagogy [24][35](ii) lack of pedagogical basis for ICTs dents quality of instruction [36](iii)existing work focuses on design of educational technologies based on a fixed instructional design and is not aimed for the scale and variety of 22 Indian Languages and variants.

In this section, we will briefly present different generations of technology solutions for adult literacy in India as part of our research journey.

2.1 Technology for Adult Literacy – A multimedia based solution for teaching 3Rs

How to facilitate learning of 3Rs (Reading, wRiting, aRithmetic) by using technologies?

TCS, an Indian Software Consultancy Services Company has developed Learning Systems for 9 Indian Languages and also for languages like *Urdu*, *Moore*, *Spanish* and *Arabic*[9]. These *e*Learning Systems are called as Computer Based Functional Literacy (CBFL) software. CBFL is multimedia oriented software, an *e*Learning System for helping *adult illiterates* who speak the language to learn the 3Rs.The content of this software is derived from State Resource Centre (SRC) created and National Literacy Mission Authority (NLMA) approved printed primers addressing this need. The pedagogy embedded in these primers is to start with known things (known words and phrases), build relations with them to learn / discover new things from the known (new syllables and their scripted depiction), and build up the newly learnt things to the extent of being able to read or write anything in the language in question (learn the alphabet, their depiction through the script, their phonetic association, and the rules for combining these sounds to form syllables and words). This gradual progression from the known to the unknown, the latter being systematically and rationally derived from the former, needs to be repeated sufficiently for cognitive learning to take place. Whilst the above pedagogy attends to learning to read, the words, phrases, and sentences are chosen thematically, to create social awareness amongst the learners, discussion on which will lead to the true value of literacy amongst learners. This carefully graded pedagogy is constant across all Indian Languages, as they all share a phonetic approach to the relation between sound and script, between the aural and the visual. Indeed, the completeness of the approach

is founded on the idea that enough cases, of words and phrases related to the social awareness theme can be derived so that, by the end of such instruction, the complete alphabet is learned. In all, 24 to 28 lessons are needed to cover the alphabet and the formation rules for scripting syllables of any of the Indian Languages. The *e*Learning Systems that were based on this approach have reached over 1,20,000 people [9] but it was difficult to create and maintain this technology for evolving needs[16]. The core idea of this technology was to convert NLM's existing instructional material into a flash based multimedia *e*Learning System to teach adult illiterates [16], but the challenge was do it for all Indian Languages and variants.

2.2 Accelerating Technology Development using Software Product Lines

How can we reduce the effort during the development of a large scale and variety of eLearning systems?

Developing and maintaining *e*Learning systems for 22 Indian Languages and their variants is an effort intensive task. On an average, each *e*Learning System consists of 24-28 folders corresponding to each lesson, with 15-20*Flash*files in each folder on average, and each of the *Flash*file contains around 30 elements. This eventually amounts to a total of around 20,000 visual elements and 2,500 elements, making it a massive task for the scale and variety of adult literacy *e*Learning Systems.

During this generation, we have looked at adult literacy not just as a single *e*Learning system but as a family of *e*Learning Systems and then applied SPL. This effort has resulted in reducing development effort from 5 to 6 person-years to 5 to 6 person-months[16]. We have also developed a set of tools called *ALP Factory* that take instructional material as input and create an eLearning System based on standardized product structure and production processes [16].The generated product has to be manually customized based on the specific needs of the eLearning System.

Table II shows the high-level production process that creates the structure of *e*Learning System. It consists of four sub-processes, the input for each process is shown in the second column, and the output is shown in the fourth column. The output of one process acts as an input to the next process along with other inputs. Each of these processes is supported by tools. The first process transforms the instructional material into a standard form as defined by the standard nomenclature. The second process takes the standard design of all the lessons and produces templates for them. The required elements of the product are configured in the third process and the fourth process generates the physical product structure (folder structure) by assembling the required product configuration items. This automation has resulted in reducing the effort for creation of *e*Learning System from 5 to 6 person years to 5 to 6 person-months[16]. This applied to creation of *e*Learning Systems for 22

Languages; varied instructional material has led to massive cost savings during design of eLearning Systems for adult literacy in India.

Table-II
Steps in Automating the Development of eLearning Systems for Adult Literacy

Steps	Input	Process/Activity	Output
Process Step 1	Primer (Instructional Material) by NLM	Create Standard Product Structure (Consisting of 24 to 28 lessons)	An eLearning System (Adobe Flash files) consists of 24 to 28 folders with each folder having around 15 to 20 Flash files for content
Process Step 2	Templates	Design Standard Templates	Base eLearning System with common elements. There are on an average 20,000 visual elements and 2,500 audio elements in an eLearning System for adult literacy
Process Step 3	Individual Configuration Items	Product Configuration	A specific configuration file with details of instructional design, lessons and user interface configuration
Process Step 4	Product Configuration, Input Files, Folders	Factory Tools	Specific eLearning System that should be customized further to suit the needs of individual system requirements

2.3 A Patterns-Based Approach for Modeling Instructional Design and TEL Systems

How can we design reusable instructional designs and semi-automatically generate eLearning systems based on them?

While software product lines used in earlier generation have reduced development effort [16], we started questioning the role of technology in education. Can we enhance the quality of teaching and learning using technology in addition to automation? As a first step, we have initially proposed GAMBLE framework that models instructional material in the form of *facts*, *cases*, *rules*, *models* and *theories* (fcrmt) [17].

Teaching using this framework has helped adult learners to perform well at higher levels of Bloom's taxonomy [37]. Based on this framework and our expertise in patterns and software engineering, we took a holistic approach that integrates learning methodologies, educational technologies and software engineering towards design of TELL.

Table-III
Layers in Patterns Based Approach

Layer	Focus			
Layer 1	Instructional Design Methodologies			
Layer 2	Pattern Oriented Instructional Design *Teaching and Learning Platforms*			
Layer 3	ID*ont* – An Ontology Based Modeling Framework			
Layer 4	Pattern Oriented Software Architecture *Software Tools & Platforms*			
Layer 5	ICT Apps	eLearning Systems	Intelligent Tutors	Games	…

The core idea of this work is to use patterns and a patterns-based approach to model reusable instructional designs and develop TELL systems based on them. In addition, we also see this approach as a fundamental way to address the challenge of huge scarcity of teachers in India by modeling experience of expert teachers and delivering it to novices. We summarize the key aspects of the approach (shown in *Table III* as follows:

(i)   *Layer-1: Foundation of learning methodologies* - The first step in our approach is to rely on a pedagogical basis for our TELL efforts and in case of Adult Literacy, we use IPCL methodology [24] from NLM and integrate it with Merrill's first principles of instruction and Bloom's taxonomy.

(ii)   *Layer-2: Pattern-Oriented Instructional Design (POID)*- Based on inputs from Layer 1, we model Instructional Design using architectural pedagogy patterns, pedagogy patterns (e.g. *context*, *goal*, *process*, *content*, *evaluation*, *environment* and so on) and integrate them via patterns-based approach.

(iii)   *Layer-3:An Ontology Based Modeling Framework* – In this layer, we use ontologies as a way to systematically model different aspects of Instructional Design through patterns.

(iv)   *Layer-4: Pattern-Oriented Software Architecture* - is based on POID and ontologies, and provides a base for automating the development of various ICT apps, eLearning Systems and so on, which are in *Layer-5*.

2.4 ID*ont-An Ontology Based Educational Modeling Framework and Platform for Instructional Design*

How can we systematically model different aspects of Instructional Design to facilitate design and customization of eLearning Systems?

We proposed ID*ont* framework to model different aspects (*context*, *goals*, *process*, *content*, *roles*, *evaluation*, *environment*, and so on) of instructional design[18]. The core idea is to use a systematic approach to capture instructional design knowledge

and advocate separation of concerns principle by modeling different aspects of instructional design using smaller, modular interrelated ontologies. Modeling instructional design using ontologies is a way to align with learning methodologies and can facilitate the automation of technologies for adult literacy. We have designed two tools namely, *Easy Author* [14] and *GURU* [38] based on this framework.

2.5   A Software Product Line Approach for Design and Customization of eLearning Systems

How can we (semi-) automatically facilitate the creation and customization of eLearning Systems for a family of Instructional Designs?

We have applied software product lines for adult literacy case study and reduced the development effort from 5 to 6 person-years to 5 to 6 person-months[16]. However, this software product line is based on a single instructional design for varied *e*Learning Systems for 22 Indian Languages with varied content. The emerging need in the context of adult literacy is to create varied instructional designs, with each instructional design requiring varied *e*Learning Systems. In essence, this means that there will be different versions of instructional designs catering to different educational needs; each of those versions of instructional design will have authoring tools which in turn facilitate the automation of a family of eLearning Systems pertaining to that instructional design. This presents the need for a product line of product lines, which is elaborated in[13]. We have elsewhere illustrated the role of software product lines to facilitate reuse in TEL[21].

2.6   A Software Product Line Approach for Personalized Learning (future work)

How to provide personalized instruction to a diversified range of learners using varied instructional designs and delivered on different kinds of platforms such as computer, web, mobile and so on?

3.   TELL as an Interdisciplinary Endeavor

In our experience for the last seven years, we have closely observed that TELL is an interdisciplinary endeavor and is becoming increasingly complex. We have briefly discussed the different perspectives of TELL in the context of adult literacy in[12]. We started our research from a software engineering perspective to reduce the mammoth effort during design of *e*Learning Systems [16] but soon realized that this effort is futile without a strong pedagogical basis [39]. We then modeled instructional design using a patterns-based approach by mining patterns from learning methodologies [19]. The next step in our journey was to apply fundamental principles

in software engineering like patterns and software product lines to systematically model instructional design and TELL systems. In addition, as our *e*Learning Systems and authoring tools are for non-technical teachers and illiterate people, we investigated our approach from a HCI perspective. In essence, our experience with design of technology for adult literacy made us to take a holistic approach from several disciplines.

4.   Evaluation and Implementation

We broadly see two major lines of research in TELL- (i) Design of technologies to enhance learning (ii) Facilitating and accelerating the design of these technologies in sync with learning methodologies. Even though we have done a field study with 100 women learners in a rural village *Anajipuram, Nalgonda, Telangana, India* to understand the impact of our reasoning framework (fcrmt) to enhance learning[39], the focus of our research has always been on (ii) design of approaches that facilitate the acceleration of technologies that have a pedagogical basis. We evaluated the approaches outlined in *Section3* through (i) qualitative analysis from Instructional Design and Software Engineering perspectives (ii) empirical evaluation by design of technologies, tools and platforms (iii) application of the approaches and tools to adult literacy case study. A detailed evaluation of the tools is discussed in [1] and the software developed based on our approach is available at http://rice.iiit.ac.in.

5.   Conclusions and Future Work

Adult Literacy in India is a *grand societal challenge* with 287 million people still unable to read or write in this digital era. This inspired us to design technologies for the last seven years in an attempt to address several *computing research challenges* in Educational Technologies and Software Engineering. To this end, we have - (i) reduced effort for development of *e*Learning Systems using SPL (ii) modeled instructional design knowledge using ontologies (iii) designed a *patterns-based approach* to model instructional design and TELL systems (iv) designed a SPL approach to model a family of instructional designs. We have also presented views of different stakeholders in adult literacy case study along with our experience of designing technologies and tools for adult literacy. The core idea of our research is to emphasize the need for a holistic perspective during the design of TELL. We also see endless possibilities of future research directions but two significant ones are: (i) use of software engineering approaches to address challenges in TEL and (ii) performing field studies to assess the impact of educational technologies to enhance learning.

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Contribution of Allied Disciplines towards Educational Research with Special Reference to Research Methods

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Education is a continuous process. It helps to develop the overall personality of an individual. It gives opportunity to develop one's skills and abilities. It is a complex phenomenon. Various fields of learning are involved in it. There is close linkage of education and development of a nation. Today, throughout the world education system is changing. Adoption of innovative teaching methods has become a need of time. Accordingly, curriculum and evaluation methods are changing. The cost of education and investment in it has increased, especially in twenty first century. This gives an opportunity to researchers to conduct studies on various aspects of education system.

Meaning of Research

Research means careful examination of an object or situation for the purpose of improvement. According to Kerlinger (1973:11), 'Scientific research is systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena.' It comprises defining, and redefining of problems, formulating hypothesis, collecting, organising, and evaluating data ; making deductions and reaching at the conclusions and at last, carefully testing the conclusions to determine whether they fit in the formulated hypotheses or not.

John W. Best and James V. Khan defined research as 'the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles, or theories, resulting in prediction and possibly ultimate control of events.' (Best, Khan, 2004:20)

Research is, thus, an original contribution to the existing stock of knowledge and/or theory making for its advancement or may create a new one.

Educational Research

Educational research helps to understand the educational process to improve its efficiency. It helps to study the problems and also suggests solutions to overcome them. For this, it takes help of other disciplines.

For example, take the problem of de-motivation of adult learners in attending literacy class. One has to first clarify the meaning of motivation and its related factors. Historian will enable us to understand how adult education classes were

conducted in ancient days. Discipline of sociology will explain this from another perspective. It will analyse this phenomenon from authority point of view. Will the adult learner ready to learn from an instructor/volunteer who is younger than adult learner? Does the instructor/volunteer teacher (VT) behaves with them authoritatively? Psychologists will have some different answers to such questions. They will take into account their life experiences, usefulness of education, etc. One needs to study this problem from various angles and find out the right solution for motivation of adult learners. In other words, each academic discipline has its own characteristic approach to research. They immensely contribute to the field of education.

Educational research helps to improve instructional techniques and management of educational institutions. Educational research is interdisciplinary in nature. Findings of researches do contribute in planning various educational strategies to bring changes. Educational research has impact on teachers and classrooms. For example innovative teaching method, need based changes in curriculum (which is constantly undergoing changes), reforms in examinations (Patil, 2017).

Educational researches play vital role in framing education policies and to bring fruitful changes in the field of education. It is the responsibility of people who are actively involved in education field to act on the findings of researches and further develop the education field.

According to Koul (2009:10) educational research means 'a systematic attempt to gain a better understanding of the educational process, generally with a view to improving its efficiency'. For this purpose, it uses various methods and techniques from various disciplines. Contribution of various disciplines in educational research is explained in following paragraphs.

Contribution of Discipline of Economics

Economics is the science of scarcity. It has a large influence on education field. Individuals and government invest in education and one needs to understand its returns. Economics helps to understand the impact of education on individual as well as the economy of a nation. This return may be in the form of money or non-monetary (for example education helps to increase sense of self-worth). How education helps in getting jobs which are more paid, getting more salary/wages? Economics gives answers to various questions related to education. For example, how early investments (pre-primary and primary education) in education system are more valuable than those made in later in adulthood, impact of smaller class size (no. of students) on students' achievements, impact of teachers' qualifications/qualities on achievements of students, impact of adult education on the life of adult neo-literates, etc.

The discipline of economics has theoretical and methodological contribution in

educational research. It tells about how best to allocate scarce resources in education. It helps us in understanding investment in education and its output. Economic impact of education on individuals and society can be studied well with the help of cost-effect relation. Various key ideas from economics are used in both research and policy making. For instance, education and economic returns can be studied from labour market outcomes or employments in various sectors, cost-effectiveness of education policy, etc. Economics is used in quantitative methods of policy oriented researches. In majority of the countries, economics has significant influence on policy making.

In empirical researches, causal impact of education on earnings is an area, which helps in developing various strategies to be adopted in education system. Application of principles of economics helps to know the market trends, demands of various jobs especially in corporate sectors. This helps us in framing curriculums at various degree levels.

The contribution of discipline of economics in the area of quantitative education policy evaluation is significant. Demand and supply can be tested through quantitative research method. By applying robust theoretical models, one can find answers to whether investment in education really helps in development of a nation.

Economics can generate testable hypothesis in the field of education. They can be tested through quantitative research methods. It provides answers in quantifiable terms, which helps in policy framing. This also helps in allocating resources to various heads, with clear justifications. For instance, allocation of 0.5% of total budget of education for providing transport facilities to girl children studying in secondary schools in rural and tribal areas, as secondary schools are located at far distance.

Economics also helps us to understand non-cognitive skills and its relationship in achievements. For example, study of implication of marketization of education helps us to find out solutions for equity in education. Findings of these researches in these areas are of great importance in framing various policies. In short, the discipline of economics helps us to produce quantifiable evidences.

Quantitative research method- (causal impact) quantitative research method has been used in educational research since ages. Economics has further contributed in it. It provides various techniques that improve the quantitative rigour of analysis particularly. For example, what is the causal impact of education policy? Establishment of causal impact helps us to draw correct policy conclusions.

One can also study whether additional resources in school lead to better students' achievement. To establish causal relation between resources and students' achievement, quantitative research can be undertaken. Researches in the area of cost benefit analysis of education budget, rate of return analysis, cost effectiveness

analysis; economics of teachers' provisions are other areas, where one can contribute to policy decisions.

Causal relationship technique can also be used to evaluate a particular educational programme. For example, usefulness of Mid Day Meal (MDM) in enrolment and retention of students in school can be studied by using statistical and econometric methods. Other examples include usefulness of scholarships to students belonging to scheduled caste and scheduled tribe, contribution of freeships in enrolment of students belonging to other backward castes in higher education. The causal impact will help us to assess the true costs and benefits of these policies/interventions. This further helps in modifying the policies (policy decisions).

By applying various methods of research in economics, one can find out the achievement and welfare of children occurred due to various policies such as Education for All, Right to Education Act, etc. Cost-effectiveness of education and achievement will help in bringing reforms in education system. Government is investing crores of rupees in education, still inequality in education exists, and quality of education is deteriorating. Economics can help us to find out reasons for these questions. Economics can predict whether these investments will be useful in long term (Patil, 2017).

Contribution of Statistics

Statistics is a major part of educational research. Various statistical techniques such as mean, median, mode, standard deviation, t-test, ANOVA, etc. are used to interpret the data in quantitative method. Use of statistical techniques differs according to the objectives of the research. There are multiple interpretations of single event and situation. Statistics allows the researcher to select a specific method for data analysis. In other words, researcher can use both-qualitative and quantitative approaches.

Use of statistical techniques is in an integral part of research. It starts as early as the phase of sampling in research. Selection of sample, sample size, items to be collected and its quantitative analysis is done by applying statistical techniques. Sampling errors can be eliminated by applying statistical formulas (Pandya, 2010).

Statistics is widely used in educational surveys. For example, survey of achievement of students, administrative problems of schools, etc. By using various techniques of probable sampling or non-probable sampling, one can choose the final sample for educational research. By using standard deviation, one can estimate value of achievement of students in various subjects. One can also find a mean score from a frequency distribution table. One can study yearly changes in achievements, comparison of performance of government schools and private schools, influence of geographical conditions on students' performance, etc. These results

may help in policy framing regarding curriculum, providing facilities in different areas, use of technology in teaching, etc. Results of these studies can also help to decide strategies for organizing remedial classes, improvement in teaching methods to help the challenged students.

In quantitative research, statistics helps to describe and explore relationships in various variables or differences among groups. With the help of statistics, researcher can make quantitative predictions in terms of probability and ultimate control of events. It also helps to assess cause and effect relationships more credibly.

By applying various Statistical techniques, one can establish correlation between one or more quantifiable variables. The degree of relationship is expressed in terms of coefficient of correlation. If the relationships are substantial and consistent, they enable a researcher to make predictions about the variables. (Pandya, 2010: 89)

Statistics is also useful in comparative research studies. By applying various statistical techniques, the researcher can compare two or more groups. It helps to study relationships between two or more variables. Comparative study provides information on how two or more groups differ on some phenomenon (Dependent variable). For instance, a study of gender based academic achievement of students in rural area. By using comparative research method, one can study the academic achievements of girls' and boys' studying in rural schools. In this study, academic achievement is dependent variable, whereas gender is the independent variable. Researcher can compare academic achievements of students from one school and same class or may select two schools and students of same class (say Std. V or Std. VII, etc). In comparative research, the most common statistical techniques used are t-test and ANOVA. For comparing two groups, t-test is used and when more than two groups are to be compared, ANOVA technique is used. t-test can be used to compare the Mean Academic achievements of girls' and boys', IQ of girls and boys.

Causal-comparative research is mostly used to establish the relationship between cause and effect. It involves two or more groups and one independent variable. Topics such as effects of teachers' personality on students' achievements, affiliation of schools to various boards (State Board, CBSE, ICSE, etc), teaching methods, infrastructure of schools, provision of scholarships, etc can be studied by using causal-comparative method. In this research method also, one can use t-test for comparing two groups or ANOVA for comparing more than two groups on a single variable. According to Pandya (2010), technique of Analysis of Covariance (ANCOVA) may also be used in case some other variables likely to influence the dependent variable which needs to be controlled statistically. ANCOVA is used to adjust initial group variances on variables used in causal-comparative and experimental researches. ANCOVA adjusts scores on a dependent variable for initial differences on some other variables related to performance on the dependent variable. For example, a researcher

wants to study the effective teaching methods. Which method is more effective-lecture method, discussion method, case study method, demonstration method or experimental method? By applying Covariate analysis technique, one can compare and draw a conclusion.

Chi-square is another statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. It tests null hypothesis. Chi-square can also be used to compare group frequencies, or to see if an event occurs more frequently in one group than another (Patil, 2017).

Statistics helps to establish correlation between cause and effect in terms of degrees and not in dichotomies. It deals with problems in terms of many variables and reflects the variation of many factors at once. Correlations range over a scale from a perfect negative correlation to no correlation and to a perfect positive correlation (Aggarwal, 2002). Correlation can be used to measure the strength of an institution, predict teaching success, predict the number of students, who can score above 70%, etc. Statistics is also widely used in experimental research, cost analysis of education (economics).

Contribution of Discipline of Sociology

Socialization is an important aspect in human beings life. Personality gets constructed through various exposures and experiences of life. Thus, education plays a vital role in moulding a human being. In his/her growth and development, social and cultural factors play an important role. Sociological factors have great impact on the educational thought and practice (Koul, 2011:35).   Research helps to explain social realities. For example, study of population explosion and its impact on educational system, study of job commitment of teachers in the context of social needs and social realities, etc. Following are some of the most commonly used methods of research:

Survey Method

Survey methods are some of the core methods for collecting and analyzing data in sociology. Survey methods have been used since the early days of sociology. They became a core method after World War II. Survey research has been used throughout the world and has become an important basis for comparative social analysis. (http://www.pra.ca/resources/pages/files/technotes/history_e.pdf retrieved on 9.2.2016)

Survey research is a descriptive research. It is mainly used for collecting primary data from entire population or a representative sample of individuals/respondents from the target population. According to Kerlinger (1973), survey research can be used to collect the vital facts of people such as their beliefs, opinions, attitudes,

motivations and behaviour. Survey research usually considers variables such as age, sex, religion, caste, income, socio-economic status, education, living expenses, occupation, and race. This method s primarily focuses on what people think and what they do. It is all about the way things are.

In education, survey method can be used to assess attitudes (parents, teachers, and students), opinions (policy makers, administrators, and parents), practices (teaching, administrative, students' study), procedures (admission, examination). In other words, to study various educational issues and problems, survey method can be used. Very often surveys are conducted to know the infrastructural facilities available in schools, teachers' absenteeism, students' absenteeism, achievement of students, and so on. In survey, the entire population can be one unit or one can draw a sample from the total population.

Various Types of Survey

Following are most popular surveys used in education sector (Pandya, 2010):
▪   Public opinion survey
▪   School surveys
▪   Community survey
▪   Developmental survey
▪   Follow-up studies
▪   Documentary analysis

Public opinion survey

These are usually sample surveys. They are conducted to know the public opinion about educational issues, especially controversial issues. For example, hike in admission fee, introduction of sex education in school, etc. Such surveys help in taking policy decisions about crucial issues.

School surveys

These surveys are conducted to examine the public attitude towards overall functioning of the educational institutions. For example, issues such as admission procedures, implementation of Right to Education Act, Mid Day Meal (MDM) programme, etc. can be studied. Findings of such surveys are useful for bringing overall changes in administration of the school.

Community survey

To assess the educational needs of a particular society and accordingly frame the objectives of the school, this method is useful. Need based education helps development of the students as well as the community.

Developmental survey

Various dimensions of students such as physical, emotional, intellectual, language can be studied in this survey.

Follow-up studies

These studies help to know the current status of alumni of a particular educational institution. Information is collected to know the status of students who successfully completed the degree from a particular institution. For example, information regarding their current employment status, usefulness of theoretical knowledge in their work, opinion about the employers, etc. can be collected. Such information helps in bringing necessary changes in curriculum (if it is at university level), teaching methodology, and co-curricular activities to be introduced at the institution level, expository visits, introduction of field experiences, etc.

Documentary analysis

In this type of survey, existing documents are studied. By using this method, one can study existing school practices for admission, examination, absenteeism of students, achievements of students, efforts for remedial classes, etc.

Based on research design, surveys can also be classified into following three categories namely:
- Exploratory survey
- Descriptive survey
- Explanatory survey

Exploratory survey

In this, no assumptions or models are postulated. This survey explores relationships and patterns through correlation, regression, stepwise regression and factor analysis. (Cohen, 2013:257) This is used to explore various areas, which are new and areas where very little research is done. This method helps to understand issues at deeper level. For example, why performance of a particular school is better than others?, why girl student dropout rate is more in secondary schools, even though they are provided cycles?, why absenteeism of girl students' is higher in rural areas?

Descriptive survey

It describes the present conditions. It generally aims at collecting information from a representative group of people from which inferences may be drawn about people as a whole. For example, opinion polls during elections, census surveys,

National Sample Survey, National Family Health Survey. Census data provides us factual information on educational status of the country (sex-wise and standard-wise enrolment, dropouts, etc). Descriptive survey mostly present numbers, percentages and averages. It provides information without explanation. Following are some of the topics for descriptive research:

- What co-curricular activities are conducted in the school for the overall development of students?
- What is the attitude of the parents towards tuition classes?
- What efforts the management of school takes for the development of teachers?

Explanatory survey

It requires a representative sample, usually a large one. Information collected is analysed by using statistical techniques. It deals with causes of a specific phenomenon. It presents evidence of relationships. For example, is participatory teaching method much effective than lecture method? Is there any relationship between teacher's friendly behaviour and students' achievement? Does family's good economic condition helps in achievement in school? Is intelligence related with reading ability, can attainment in the early years of primary school linked to date of birth? Relationships are measured in their real setting. For example, tests are given to students in their classrooms, people are observed in the process of their everyday lives.

Thus, by using various types of survey research methods, one can overcome various problems in education field.

Ethnography

This research method is used in sociology to study socio-cultural factors. It is descriptive in nature. In this method, community is the major area of study. It emphasises on study of culture. It has diverse approaches. The most common is participant observation. There are no restrictions on limit of what will be observed and interviewed.

According to LeCompte and Preissle (1993), ethnography research is a process involving methods of enquiry, an outcome and a resultant record of the enquiry. This research intends to create as vivid a reconstruction as possible of the culture or groups being studied. The researcher gathers empirical data in its natural setting. Ethnographic approaches are concerned more with description rather than prediction, induction rather than deduction, generation rather than verification of theory, construction rather than enumeration and subjectivities rather than objective knowledge. (Cohen, 2013: 221)

The subjects studied under this may include ethnic community, formal organization, perceptions of a particular group about a particular system, etc. It is an exploratory study. Data are gathered from various sources, mostly through observation and informal conversations. Researcher has to build trust and establish rapport with the subject in initial phase itself. Questions are unstructured and mostly open-ended. Researcher has to ask clear questions by using appropriate language, so that it is understood correctly by the respondent. Probing questions help to get detail answers. Researcher needs to have good observation skills. Observation skill also helps while asking sensitive questions. Unlike other research methods, the researcher have to collect data and do analysis on continues basis.

By using ethnography method, one can study the impact of culture on achievement of students. For example, a particular tribal community in the district of Udaipur, Rajasthan state of India, celebrates *Holi* festival for a month. During this period, they don't work. They just enjoy life by eating, drinking and attending festivals (*Jatras*). One can conduct an ethnographical research to understand the achievements of students in this area. Other areas could be education and social mobility, education and equality of opportunity, etc.

Using this method one can study culture of a particular group, patterns of social interaction in a particular group/community, in relation to education of their children. For example, portrayal of a social group-*Banjara* community (Nomadic tribe), *devdasi* and their life, etc.

Narrative Research

It is emerged as a discipline in the field of knowledge management. It is an approach to understand behaviour of students, teachers, administrators or parents. Narrative research deals with diverse events, happenings and actions taken in person's life. It is a powerful tool in sharing of knowledge. It is a form of qualitative research. It has been used as a tool for analysis in the field of cognitive science.

Narrative research studies illustrates life history of a person in a sequential manner. It includes conflicts/struggles, challenges, agitations, predicament, happy movements/success, tragic and romantic moments, comic and ironic moments as well.

In education, narrative research can be done on the following topics:

- A narrative study of experiences of woman principal in boys' school,
- Study patterns of student toppers in board examination/university examinations,
- experience as a teacher working in the school of mentally challenged children,

- Challenges of a teacher belonging to ethnic group/scavenger family and working in a metropolis city.

Narrative studies may become inspirations to others. From such studies, one can understand strategies used by people to overcome hurdles and to achieve success.

Contribution of Discipline of Psychology

Psychology is the science of behaviour, which can be observed and measured in an objective way. The knowledge of child psychology (pedagogy) helps teacher to plan classroom activities which ultimately results in overall development of children.

Educational Psychology and its Contribution

Educational psychology is an applied discipline. It helps the teacher to understand the students and enhance their skills. There are many areas in education where general and objective information about an individual is crucial. Psychology enables the teacher to know these factors. Teacher has to deal with complexity of children's behaviour in the classrooms.

The educational psychology helps in understanding developmental characteristics of various stages of life such as infancy, childhood and adolescence. It also helps to understand the nature of class room learning, needs and problems of students, individual differences in classroom. Due to heterogeneous groups of students, knowledge of these factors helps teacher to decide appropriate teaching strategies.

Psychology has contributed in content area as well. It has contributed towards pedagogy, behavioural management, guidance and counselling, classroom management, personality, adjustment and defence mechanism and theories of learning.

Research Methods of Educational Psychology used in Educational Research

Following methods are widely used in the area of education:

- Introspection
- Observation
- Experimental method
- Action research
- Clinical method
- Case study
- Survey or differential methods

Introspection

This is the oldest method, first used in philosophy. Introspection means self observation to understand one's own mental health and/or the state of mind. This method is useful while working with students who are aggressive, introvert, and juvenile as it gives information about one's own self which is difficult to understand by other methods. This method can be clubbed with other methods such as experimental and observation method.

Observation

One can do observation in various manners such as direct or indirect, scheduled or unscheduled, natural or artificial, participatory and non-participatory. For instance, teacher can observe students' behaviour in the play ground, social gatherings, and during group activities, without making them conscious. (Observation in natural setting) There are two basic types of observation. Teacher can also give some activity and participate with students and observe them closely.
                                    .

Experimental Method

It helps to understand, control and predict behaviour. It is the most precise, planned systematic observation. It describes 'what will be' when certain variables are manipulated. To understand the cause and effect relationship between variables, this method is used. Experiments may be conducted in a laboratory or in the classroom or anywhere else in the community. It is a well-planned activity which involves proper research design. Experimentation involves comparison between behaviour of a control group and that of an experimental group.

An experiment involves two or more variables. For example; study of effect of a sex education programme. In this particular study, before the experimental method administered, pre-test should be conducted for both the groups. Then the experimental group is exposed to attend this programme on sex education and the controlled group is not exposed to this programme. After the experiment, both the groups are administered post-test. One can also see the behavioural changes in experimental group.

This method is widely used in education, especially to study the effects of various learning models on academic achievements. Explosion of knowledge has happened due to use of technology in twenty first century. It has also added various educational problems. Hence, this method is more significant in today's world (Aggarwal, 2002).

The experimental method serves as a basis for the formulation, execution and modifications in educational programmes and policies. It also ascertains the effect of any change in the normal educational practices and programmes.

Action research

Action research studies problems at the local level. It usually focuses on the development, implementation and testing of a new product, programme, plan or procedure in a school building (Picciano, 2004, Pandya 2010). This method enables the administrators and the teachers to study their own problems in their respective schools and classrooms.

It deals with realistic problems and issues rising at the educational institutes. It focuses on problem solving and can help to bring changes in education system. For instance, a particular class is consistently performing low. The teacher/s, Principal and students together or separately can find the reasons and solutions to overcome this problem and improve the performance of students. If needed, they can seek outsider's help (e.g. counsellor). At the end of the action research, one can find answers to questions such as what worked and what didn't, what we have learnt and how could we do it differently next time.

This method involves active participation of all those who are associated with the problem/issue. In this method, continuous effort/s are required to find out the root causes of the problem, reasons behind them, establishing relations, taking action and again reflections on it to know whether it works or not. In other words, it involves review of actions undertaken and planning to future actions.

Following are some of the areas for action research:
▪   How can I improve the students' classroom participation?
▪   How can I reduce students' fear of examination?
▪   How to improve communication skills of students?
▪   How do I improve my teaching?
▪   A study of effectiveness of ICT as an instructional strategy
▪   A study of effectiveness of ICT in administration of a school/college
▪   A study of staff development and promotional opportunities available in a particular school/college.

Findings of action research help to improve the quality of education in schools/ colleges.

Clinical method

This method is basically used to solve behavioural problems of the student/s (individual and/or group). It focuses to detect the specific behavioural problem and therapeutic measures to rehabilitate them. For example, a student with a habit of stealing things from the classmates' bags, student with a habit of sleeping in the classroom, student having habit of stammering when asked questions in the class (otherwise he speaks normally), etc.

Case Study

Case study is in-depth analysis of an individual, small group of people, or phenomenon. It describes and interprets current events, circumstances or situations. It helps us to understand a complex issue or a person's behaviour. It gives us detailed contextual analysis of certain important events and their relationships. The limited size of sample avoids many of the complications in logistics or in analysis which are found with the other methods. It is intensive in nature.

Case study is the most widely used descriptive research in education. It is qualitative in nature. It is based on the assumption that things may not be as they look and hence, requires in-depth study and analysis to understand the 'case'. One cannot generalize things without knowing the details. For example, a girl student sleeps in the class in spite of warning so many times. In this case, reasons may be varied as she has to work at home, take care of her siblings, working after school hours, cannot understand what teacher teaches, not interested in learning, boring teaching method, malnourishment, and eye sight problem and so on. By conducting a case study of this particular student, one can find out the reason/s and take appropriate action to overcome this problem.

Case study helps teachers to understand students with academic difficulties. To eliminate subjectivity, one can use psychological tests as well. Case history clarifies and helps to resolve controversial issues/points. It uncovers illogical thinking and misconceptions, which in turn lead to resolve complaints, if any. The 'case' may get reassurance that disclosing the past may help to resolve problems and will benefit personally.

Though case study is a qualitative method, sometimes it is also used as quantitative. For example studies related to cost effectiveness, institutional effectiveness and so on. In policy related issues, the whole country or a state can become a case. One can do a case study of effectiveness of 'Education for All' or "Saakshar Bharat" scheme. One can do case study of a single school as well. Usually, case studies focus on single unit or smaller unit; hence its findings cannot be generalized.

A variety of techniques are employed for collection of data including personal interviews and observations. Tools such as psychometric tests, questionnaires, documents, artefacts, diaries and archival records are also used. These multiple tools and techniques of data collection add texture, depth and multiple insights to an analysis. It also can enhance the credibility of the results.

In the field of education one can do case studies of students' lack of interest in study, Aggressive behaviour of a student, day dreaming, absenteeism, emotional problem, social problems, etc.

Causal Comparative Method

This method establishes causal relationships between events and circumstances. It compares the circumstances associated with observed effects. For example, in a study of educational and social background of delinquent children with those of normal children, researcher can observe which factors are common to the delinquent children and non-delinquent children, any factors common to only one group, which might serve as a possible explanation of causes of delinquency. The causal comparative method begins with observed facts, actual happenings, investigating reasons. It finds out causes of certain occurrences and non-occurrences. This is a method which answers many educational problems.

Following are some topics for causal comparative method:
- Effectiveness of health education and character development
- High cost of education in private schools

Contribution of Discipline of History
Historical Research

Historical research is the systematic collection and evaluation of data to describe, explain and understand actions or events that have occurred in the past. Researcher cannot manipulate or control variables, as events have already happened. It is an attempt to reconstruct what happened during a certain period of time, as completely and as accurately as possible. It is a type of analytical research.

The main purpose of historical researches is to make people aware of what has happened in the past in order to learn from past successes or failures, apply certain strategies to current problems, and make predictions. Past conditions influence present. Hence, historical researches help us to understand present practices and policies fully. It helps to explore changes and transformations taken place in a society.

Current educational problems, practices can be well understood in their historical perspectives. Historical studies can help to address various issues of current education system, its problems, practices and attitudes. For example curriculum reform, relationship between economy and educational innovations, educational innovations, education for minority girls', generic courses versus specialized courses, relevance of current education in the market, education in mother tongue versus English as a medium, relevance of current education in job market, traditional teaching methods versus modern methods and so on. Findings of the historical researches may play an important role in shaping the educational policies.

Historical research provides information concerning effects of past educational practices. An attempt is made to examine and establish facts in order to arrive at conclusions concerning past events or to predict future events. For example, impact

of 'operation blackboard' or "District Primary Education Programme (DPEP) on enrolment of students. Such studies suggest programmes for future action. It also contributes to understand significance of education, inter-relationship between curriculum and job opportunities.

Historical researches show patterns that occurred in the past and over time. This helps us to understand the existing situations and educational practices. For example, study of various educational schemes implemented by the Central government and State government to increase the enrolment of students in schools. Such studies show us what worked and what did not. As we know past conditions influence present. For example, inadequate infrastructure of a school results in drop out of students. This reflects in illiteracy rate. Effects of certain past educational practices (for example, corporal punishments to students in schools increase dropout rate of students) can be studied by using this method. The historical research can provide answers to questions such as why and how. It also helps to understand the significance of education, relationship between curriculum, teaching methods and achievement of students.

Importance of Historical Research in Education

It enables the present educators and administrators to avoid mistakes of the past. It becomes a foundation for any educational reform. Current educational problems can be viewed in the context of their origin and growth, without any bias. For example 'low literacy rate amongst women' can be studied in past context. Such studies provide educational ideals and standards of past time. One can study the changing role of social institutions and understand the dynamics of education, learn how educational prejudices and misconceptions have hampered the educational system.

Types of historical research include bibliographic research, legal research, studying the history of ideas and studying the history of institution and organization. Bibliographic research provides data on important facts about life, character and achievements of stalwart educators (for example *Tagore*, Aristotle, J.P*. Naik* etc). One can conduct a legal research in the areas of legal status of teachers, administration of private aided schools, school finance, etc.

Historical research can be conducted on following topics:

▪   Growth of education system in India after independence
▪   Contribution of great educators'
▪   Influence of *Bharat Ratna Maharshi Karve's* movement of women's education in Maharashtra
▪   Constitutional provisions for education/girls' education
▪   Changing contents of school text books

- Reservation policy and its impact on enrolment of students belonging to reserved castes
- Teacher qualifications, recruitment policies and performance of schools
- Implementation of Education for All policy and its educational reforms.

In historical research, data can be collected from various secondary sources such as libraries, archives, historical documents, diaries, memoirs, newspapers, photographs, autobiographies, periodicals, bulletins, census reports, books, magazines, journals, films, etc.

Contribution of Discipline of Philosophy

Philosophy is the oldest original intellectual discipline. It is the mother of all arts and sciences. According to Ross (1937), 'philosophy and education are like the two sides of a coin; the one is implied by the other: the former is the contemplative side of life, while the latter is the active side'.

The philosophy deals with nature of the universe in which we live. It tries to find the root causes of problems. There is a very close relation between philosophy and education. Philosophy is a way of life, and education prepares person to live the life. Philosophy deals with the ends and education is the means to achieve those ends. Philosophy gives ideals, values and principles whereas education works out these. In short, we can say education is the dynamic side of philosophy. Thus, philosophy has great influence on determining the aims, curriculum, methods, text books, and discipline in education.

According to L. K. Oad (1983), philosophy can help to answer following question (Pathak, 2013):

- Should education be universalized? Why?
- Who is eligible/fit to impart education?
- What kinds of relations should exist between teacher and student?
- What are the characteristics of a good teacher? (moral, abilities, skills, etc)
- What should be the content of text books to develop the overall personality of students?
- What methods should be used for inculcating values in students?

Contribution of Discipline of Political Science

Research and politics are inextricably bound together. For example, evaluative researches done in educational research where researchers evaluate the effectiveness of given policies and projects. Usually they are commissioned research, which are funded by policy makers. Politicization of research has resulted in funding bodies awarding research grants for categorical research that specify timescales and the

terms of reference (Cohen, 2013:48, 51). For example, evaluation of various schemes/programmes of National Literacy Mission comes under this.

Educational research has political dimension. At macro level, manifestation of funding takes place. When researches are sponsored, beyond commissioned, then the issue of dissemination of findings come. Who will receive or have access to the findings and how the findings will be used and reported. This, in turn raises the fundamental issue of who owns and controls data, and who controls the release of research findings.(Cohen, 2013:52). Many a times, unfavourable reports are withheld for time being, suppressed or selectively released. Thus, research and politics are intertwined. The impact of research on policy making depends on its degree of consonance with the political agendas of governments (Thomas, 1991, Cohan, 2013:53) and policy makers anxious for their own political survival (Cook, 1991, Cohen, 2013) and the promotion of their social programmes. Research is used if it is politically acceptable.

Political science helps to understand political ideologies of an educational institute, its influence on the curriculum/content, and overall functioning of an institution. Political science helps in knowing distribution of power in the decision- making process, the overall organization and governance of school systems, outcomes and effects of education policy decisions.

How much does national policy make a difference in classrooms? How much do national politics drive education policy? How education policy helps to bring fairness and equity in education can be studied as education has always been a polarized issue and minorities have always had to fight for access to education. How do teachers' union promote/hamper the development of education system, how the pressure of political parties and religious leaders together change policy decisions, are some of the topics which can be studied under educational research.

Policy makers, funders and users of education have interest in knowing changes taking place in the area of education. Education plays a vital role in creation of learning society. Researchers can study interrelationship between economics, political and cultural dimensions of globalization. The relationship between international, national and local politics and policies and their impact on educational systems and practices can be another area of research.

Education has become a field of major transformations and political experiences (Enders, 2010). Foreign universities are entering in higher education. A study on impact of foreign policies on education can answer various issues about quality, equity and achievement issues. Such studies can answer to questions such as do education reforms matter? Do they lead to new forms of social exclusion? And if so, under what circumstances one can avoid these effects? Such studies will be of great relevance for political practices and policy making.

Conclusion

Education is a continuous process. It requires continuous refinement as per the needs of the society. Education is a multidisciplinary endeavour. It cannot be imparted in isolation; hence it cannot be studied in isolation. We have to take into consideration the related disciplines of psychology, sociology, economics, philosophy, and statistics in educational research specially while evaluating its importance. Change is the law of nature, nothing remains static. Research is no exception. We have to update ourselves continuously to deal with the complexity of educational research. As development takes place, new problems arise. To solve them we need to have new devices of research and updated information.

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Recognition of Prior Learning, Skill Development and Migration: The Construction Sector in India

Chetan B. Singai

Recognition of Prior Learning (RPL) is the process used to identify, document, assess, and recognize skills and knowledge, especially for the adults. Currently, India's population is 1.31 billion, which is fast expanding at a rate of 17 percent and integrating rapidly into the global economy (FICCI, 2015). India is among the 'young' countries in the world, with the proportion of the work force in the age group of 15-59 years, increasing at a rapid pace. As a result of such a huge population with recurring unemployment and lack of employability, the demographic-dividend has become a liability than an asset to the nation. The labour market is volatile and demands new and complex skills to survive and grow, respectively. To this end, the following section of the paper examines the three prominent issues firstly, the status and need for RPL; secondly an overview of skill development in the country and finally, examine the issue of rural-urban migration with the construction sector as the case-in-point.

One of the ways to deal with unemployment and non-employability problem in lieu of increase in (rural to urban) migration is to pursue Recognition of Prior Learning (RPL) in the country. Recognition of Prior Learning is a formal process of recognizing previous experiential learning through a systematic assessment and certification process to award a formal qualification. These certificates are further used as currency to make upward mobility in enhancing individual's employment and socio-economic status, given the competitive and specialised needs of the labour market. Among the various sectors operating in the economy, the construction sector is fast-becoming one of the dominant agents of economic growth. Construction sector is the 3rd largest employer in India after, agriculture and manufacturing and holds 8.1 percent share in Gross Domestic Product (GDP), more than 4.22 crore workers are employed, with increasing demand for construction workers across the country, especially in the urban areas (Economic Survey, 2016). RPL in the construction sector is an important dimension to be introduced. Recognition of Prior Learning initiative in developing competencies among the traditional or semi-skilled or unskilled workforce to meet the modern day requirements of the complex-skill-based construction work. RPL would also help in opening doors for up-skilling and multi-skilling of workforce and contribute towards improving sectoral productivity and efficiency.

Adult domestic workers who work in the middle-class homes in Delhi, drivers working for taxi companies in Gurgaon, the construction worker in Karnataka and

the agricultural labourer in Punjab probably have one thing in common – they are migrants. Nearly one-third of India's population is migrant population (Ratha, Yi & Yousefi, 2015, Pp. 260).

Half of this population has migrated from rural areas to cities in search of work (see table 1 below, for details). Lack of alternate livelihoods and skill development in source areas, locations from where migration originates, are the primary causes of migration from rural areas. Workers migrate seasonally, temporarily, or for a longer period, either within a state or across states. The impact of migration is twofold: (1) labour migration within India is crucial for economic growth and contributes to improving the socio-economic condition of people and (2) migration, often results in overcrowding especially in the urban-areas accompanied by unemployment and/or non-employability and poverty.

Irrespective of migrant or non-migrant population, presently only 10percent of the total workforce in India have undergone skills training. As a result of this, unskilled or non-employable population in the country is increasing, resulting in a situation of crisis amidst robust growth. However, one must be wary of India's 'skills deficit' (see figure 1 below) which is a major hindrance to its economic development and growth, in comparison to other developed and developing economies.

Figure 1: Percentage of workforce receiving skill training
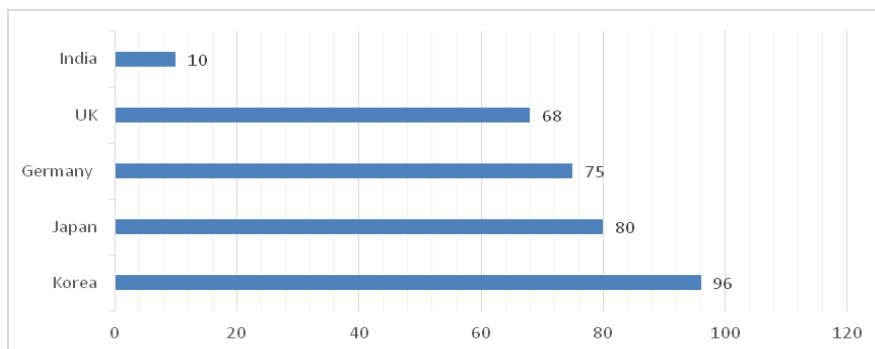
Source: Chenoy, D, 2012, Pp. 199

Hence, the current 'demographic dividend' is a vantage point for India, unless it engages actively in harnessing the skills of the workforce and those outside this paradigm. The main challenge in this regard is to face an ever-increasing migration of workforce from traditional occupations like agriculture to manufacturing and services, demanding higher skill sets. The challenges for India gets magnified, as it needs to reach out to the million plus workforce ready population, while facing an ever-increasing migration of labor from rural-agriculture centric to urban manufacturing and services

centric work profile. Can an intervention through RPL programmes/modules could overcome this challenge?

In line with this, the chapter provides an overview of the migration and skill deficit scenario in India, followed by discussion on suggesting a way forward by discussing the case of recognition of prior learning of workers in construction sector, a programme initiated by the Director General for Employment and Training (DGE&T), Ministry of Labour and Employment (MoL&E), Government of India (GOI) (DGE&T). The main question addressed with reference to the case-in-point and the way forward is: Does providing opportunity for skill development based on Recognition of Prior Learning for the migrant population to get employment or become employable, a 'winning' proposition to address the complex conundrum of migration, skill deficit, urbanisation, unemployment and poverty conundrum? In the following section, a brief on this conundrum is discussed.

Migration, Urbanization, Unemployment and Skill Development: *A Conundrum?*

The stride of migration, urbanization, unemployment and skill development are not mutually exclusive, they are direct manifestations of the process of economic development, particularly in the contemporary context of (economic) globalization (Benjamin, Bhuvaneswari & Aundhe, 2006). A large part of migration, unemployment and urbanization in the less developed countries have historically been linked to stagnation and volatility of agriculture and lack of sectoral diversification within agrarian economy. The growth rates in agricultural production and income has been noted to be low, unstable and disparate across regions over the past several decades, resulting in lack of livelihood opportunities in rural areas.

Such lopsided migration exposes the migrants to myriad challenges at their destinations in a country that is dizzying in its diversity of languages and cultures. Among the challenges: restricted access to basic needs such as identity documentation, social entitlements, housing, and financial services. Many migrants especially those who relocate to a place where the local language and culture is different from that of their region of origin also face harassment and political exclusion. Thus, nurturing the debate on 'inclusion', 'citizenship' and 'livelihood' of the citizenry of the country.

India has a long history of migration which has shaped its social history, culture and pattern of development. In pre-colonial times, the reasons for the circulation of populations were mainly for religious and trade purposes (McNeill, 1984:9). Migration, on account of military movements, also played an important role. People also travelled in search of pastures with their cattle. Nomadic migration, even for short distances, was an important feature outside the Genetic valley. As a matter of fact, this practice is still found in some parts of Rajasthan and Madhya Pradesh located in central India and is one of the earliest forms of circulation in the history of human migration.

Further, migration is spurred by search of employment and result of marriage as well.

Interestingly, Kingsley Davis (1951) in his pioneer work on India argued that Indians were less mobile. This conclusion was based on inter-provincial/state migration which stood at 3.6 percent in India in 1931 compared to 23 percent in the United States in 1940. Davis attributed this fact to the prevalence of the caste system, joint families, traditional values, the diversity of language and culture, the lack of education and the predominance of agriculture and semi-feudal land relations in India. However, the fact remains that Indian migration is predominantly a 'within state' phenomenon. According to the 2011 Census – the latest data available on migration as the 2011 Census– shows inter-state migration is only about 4 percent (41 million) of India's population compared to 26 percent within state migration (268 million) (Bhagat, 2010). Thus, considering the entire mobility including within and between state migrations, the mobility of Indian population stands close to 30 percent – much higher than what Davis believed. It is also startling to see that about 30 percent of India's population is internally mobile, a figure which has remained remarkably stable over the last several decades and is also consistent with NSS data. The 1971 Census shows 29 percent internal mobility compared to 30 percent in 2001 and the latest available NSS data for the year 2007–08 shows about 29 percent of India's population are internally mobile.

The rural poverty situation in India is highly complex and greatly differentiated by geography, demography and social class. It is multi-dimensional and influenced by systematic as well as structural changes in the economy. Vast majority of poor are engaged in low skilled jobs in agriculture, hence lacking employability skills.

The result lies in the different actors involved in the definitions. On one side employability relates to the individual, and on the other side, employment is a consequence of the match of internal (individual) and external (context) characteristics.

Knight and Yorke (2003) identified three main constructs of employability:

- as employment outcome;
- as a learning process;
- as a set of learning outcomes.

Moreover, they distinguished between:
- Employability as an individual feature, as the possession of the necessary characteristics to obtain and maintain the desired employment
- Employment as the transformation of the potential employability in the desired employment that demonstrates the acquisition of the specific skills desired by the labour market.

The conceptual distinction discussed here is further analysed in the context of need for more employability over mere employment, while examining the case of RPL in construction sector in India.

Currently, it is appropriate context, for the country to address the challenge of skill deficit along with emphasis on employability rather than, mere employment. One of the major policy challenges India faces today is how to provide skilling and up-skilling opportunities to low skilled and unorganized rural migrant workers. Adequate and appropriate skill development initiative or programmes for youth in rural India, could check migration from rural to urban and enable sustained growth in the rural areas of the country. Table 1, below illustrates the migration across streams in India – urban to urban, rural to rural, urban to rural and rural to urban. Though the rural to rural migration is at the peak, the migration of population from rural to urban, unpacks issues related to employment vs. employability, skilled vs. non-skilled and so on.

Table 1: Representing Migration by Gender in India (2001-2008)

Streams	Male			Female		
	2001 Census	1999-2009 NSSO	2007-2008 NSSO	2001 Census	1999-2009 NSSO	2007-2008 NSSO
Rural to Rural	36.3	32.3	27.1	72.4	70.3	70
Rural to Urban	34.2	34.3	39	13.5	14.4	14.8
Urban to Rural	6.2	10.7	8.9	4.1	5.2	4.9
Urban to Urban	23	22.6	24.8	9.9	10.1	10.3

Source: Census of India 2001; NSSO, 2010 in http://www.solutionexchange-un-gen-gym.net/wp-content/uploads/2016/01/WMR-2015-Background-Paper-RBhagat.pdf accessed on 18 May 2016 1830 hrs.

To overcome the 'skill deficit' conundrum due to increase in migration, harnessing the 'dividend' with better skills sets and employability could contribute to the overall economic development a better growth prospect. Responding to this, at the level of policy the Indian government embarked upon a series of innovative strategies regarding skill development and knowledge augmentation. One of the first interventions in this regard was the National Policy on Skill Development (NPSD) in 2009. The vision of the NPSD is to:

National Skill Development Initiative will empower all individuals through improved skills, knowledge, nationally and internationally recognized qualifications to gain access to decent employment and ensure India's competitiveness in the global market (Planning Commission, National Policy on Skill Development, 2009:9).

Main target group for skill development in India is the first migrants especially

the migrants coming from rural to urban areas. Literature galore expressing concerns of these dwellers, highlighting, their inability to self-sustain due to illiteracy and deficiency in skills required to make a living in urban India (Desai, 1994). Table 1, above illustrates the pattern of internal migration during last decade by gender. Apart from the pattern indicated here, it is interesting to make two critical observations – (1) the percentage of Rural to Urban migration is higher, in comparison to other streams and (2) migration among women is prominent in the rural to rural streams, unlike the male population.

These observations corroborate couple of arguments. Firstly, considering the rural to urban population as the major stream of migration given the massive expansion in urban India raises that concerns about space and sustainability. The challenges exposed by such an explosion are many – among them the critical one is the basic survival of the migrants. Survival is conditioned by access to basic amenities, and these amenities are available as a result engaging in work and earn.

The existing literature on urbanization raises concern about mmanaging urban growth, which has increased in both scope and complexity and has become one of the most important challenges of the 21st century (Cohen, 2004). One of the most critical questions in the context is - What is the relative contribution of rural–urban migration, natural increase, and reclassification to urban growth? (Ibid). In the case of India, fertility decline in urban areas has been faster than rural areas. In this situation, rural to urban migration and reclassification of settlements may emerge as a dominant force of urbanization. This requires an assessment of natural increase along with the components of migration and reclassification. Such trajectory of settlements leads to overcrowding, unemployment and homelessness and slums. Can employment overcome these problems?

To substantiate this, an initial step will be to outline the meaning of skill and its development. Skills have become conceptualized as "things" that can be acquired and measured and that possess an inherent capacity to bring about desired outcomes, outcomes that can be measured in tangible terms like money and in-tangible aspects like social status and so on. As the neo-liberal dream has increasingly receded the State, saturating the new workplace, workers have come to be personally responsible for skills acquisition, to the point of self-commodification.

The hierarchical view of skilled behaviour as fundamental to many modern theories of skill acquisition and accordingly, skills can be divided into hard skills, soft skills, and professional skills. Many concepts referring to types of skills/skill-sets are now in vogue (Stasz, 2001:386) distinguishes between academic skills (primarily learnt in schools); generic skills (such as problem solving, communications, or working in teams), technical skills, which are specific skills needed in an occupation and may need reference to academic skills; and work-related attitudes or 'soft skills', which include motivation, volition and dispositions. Beechey (1982) suggests that three

different elements can be distinguished when we discuss skills: (1) objectively defined competencies; (2) control over conception and execution; (3) socially defined occupational status, which may be independent of objectively defined competencies. There may also arise the necessity of distinguishing between skill in individuals and the skill required for jobs, as well as between these and labelling specific jobs as skilled.

In sum, the linkages between migration, urbanisation, employment and skill development exists, hence, need for recognising and harnessing these skills are the need of the hour. To demonstrate this, below, the case of RPL of Construction Worker in India, an initiative of DGE&T, MoLE is described and analysed.

Case Study: Construction Sector in India

With an estimated USD$ 1 trillion planned investments, in the construction sub-sector holds immense potential for employment generation (Economic Survey, 2016).The profile of those employed in the construction industry is skewed. The industry is predominantly stationed with male workers (about 85 percent) and are migrated from rural areas (about 74.6 percent), largely belonging to the age group of 15-59 years (Economic Survey, 2016). Among these, approximately 28.4 percent of male workers have received Primary education and 13.6 percent workers from the rural areas possess formal and/or non-formal training (Economic Survey, 2016).

The construction sector in India, is no doubt an area where majority of the migrants and the urban population, are dependent on their livelihood and growth, respectively. However, the challenges are in sustaining these dependencies – firstly, demand for skilled labourers to address the ever-increasing demand for workers for the construction industry one hand, and availability of labourers among the un-skilled or semi-skilled rural migrants on the other. Secondly, providing skill-based training to ensure efficiency and better emoluments for rural migrants to sustain their livelihoods in urban centres.

In the following section analysis of the latter and its relationship with migration and skill development, are discussed with reference to case of Director General of Employment and Training (DGE&T) ongoing interventions for Recognition of Prior Learning of Construction Workers. The case in point provides an overview of a policy intervention in unpacking the complex link between rural migration, skills and employment, arguably, a robust link to alleviate poverty and addressing the problem of rural migrants in urban India, in particular.

The basic purpose of the DGE&T intervention is to react to the growing significance of construction industry and the challenge in addressing the issue of exodus of rural population to urban areas, particularly when majority of the rural migrant population lacks requisite skills to sustain themselves in urban areas. According to DGE&T, majority of these labourers lack skills, but have some experience working in the

construction sector. Such experiences are in some cases reflects in their engagement with Rural Employment Guarantee Schemes of the government and/or are acquired by self-practice or observations. With their respective strengths and weakness, the DGE&T in 2015 initiated the process of certification for recognition, provision and upgradation of their prior or existing skills. The competency led Recognition of Prior Skills certification framework proposed by the Directorate, in alignment with the National Skills Qualification Framework (NSQF).

Key features of the DGE&T RPL intervention in Construction Sector

The skill recognition and upgradation initiative is envisaged primarily at the worksite led recognition and training intervention considering the accessibility element vital for the profile of the construction.

Training partners (both from public and private) anchor's the tie-p's with various construction industry partners and establish Training Centres at their work site to facilitate assessment and training of the current workforce.

The DGE&T has identified various trades for skill development or training for the workers on the construction site. Following the list of trades provided for the workers – Bar bending, Masonary, Shuttering carpentry, Plumbing, Painting and Scaffolding. Construction workers registered with Labour Welfare Boards or their eligible family members, across India.

The models, suggest that the beneficiaries would be shortlisted during preliminary interviews before putting them on assessment. During preliminary interviews, they would be asked few questions relating to their trades acquired (if any) from their experience. Based on the outcome, the beneficiaries could be sent for assessment or further training to upgrade their existing skills. Following assessment, worker's eligibility levels (1 or 2) are determined. Further, the 'Skill Gap Training Process', based on the level suggested, is provided by designing a course content following which training and assessment of the training is done, with final assessment. An assessment indicates, providing certification to the candidates based on assessment scores (detailing the training for the respective trades). Certificate is the hard copy of DGE&T approved competencies in respective trades. The certificates illustrate specific grades earned by the worker, at the end of the training.

The project has been initiated across four districts of Madhya Pradesh-Bhopal, Indore, Gwalior and Sehore. In total, 19 sites have been identified across 04 districts for the pilot phase. The project is being implemented as per DGET guidelines with 02 training providers (Bhaskar Foundation &Infrastructure Leasing & Financial Services Limited (IL&FS)), 01 assessing body (Star Projects Pvt. Ltd.) and a certifying agency (Construction Sector Skill Council of India). The pilot project is being funded by the Madhya Pradesh Board of Construction Workers (MPBoCW).

The overall mode of recognising, training and certifying skills of the workers is foolproof. The initiative of DGE&T has been commendable; however, the impact of this on rural migrant is still not evident across the country. This gap between policy and its impact in this regard, needs to be studied. Such a study is not the focus here, describing the case of RPL intervention in the construction by the Government (DGE&T), has been emphasised here.

Analysis

The complex relationship between migration, employment and skill development in the equally complex and competitive labour market is discussed above. The case description of DGE&T RPL initiative in the construction sector, the aforementioned relationship is examined. Below, an analysis of this is discussed.

With an increase rural to urban migration (see table 1 above), mostly, in search of employment and survival the issue of unemployment and poverty is further aggravating. Responding to this, many governments in the past have actively engaged in providing pro-welfare reservation policies along with vocational training institutes, to increase the number of employment and reduce existing rate of unemployment. Currently, the challenge of unemployment is complicated, it is not the same as few decades ago, new entrants into the unemployment scenario and the complex labour market conditions demand new interventions and new players in enabling these interventions.

From the profile of the rural migrant's, it is evident that the level of education and skill levels are abysmal, at least in the majority of them, given the demands for 'skilled labour' in the period of competitive labour market. Given this context, the need here is not to create and provide employment, only, but to ensure better employability among the migrants' adults, especially the rural to urban migrants.

The number of rural-migrants is increasing; however, the pace of accommodating and assimilating them into urban conglomerations is slow. Such a phenomenon is the root cause for unemployment, proliferation of slum-dwellers leading to poor quality of life. Given such a condition of life, the migrants are unable to participate actively into the socio-political realities of the (urban) locality, curtailing basic right of a being a 'citizen'.

The DGE&T intervention towards RPL for construction labourers responding to the growth of construction industry are significant. There is also a need for modular interventions in this regard in alignment with National Skills Qualification Framework (NSQF). The 'employability' factor as an element of empowerment and self-substance seeks further impetus, from not only government sector, but private (industries/corporate) and non-governmental organisations in the country. The DGE&T in the report on 'RPL of Construction Worker' mentions about two different (key) segments

within the construction section – buildings (housing, commercial, institutional and so on) and infrastructure (road, rails, dams and so on), however, closer look at the framework of RPL – while determining the trades for skill upgradation and defining the Competency Based Assessment and Training – does not emphasise on the differences in the trades and its assessment across two segments with the construction sector, In other words, the trades and assessment of these trades based on RPL are generalised for construction and infrastructure segments within the construction sector. The skills and competency required by the construction worker in infrastructure or/and building related work might be similar, but they are not the same. Arguably, such generalisations could provide employment to the worker based on prior skills, however it could make him/her less employable or unemployable, a feature necessary to obtain and maintain desired employment, than sticking to what is given. Freedom to choose one's employment, based on skills and passion is more benefitting than coercion.

In addition to limited scope of intervention, hitherto, the DGE&T modules for construction workers, have provided some respite for the rural migrants to assimilate (though slow) into the urban context. However, the number of migrants is increasing at a rapid rate so is the need for RPL and skill development along with urbanisation and unemployment, in the country. More interventions in near future are need of the hour.

Conclusion

In summary, migration and skill deficit are challenges that young India is exposed to in the contemporary era. Similarly, the opportunities provided by the young India, in terms of 'demographic dividend' and economic growth are also a reality today. Such an enigmatic situation has unpacked many facets related to migration, employment, skill development, and urbanisation and so on. In this chapter, a conceptual overview of these facets in line with existing practices to overcome the challenges mentioned above is discussed. It is argued that the harnessing the 'demographic dividend' and adopting the practice of effective RPL practices, the ongoing crisis in India can be addressed.

The chapter notes that the relationship between skill development and employability for migrant population is strong and so is the case for the country's development and its sustainability. Such a relationship is substantiated by examining the case of Recognition of Prior Learning of Construction Worker established by the DGE&T, MoLE, GoI.

The conclusion drawn in this chapter needs to be tested further on the 'field'. Interviews and field observations of practices related to RPL sessions, training sessions and interaction with migrant workers could enrich the insights already drawn from secondary data sources. The arguments, mentioned above are drawn

from the conceptual framework, incites need for further investigation to examine the complex relationship between migration, skill development, employment and economic growth in India.

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How the Adult Literacy Skills Measured in India

Arunima Chauhan

In societies dominated by written word, literacy is fundamental requirement for citizens of all ages in whole world. Literacy empowers the individual to develop capacities of reflection critique and empathy loading to sense of self-efficacy, identity and full participation in society. Literacy skills are crucial in all aspects of life such as parenting, finding and keeping a job, participating as citizen being an active consumer, managing one's health and taking advantage of digital developments both socially and at work. It is central to personal wellbeing and social development, and contributes to economic independence (EU high level group, 2012)[17].

Improving adult literacy serves as a stepping stone not just to further education but for improving learning outcomes of their children, better employment, greater social inclusion, active and informed citizenship and more fulfilling lives. The personal benefits of literacy for adults are increased self-esteem and self-assurance, self-awareness of capabilities, and consequent empowerment and confidence to improve personal and professional life. For the holistic development of a nation it is very necessary that the whole population young, adult, women, marginalized all become literate.

According to Kofi Annan, former Secretary General of UN literacy is bridge from misery to hope. It is a foundation to build a more sustainable future for all (Irina Bokova).

In India despite numerous efforts made towards achieving 100% literacy, it is still a distant dream. Even after number of literacy programs were implemented, there are 268 million adult illiterates. As per the recent UNESCO's Global Monitoring Report based on the current trends, India will be able to achieve Universal Primary Education in 2050, Universal Lower Secondary Education in 2060 and Universal Secondary Education in 2085. This means India will be more than half a century late to achieve the deadline of 2030 Sustainable Development Goals (IAEA newsletter, Sep 2016). In such situation lifelong learning has an important role to play in bridging this gap.

This transnational essay is an effort to answer the following questions: What is literacy? What is lifelong learning? What is the importance of lifelong learning? What are the various policies and programs in India for promoting lifelong learning? Which institution played crucial role in taking the lifelong learning ahead? What role do the media play in propagating lifelong learning? How is the lifelong learning measured in

India? How is lifelong learning measured in rest of the world? What is the role of various organizations like Organisation for Economic Co-operation and Development (OECD), European Community (EC), National Institute of Open Schooling (NIOS), etc. in assessment of literacy? How the assessment tool is developed? What are the steps in whole assessment process? How do they contribute in strengthening the lifelong learning?

Media coverage, Policy and Programmes on Lifelong Learning in India

Spread over 3,287,263 Km with a population of 1.2 billion, India is the seventh largest and second most populous country in the world. But the literacy rate in India is still a matter of concern. We have attained a literacy rate of 73% in 2011 from 18.33% in 1947, but the rate of increase has been rather slow (Census, 2011)[11]. The growth in literacy rate is not the result of formal education system only. The informal and non-formal education played an equally important role. Adults who were deprived of literacy were brought back through lifelong learning and continuing education. Currently lifelong learning is being used as an umbrella term to cover basic literacy, post literacy, continuing education and extension programme of different organization, refresher courses of professional bodies, private institutions & business homes but not conceived as an overarching framework of learning (Shah, 2007)[9].

What Is Lifelong Learning? An important focus of Sustainable Development Goal (SDG) is 'Lifelong Learning opportunities for all'. Lifelong Learning comprises all learning activities undertaken throughout life with the aim of improving knowledge, skills and competencies, within personal, civic, social and employment-related perspectives (UIL, 2015). However lifelong learning has often been more narrowly associated with adult education, especially training to help adults compensate for poor quality schooling (UNESCO, 2000). The post-2015 development agenda conceives of lifelong learning as a process, one that begins at birth and carries through all stages of life. This approach to education incorporates multiple and flexible learning pathways, entry and re-entry points at all ages, and strengthened links between formal and non-formal structures, including formal accreditation of the knowledge, skills and competencies acquired through non-formal and informal education. Lifelong Learning is more than a longitudinal description of an education system that runs from cradle to retirement and beyond; it is an organizing principle, intended to improve people's quality of life.

Lifelong Learning is not a new concept for India. We can find its presence throughout the history of Indian society & culture. Emphasis on lifelong learning can be found in sacred of Indian viz Vedas, The Upanishads, Dharmasutra. During ancient times temples were centres of learning as they held public meetings, philosophical debates. Later on eminent leaders like Gandhi, Tagore espoused the cause of education through their speeches and writings. Social reform societies like Brahmo Samaj, Arya Samaj, and Aligarh movement played an important role in creating

literate environment (Shah,1999)[7]. We can't deny the fact that during 1980's & 1990's lifelong learning in India was equated with adult literacy mainly because of the massive number of illiterates.

Table – 1
Changing concept of Adult education India

Approaches	Cycles & periods	Key Concepts	Main Programmes
Traditional & Religious	First Cycle (1882-1947)	Basic Literacy	Night Schools, Social Reform Movements
Life-oriented	Second Cycle (1949-1966)	Civic Literacy	Social Education
Work-oriented	Third Cycle (1967-1977)	Functional Literacy	Farmers Education and Functional Literacy Programme, Shramik Vidyapeeths
Social change	Fourth Cycle (1978 till date)	Developmental Literacy	*National Adult Education Programme* *Mass Programme of Functional Literacy* *Total Literacy Campaigns* *Continuing Education*

Source: S.Y.Shah,1999. *An Encyclopedia of Indian Adult Education*, New Delhi: National Literacy Mission, Government of India.P-5

Introduction of National Adult Education Programme (1978) shifted lifelong learning from mere eradication of illiteracy among adults to broader terms. Government of India (GOI), 1988 stated that *aspects like self- reliance in numeracy becoming aware of the cause of one's deprivation and moving towards amelioration of conditions through organization and participation in the process of development and acquiring skills to improve the economic status and general well-being and imbibing the values of national integration, conservation of environment, women's equality, observance of family norms are all part of lifelong learning. Lifelong learning is the cherished goal of the education process which presupposes universal literacy, provision of opportunities for youth, housewives, agricultural and industrial workers and professionals to continue the education of their choice at the pace suited to them* (GOI, 1986)[2]. National Policy of Education (NPE) followed by National Literacy Mission (NLM)(1988) revitalised the whole lifelong learning in practice. Total literacy Campaign, Post literacy campaign, and Continuing Education (CE) proved to be a boon for lifelong learning. It touched all the aspects required for personal social &economic development. It introduced Equivalency Programme, Income Generating Programme (IGP), Quality of Life Improvement Programme, and Individual Interest Promotion Programme (Shah 2006)[8]. Equivalency Programme was meant for neo-literates & school dropouts to bring them whereas IGP was for acquiring or upgrade vocation skill, *Jan Shikshan Sansthan* (JSS) also played vital role in supporting CE for vocational training. *Saakshar Bharat* (2009), a new variant of NLM was launched on the

International Literacy Day, 8th September, 2009 with the following goals: to raise literacy rate to 80%, to reduce gender gap to 10% and minimize regional and social disparities, with focus on Women, SCs, STs, Minorities, other disadvantaged group (Saakshar Bharat Mission 2009)[12]. It was not always the government that worked for lifelong learning but many institutions also played very important role in promoting lifelong learning.

Lifelong learning and Institutions

Although there are several universities in India offering a variety of programmes, in Delhi the two universities viz; University of Delhi and Jamia Millia Islamia has been very active in the field. The Department of Adult Continuing Education & Extension (DACEE) of University of Delhi had its beginning in the Adult and continuing Education cell in 1976. It was upgraded in 1982 as the centre for Adult continuing Education Extension with the aim of planned involvement of the university and colleges in community extension activities. The department was accorded statutory status as a full-fledged department in 1985. In 2014 it started full-time degree course at Master's level in Lifelong Learning (du.ac.in accessed on 11th Jan 2017)

The DACEE of JMI came into existence as Centre of Adult continuing Education & Extension in 1982. In 1990 with the introduction of Master's Degree in Extension Education CACEE became DACEE under the Faculty of Social Science. It is the first university in India to start a Master's degree in Extension Education. The Department now performs three fold activities:- Teaching, Research & Extension. The DACEE had been actively organizing adult literacy program through adult education centres in different communities around Jamia in order to prevent the neo-literates from reverting back to illiteracy. (jmi.ac.in accessed on 11th Jan 2017).

 Among the non-governmental organizations in India, Indian Adult Education Association (IAEA) established in 1939, is the pioneer institution which has been promoting lifelong learning. IAEA organises Adult Education Conferences, Seminars, Workshops, Symposia, Round Tables, Group Discussions, etc., on different aspects of adult education and allied areas in different parts of the country. They serve as an important forum for exchange of views and sharing of experiences. It undertakes surveys and research studies on its own as well as in collaboration with other agencies.

IAEA is an empanelled agency for evaluation with National Literacy Mission. It has already conducted 42 external evaluations of Total Literacy Campaigns, Post Literacy Programmes, Continuing Education Programmes, Jan Shikshan Sansthans, Population and Development Education Programmes implemented by State Resource Centres. It also publishes IAEA Newsletter, Indian Journal of Adult Education, Proudh Shiksha, Population Newsletter and Journal of Population Education. (iaea-india.org accessed on 11th Jan, 2017)

Mass Media in Lifelong Learning

According to Directorate of Adult Education, India has produced several audio-visual programmes which are telecasted and broadcasted on adult education. Coverage area of these programs is very large as they are being broadcasted and telecasted in almost all the regional languages. The audio-visual programmes on adult education are presented under certain categories such as video programme, video spots, audio programmes and audio spots.

Among all the languages highest number of programmes are telecasted in Hindi (206 video programme) followed by English (63 video programme). Video programmes are telecasted in all the regional languages but video spots are not telecasted in Jaintia, Malayalam, Nagpuria, Rajasthani and Urdu. Audio programmes are broadcasted in all the language except English, Jaintia, Marathi, Malayalam, Nagpuria, Oriya, Punjabi, Rajasthani and Urdu.

Other than this, Doordarshan (National television) has currently 26 channels, covering 90.7% of geographical area. It has been telecasting regular programmes on adult literacy, farmer's education, health awareness, women's development, yoga, culture etc. which have been very effective in meeting the educational needs of masses. Two of the popular Adult Education programmes were *Chauraha* (The cross road) and *Khilti Kaliyan*, (Blossoming buds) telecast during 1990s. The first exclusive National Education TV channel *'Gyan Darshan* was launched in January 2000 with Indira Gandhi National Open University (IGNOU) as a nodal agency. The launching of EDUSAT - world's first exclusive satellite for serving the education sector in 2004 has in fact given tremendous boost to the Lifelong Learning programmes in the country (Shah, 2007)[9].

News related to adult literacy is published more in regional newspapers than in national newspapers. National newspapers give attention to adult literacy especially at the time of International Literacy Day celebrated every year on 8th September. IAEA publishes developments in adult education on a monthly basis in its Newsletter.

Despite these efforts, the base of lifelong learning in India continues to be weak, Due to lack of expertise and interest in lifelong learning and preoccupation with literacy program not much progress could be made during the five years (2007-2012). With the discontinuation of UGC funds to lifelong learning in July 2013 it will be challenging for the majority of Indian Universities to operationalize the policy guidelines. Almost after three decades, Government of India decided to revive its educational policy on education. The core objectives of education in the coming years should encompass four essential components – i.e. building values, awareness, knowledge and skills. But the success and failure of lifelong learning programmes can only be done through the assessment of outcomes which is done mainly by NIOS in India, which is discussed in the subsequent paragraphs.

Assessment of adult literacy in India

The periodical assessments conducted by the National Literacy Mission have brought out the success and outcomes of literacy programmes. Assessment programmes can also be instrumental in promoting courage and self-confidence amongst individual learners as they begin to recognize the level of their achievements in their attempt to attain an equivalency to formal education which would facilitate their vertical mobility for higher learning and understanding. Assessments not only provide feedback about the understanding and internalization of contents delivered to them but it also indicates the competencies and skills acquired by the learner from the learning process. Learner assessment is a process of ascertaining the outcomes of the programmes on two aspects; one, the proficiency level attained by a learner in achieving literacy skills (3Rs) and two, the empowerment experienced through participation in the programme assessment of literacy skills.

The basic literacy assessment in India is conducted by NIOS in collaboration with National Literacy Mission Authority (NLMA). The whole assessment programme is conducted on a large scale participation of various governmental and non-governmental institutions/departments ranging from national level to Panchayati Raj (village level self governing institution).

Main objectives of assessment of neo literates are:
- Assessing the proficiency levels of attained functional literacy skills (3Rs).
- Recognizing the level of achievements at basic literacy level through certification.
- Inspiring them towards a vertical mobility in education.
- Enhancing informal experience and provide equitable access to appropriate learning and life skills.

The assessment helps in evaluating not only the literacy skills of learners but their general awareness and empowerment too. This provides input for learner specific needs. Gained literacy skills facilitate learner's participation in lifelong learning process.

Principle of Assessment
(i) Assessment is done to encourage the learners so it is non-incursive and summative in nature.
(ii) All the basic literacy skills i.e. reading, writing, arithmetic are given equal weightage of 50 marks each.
(iii) Learners are allowed to learn at their own pace
(iv) Assessment is done by three level grading system i.e. A for 60% and above, B for 40-59% and C grade for less than 40%. Learners securing C grade are allowed to reappear in the examination to improve their level of competency.
(v) Grade sheet is a joint certificate of NIOS and NLMA. Grade sheet- cum- certificate is given to all the learners participating in the assessment.

Development of Assessment tool

The assessment tool is developed mainly by the NIOS with help of SRC's resource person. Summative assessment tool is developed first in Hindi then it is converted in the regional language by the SRC's. SLMA sends three set of question answer to NIOS which is finalised after the workshop conducted by Directorate of Adult Education. Assessment is done by a three hour written test which is conducted twice in a year. The test is conducted on suitable Sundays of March and August respectively. Learners can come for the test as per his/her convenience between 10 am to 5pm but the duration of test is fixed i.e. 3hrs.

Learners can register themselves in advance from the next day of previous assessment till 10 days prior to next assessment. In case the learner is unable to register well in time, his/her registration can be done through spot registration from next day of the last date of advance registration till the date of current assessment. Each registration is valid for five years (NIOS, 2017)[3].

Along with the above mentioned literacy assessment there are few other organisations which contributed to assessment at elementary level. Annual Status of Education Report (ASER) is brought out by the NGO *Pratham* since 2005. National Council Of Educational Research and Training (NCERT) has been conducting National Achievement Survey (NAS) since2001 for class 3, 5, and 8. It is also necessary to refer to *Gunotsav*, a mass assessment process, first introduced in Gujarat in 2009, but now also implemented with variations in some other states as well. A key focus of *Gunotsav* is to highlight the levels of student learning (with a focus on basic skills like reading, writing and arithmetic operations in the lower classes and subject knowledge in the higher classes) and provide systematic year-on-year data and insights to improve learning levels in a measurable way (*Report of the Committee for Evolution of the New Education Policy, 2016*)[6].

In India, the decennial census data remain the most widely acceptable and frequently quoted estimates of literacy. Besides, the National Sample Survey Organization (NSSO) conducts sample surveys once in every five years, usually in between two census years, to collect data on literacy status and other socio-economic characteristics of the population. The estimates of literacy by the NSSO can be viewed as the mid-term assessment of literacy in the country (Govind & Biswal, 2005)[1].

Assessment of Adult Literacy – the global perspective

When we take an overview of national regional and global trends over the past five decades we find that although there is an increase in the literacy rate throughout the world but it is more prominent among youths than adult. It is very sad to see that out of 758 million illiterates 2/3 are women. According to United Nations Institute of

Statistics data, goals of Education for all were missed by majority of countries. Now UN has adopted Sustainable Development Goal in 2015 with the pledge to ensure that all youth and a substantial proportion of adults both men & women achieve literacy & numeracy (UIS, 2016)[10].

Global education policy appears to be developing driven by the needs of the knowledge economy, and producing a shared emphasis on competitiveness skill development and employability linked to the extensive of monitoring of performance and target setting. The global education field is said to be dominated by transnational organizations like OECD & European Commission (EC). These two organizations had different approach in promotion of education. European commission was interested in promoting European culture and identity through education, but the economy pressures forced EC to change its education policy and make shift toward neo-liberal policy similar to that of OECD.

OECD steers education through monitoring of performance through Programme of International Student Assessment (PISA) and Programme for the International Assessment of Adult Competencies (PIAAC). The OECD brought global exposure to education in Europe and changed its discourse. PISA gave a new direction to assessment which consisted of competition and comparison. It changed the system of education from one based on local tradition to evidence and learning from others.

What Is PIAAC?

The Programme for International Assessment of Adult Competencies (PIAAC) is an international comparative survey successor to IALS (International Adult Literacy Survey) three waves during 1990's and Adult Literacy and Life skills survey (ALL) two waves during 2002-2006 (Hamilton, 2015). According to OECD, PIAAC develops and conducts the survey of Adult Skills. The Survey measures adult's proficiency in key-information processing skills-literacy, numeracy and problem solving in technology rich environments and gathers data on how adults use their skills at home, at work in the wider community.

PIAAC conceived literacy more broadly than IALS and ALL. Encompassing the domain of prose and document literacy (assessed separately in IALS & All) furthermore, in PIAAC literacy includes the reading of digital texts, in addition to the print based. The quality assurance and quality control procedures put in place for PIAAC are among the most comprehensive and stringent ever implemented for an international household based survey (Paccagnella, 2016).This international survey is conducted in over 40 countries and measure the key cognitive and workplace skills needed for individuals to participate in society and for economies to prosper (accessed from oecd.org on 12th Jan, 2017).

PIAAAC Survey is done by interviewing adults of age-group 16-65 years. 5000 respondents are selected from each participating country and they have to answer via computer and those who are not familiar with computer can be given paper pencil test. (accessed from oecd.org on 12th Jan, 2017).

PIAAC is used for collecting a broad range of information items that measure problem solving on technology rich-environment are only computer administered. Reading component tasks are only administered in paper & pencil mode. All participating countries are required to asses literacy and numeracy domain but problem solving and reading is option, including how skills are used at work and in other contexts, such as the home and the community. The survey is designed in such a way that can be administered in national language and is valid cross-culturally & cross-nationally (accessed from oecd.org on 12th Jan, 2017).

For assessing the use of skills PIAAC uses an innovative "Job-requirements approach". The employed adults are asked about the skills they use at their workplace and also how frequently do they use those skills at their workplace. While collecting information about skills used information about four broad categories of generic work skills. Cognitive skills, interaction and social skills, physical skills and learning skills (accessed from oecd.org on 12th Jan, 2017).

Cognitive skill comprises of reading, writing mathematics, and the use of communication technologies. Interaction and social skills cover collaboration and co-operation, planning work and use of time for oneself and others, communication and negotiation and customer contact. Physical skills involve the use of gross and fine motor skills. Learning skills cover activities such as instructing others learning (formally or informally) and keeping up to date with development in one's progression field. Respondents are also asked about the frequency and intensity of their reading and numeracy related activities as well as their use of ICT's at home and in the community (assessed from nces.ed.gov on 11th Jan, 2017).

The cognitive assessment under PIAAC is done by two methods: (a) Computer based Assessment (CBA) and (b) Paper based Assessment (PBA).

Computer-based assessment (CBA)

The computer-based assessment consists of the following parts, which are all automatically scored:

- *Information communication technology (ICT) core*: A set of easy basic computer tasks to assess basic functional computer skills necessary to take the main assessment on the computer.
- *Computer-based literacy/numeracy core*: A set of short, easy literacy and numeracy tasks to gather information about basic literacy and numeracy cognitive skills of the participants.

- *Computer-based literacy items*: The CBA literacy domain consists of 52 items based on the PIAAC <u>definition of literacy</u>. Of these 52 computer-based items, 30 come from IALS/ALL and will serve as linking items to equate results on PIAAC with results from IALS and ALL. The remaining 22 computer-based literacy items were newly created for PIAAC.

Literacy items (both CBA and PBA) ask participants to answer questions about texts that are drawn from a broad range of real life settings, including occupational, personal (home and family, health and safety, consumer economics, leisure and recreation), community and citizenship, and education and training contexts.

The questions or tasks using these texts are meant to assess three specific cognitive processes:

- Access and identify
- Interpret and integrate
- Evaluate and reflect
- *Computer-based numeracy items:* The CBA numeracy domain consists of 52 items based on the PIAAC <u>definition of numeracy</u>. Of these 52 computer-based items, 30 come from IALS/ALL and will serve as linking items to equate results on PIAAC with results from IALS and ALL. The remaining 22 computer-based numeracy items were newly created for PIAAC. Numeracy items (both CBA and PBA) ask participants to answer questions about quantity and number; dimension and shape; pattern, relation, and change; and data and chance.
- *Problem solving in technology-rich environments (PS-TRE) items*: The PS-TRE domain consists of 14 items based on the PIAAC <u>problem solving framework</u>. All of these items were newly created for PIAAC. All of the PS-TRE items were newly created for PIAAC specifically for testing participants' ability to manage tasks that can include multiple steps and, in some cases, multiple technology environments. For example, items may require participants to navigate between e-mail and spreadsheet environments to locate information and create a table which represents that information for a specific purpose. The PS-TRE tasks are all scenario-based, ranging from easy to difficult (accessed from <u>https:// nces.ed.gov/surveys/piaac/cba.asp on 12thJan 2017</u>).

Paper-based assessment (PBA)

The paper-based assessment consists of the following parts, which are scored by expert scorers:

- *Paper-based literacy/numeracy core:* A set of short, easy literacy and numeracy items that will gather information about the basic literacy and numeracy skills of the participants and serve as a basis for routing them to the literacy/numeracy or the reading components booklets.

- *Paper-based literacy items:* 24 literacy items, based on the PIAAC <u>definition of literacy</u>. Of these 24 items, 6 are paper-based only and 18 items are presented in both the paper-based and computer-based assessments. All literacy items are authentic, culturally appropriate, and representative of the purposes adults pursue in their daily lives at home, work, and in community contexts. As a set, they cover a range of difficulty from easy to hard.
- *Paper-based numeracy items:* 24 items, based on the PIAAC <u>definition of numeracy</u>. Of these 24 items, 4 are paper-based only and 20 items are presented in both the paper-based and computer-based assessments. Paper-based numeracy items cover the same areas as the computer-based numeracy items in terms of contexts, responses, mathematical content/information/ideas, and forms of representation.

Reading Components (RC): The <u>reading components domain</u> of PIAAC is designed to provide information on the reading abilities of adults with limited English literacy skills. The RC domain includes questions about reading vocabulary (34 items), understanding the literal meaning of sentences (22 items), and comprehending multi-paragraph passages (44 items). These questions are designed to provide information about the skills of the target population (i.e., lowest performers) and to capture data on timing and accuracy. In this way, reading components measure the accuracy and fluency (as shorter response time) of respondents.

Print Vocabulary questions present an image and four concrete word choices, where the participants must select the correct word choice that matches the picture. Sentence processing questions asks participants to make sensible judgment about accuracy of a sentence. Passage Comprehension questions present passages embedded with a choice of words to complete the passage (accessed from <u>https://nces.ed.gov/surveys/piaac/pba.asp assessed on 12thJan 2017</u>).

Conclusion

It is very sad to see that in a country like India, where lifelong learning is embedded in its history literacy skills and competency is still a major concern. Though various policies and programs have been made, implemented and evaluated but to achieve the goals of 100per cent literacy, skills and competency proper assessment of the outcomes of these programs is equally important. Learners in India are considered as literate after passing the assessment test but whether they are competent enough or not remains questionable because they pass the assessment test even with a C grade and reappearing in the examination is completely their choice. The structuring of the assessment process in India is satisfactory as it involves organizations of different level and all levels in this process but the output of assessment is not satisfactory. India needs to participate in international assessment conducted by organizations like OECD and EC as it will help India in making its learners at par with the learners throughout the world. In today's globalized world cross national

assessments are very important. India needs to participate in PIAAC as it will help Indians to:

- Identify the gaps in key competencies which hindering personal & society's success.
- Assess the impact of competencies on various aspects of life such as social, economic, educational, etc.
- Assess the importance of education and training in making individuals competent to fulfil their social & economic demand
- Identify the risk population &
- Identify the links between key cognitive skills and variables

But before doing the PIAAC assessment it is very necessary that PIAAC's assessment tools are developed according to the need and requirements of the learners in India e.g. computer based literacy assessment appears to be vague in India, where computer is still not within the reach of everyone. We can say that Indian learners have miles to go before making education for all a reality or achieving SDG's.

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The Catalytic role of Adult Literacy in Transforming the Lives of Women in Rural India

Khaleda Gani Dutt

This doctoral thesis explores and investigates the critical role of Adult Education and Literacy in transforming the lives of rural and marginalized women in the selected regions in India. Adult Literacy is envisaged as a powerful vehicle to empower and equip people with the required life skills paving a path out of poverty. The Global Education Monitoring Report 2016 (UNESCO, 2016) cited the global adult illiteracy rate in 2014 to be 15 percent which was equivalent to 758 million adults. Out of which 63 percent of adults unable to read and write are women. In both Southern Asia and sub-Saharan Africa around one in three adults are illiterate whereas in Northern Africa and Western Asia the proportion is nearly one in five. In Afghanistan figures reveal that literacy rates for males are more than twice than those of women (UNGEI, 2016).

The Socioeconomic and Caste Census painted a stark picture of India's poverty and deprivation predominant in rural areas. A survey that included 300 million households highlighted an overwhelming majority i.e.73 percent reside in the villages living below the poverty line (Katyal, 2015). The survey indicated that less than 5 percent of the rural population earn enough to pay taxes and less than 10 percent have salaried jobs. In the report released by the Indian Government Planning Commission it was estimated that out of the 260.5 million individuals in rural India, 30.9 percent were living below the poverty line. The report also mentioned a decline in the poverty ratio from 39.6 percent in 2009-10 to 30.9 percent in 2011-12 in rural India and from 35.1 percent to 26.4 percent in urban India. During this period the all-India poverty ratio fell from 38.2 percent to 29.5 percent and lifted 91.6 million individuals out of poverty (Government of India, 2014). The India Human Development Report (IHDR) released in 2011 had showcased that in rural areas an average 28.3 percent of the population lives below the poverty line out of which 36.8 percent belong to the Scheduled Caste (SC) compared to 39.8 percent in urban areas. Poverty continues to remain a chronic condition for almost 30 percent of India's rural population and is deepest among members of SC and Scheduled Tribes (STs) in the country's rural areas.

Poverty is deepest among members of SCs and STs in the country's rural areas. In 2005 these groups accounted for 80 percent of poor rural people, although their share in the total rural population is much smaller.

The Census of India 2011 further elaborated that 27 million households, constituting 11 percent of the households in the country were headed by women (Chandramouli, 2011). The responsibility of these households rests on the shoulders of women-widows, single unmarried women, deserted or divorced women. These women come from the poorest of the poor households, socially excluded and are the most vulnerable. Poverty among female-headed households are attributed to intra-household discrimination against girls in education, which leaves them with fewer skills than boys, contributes to fewer economic opportunities for women, and consequently higher poverty rates among female-headed households. Studies show that nearly 40 percent of women-headed households do not possess permanent shelter, around 45 percent of women-headed households live in one-room premises, and 29 percent of women-headed households do not possess any assets such as a radio/TV/telephone/bicycle/scooter (Patel, 2009).

Aim and Objectives

The overall aim of this research is to examine the role of Adult Education and literacy in changing the lives of marginalized women in rural Rajasthan and West Bengal in India.

The specific objectives are: 1) to trace similarities and differences in the socio-economic context of the rural women in Bhilwara District Rajasthan and Howrah District West Bengal, 2) to identify and analyze some of the key factors that contribute to and sustain women's access to adult education, 3)to study the linkages between education, empowerment and transformation and 4) to examine the role of stakeholders and the civil society in sustaining women empowerment and transformation in Bhilwara District and Howrah District

Significance of the Study

Within India there are wide inter-state variations regarding different indicators, such as Income Poverty, Total Literacy Rate, Infant Mortality Rate, Sex Ratio, and many more. Unlike West Bengal with a literacy rate of 76.26 percent; the literacy rate in Rajasthan cited at 66.11 percent in all the three categories (total, male and female) fell below the national average of 74.04 percent (Census of India 2011a; b). By comparing the two cases i.e. Howrah District in West Bengal and Bhilwara District in Rajasthan the study demonstrates that it is important to understand the social and cultural traditions that often hinder women from becoming literate. Most research focuses on program evaluation of adult education but this study analyses, informs and explains some of the reasons behind women wanting to empower their lives through education and the challenges they have to overcome to gain status not only within the society but in the households. The two cases also draw attention to the inter-regional cultural diversity.

Limitations of the Study

The Indian subcontinent is a land of cultural and geographical diversities which is reflected in the number of languages spoken across the country. The states of India not only have their own regional language but incorporate numerous dialects spoken by the rural, indigenous and the tribal population.

The selection of informants and the statistics based on the interviews are not representative in a statistical sense. Since, it is a comparative case study general conclusions about the entire population cannot be drawn from this study. However, it identifies tendencies that can be generalized to people living in the same situation (Goetz & LeCompte, 1984). A conscious effort has been made to forge a conceptual link between the macro and micro levels throughout the study by using the concept of 'gender', which by itself embodies both societal and personal dimensions

Literature Review: Previous Studies on Literacy and Transformation

Studies show that by investing in skills for socio-economic empowerment of women, identifying the gender barriers that prevented girls from attending schools and by promoting employment opportunities and income generation for both men and women in Asia and Africa ameliorated the lives of women and their families. United Nations Industrial Development Organization (UNIDO Gender) 2013 envisions a world where economic development is inclusive, sustainable and equitable. By targeting sectors with a high potential for wealth creation, food security or export promotion UNIDO has worked in countries namely Bolivia, China, Pakistan, Panama and Peru. By providing technological assistance to rural women cooperatives involved in Shea Butter production in Mali total sales of the groups doubled and women's income increased significantly. At least 1200 women have received training in 160 women's cooperatives involved in Shea Butter Production. Over 10,000 women were trained in Pakistan in production techniques for textiles, gems and mosaics and including business management and entrepreneurship. In addition UNIDO Women's Entrepreneurship Development program helped over 6,000 women set up new enterprises with 680 women turning 'master trainers' who continue to deliver the programs training courses. Whereas, in Morocco the UNIDO Entrepreneurship Programme assisted over 400 women by improving the competitiveness of small scale olive production, textile and food and vegetable dying production which are all managed and owned by women. All women entrepreneurs were trained in business management, good manufacturing, traceability systems that resulted in a 40 percent increase in productivity and a 50 percent increase in income. Evidence-based research drawn from Africa, Asia and the Pacific, Latin America and the Arab States reiterate that transformation and empowerment are interwoven. They also stand testimony to the fact that "to work", literacy programs must be participatory, gender sensitive and relate to the needs of the rural, marginalized women. The advancement of women has been an area of concern for the global community taken up by international

organizations, national organizations and non-governmental organizations working at the grass roots. Undoubtedly, education is the pathway to success as has been demonstrated in the documented cases. The projects and the initiatives are launched keeping in mind the contextual history of the region which accounts for its success. However, what studies often fail to point out are the intangible power relations existing within households and in the society. In her work on Gender and Development Kabeer (2005) points out that the positive attributes to education as empowerment is likely to be conditioned by the society it represents and the social relationship it embodies. The intangible power relationships are often missing from these studies-negotiations which women have to make within their private sphere to have access to education and be empowered. This study takes up these sensitive issues through the interviews, collates the information and depicts the multi-dimensional nature of inequalities. It looks at the conditions needed to bring about the transformative change in the lives of women and their agencies that allow them to become the change agents.

The Theoretical Framework and the Conceptual Construct

Paulo Freire (1970) placed literacy development in the context of personal empowerment. When education and training not only provide people with the necessary knowledge and skills for development of the people but also empower people with knowledge and skills they need in order to take charge of their lives and bring about changes in the society in which they live, it takes on a new and powerful meaning. In this new paradigm, people can take control of their lives rather than just respond to the things imposed on them. The Indian Diaspora is woven around castes, languages, religions–a young nation boasting of an ancient civilization in which inequalities are deeply ingrained in its culture and traditions. Although critical government interventions have succeeded in increasing the literacy rate of women in both urban and rural areas general household characteristics such as income, caste, occupation and education attainments of parents still continue to determine access, attendance, completion and learning outcomes (Ramachandran, 2009) of girls and women from severely disadvantaged communities. The enumerated theories on Gender and Development, Theory of Representation, Intersectionality, transformative learning and the conceptual constructs on power and the capability approach engages with gender relations as a category and accentuates the need to focus on social relations. This shifts the lens from studying 'women' only to understand how 'women' are placed in their status within households and the community.

Methodology

The study explores the relation between social norms, societal structures, social entities, policy legislations and the role of adult education in empowering rural and marginalized women. The qualitative study is interested in illuminating that the rich and diverse fabric of the Indian society based on generations of historical and cultural traditions plays an intrinsic role in shaping the lives of its women. The field work

undertaken in Bhilwara District Rajasthan and Howrah District West Bengal attempts to interpret people's behavior, actions and opinions within the context of their natural environment or surroundings. The fifty-two interviewed informants chosen debated about the catalytic role of adult literacy and empowerment. In the semi-structured interviews and focus group discussions questions were raised around socially constructed roles and power relations to provide valuable insights of the key issues to be discussed. A qualitative and comparative case study approach is selected to illustrate the uniqueness of the regional location studied simultaneously pointing out their similarities and differences. The locational comparisons draws out the diversity of the regions, socio-economic context, impact of adult education on rural women and the emerging opportunities. The study compares whether or not adult literacy has been a key factor in transforming the lives of women in Bhilwara District in rural Rajasthan and Howrah District in rural West Bengal. The primary reason for choosing multiple regional settings is to reflect the diversity of the Indian subcontinent. The language skill of the researcher was critical to be able to communicate with the participants in their languages spoken in the areas i.e. Hindi and Bengali having a direct impact on the quality of the findings in the study. The semi structured interviews and focus group discussions brought out significant patterns about the social systems experienced by the informants. The interview guide helped in constructing the themes and sub themes to analyze the interviews. The themes relate to the research focus built on codes identified in the transcripts. Based on the data the researcher was able to generate the theoretical understanding relating to the research focus which is on gender, education and transformation/empowerment. In this study one of the main themes that was identified was 1) Ideological critique, 2) Education impact and 3) Transformation which lead to further subthemes such as gender, class, rural, women, literacy, social, political and economic impact, empowerment. Narratives have also been included in the findings to illustrate the cases under scrutiny and an attempt is made to keep the language of the respondents as far as possible in the narratives cited. To strengthen the qualitative case studies triangulation is used to enhance the validity of the research findings. This strategy is used to eliminate the presence of bias and to corroborate to the findings. The three forms of triangulation used are 1) data triangulation from focus group discussions and semi-structured interviews 2) theoretical triangulation and 3) methodological triangulation.

Results

Most of the informants were below the age of forty from families with minimum four to six members. The majority acquired literacy through adult education (e.g. such as income generation training, life skill training) organized by their group leaders. In Bhilwara District, Rajasthan the majority worked at construction sites or was part time laborers. Whereas, in Howrah District, West Bengal a large number of the informants were members of a micro-credit organization. In spite of variations in terms of caste, age, educational status of the informants most of them shared similar backgrounds, challenges and experiences. The candid interviews revealed their trust

in me as a researcher which has been upheld in the narratives transcribed by me from Hindi and Bengali into English for comprehension and for a wider outreach. The data assimilated from national documents reaffirm that along with child marriage, domestic violence and being widowed strongly signal that interventions at grass roots are critical for strengthening the voice of women, creating an awareness of their rights and duties and working towards their emancipation and liberation. Child marriage in the narratives has been associated with religious practices, cultural traditions and poverty. The main reason behind it being still widely practiced specially in the tribal areas visited is the economic benefits received by the bride's family. This was proclaimed to be the fundamental reason that has sustained the practice. The most common reason being widowed in this study arose from being married to older men and poverty. The women interviewed were hesitant and reluctant to remarry since they 'would not find suitable grooms'. Only old men would approach them' and they refused to repeat their traumatic experience all over again. They spoke frankly about the ordeals suffered at the hands of household members who often mistreated them and took away the little possessions (jewelry, money) that they had received as gifts from relatives. The factors responsible for domestic violence were the necessity to show control over women, alcoholism and when wives refused to part with their savings or tried to assert their opinion. These incidents reveal the intangible power relations that define women's status at home and her status within the family. Documents on the Government of India's website recognize domestic violence as a serious offence punishable by law. Most women refrain from lodging complaints because it would bring shame to the families and the social stigma attached with it. Both West Bengal and Rajasthan fall within the top ten states reported to have the highest percentage of domestic violence. The narrations also suggest the importance of bringing men into the picture. The benefits of education signals a change in the mind set of family members indirectly leading to social benefits such as education of children, poverty reduction and in softening of traditional roles. From the voices encapsulated in this section one can infer the vital role of the civil society. The informants were able to overcome their hurdles due to helping hands that guided them towards a better and brighter future one that they were fully in charge of and were in control of their destiny. Society's actors are in a position to create political space for reform by building coalitions to increase the demand for change. Social mobilization can widen the platform of support and reach the unreached. Social coalitions are fruitful pacts that enable policy to reach the marginalized women whom they were designed for. In Bhilwara District Rajasthan and Howrah District West Bengal the invaluable social alliances continue to lift women and children out of poverty.

The findings showcase that no single factor can explain changes in gaining power or become empowered. In the narratives any one factor could act as the catalyst for change. For example changes in marital and family conditions create opportunities for some women "when husband supports his wife" or if there is an additional source of income and "the mother can pool her resources to send daughters

to school". For some it could also be "divorce" to escape domestic violence from their husbands, and if she is a widow having access to the various support mechanisms available from a public-private partnership (PPP) and a stepping stone to pathways of empowerment. By amplifying their voices and increasing their ability to make choices are yielding broad transformative dividends for them and their families, communities and societies. A broad consensus among the informants revealed that both men and women chose to gain from the education. Achieving literacy would secure a better future for their children, access to livelihoods opportunities and ameliorate their living conditions. Many also pointed out that it is imperative that both men and women together need to make decisions regarding their children and it is not the lone responsibility of the mother. Women having husbands with basic adult education were more involved in decision making surrounding their children's education and encouraged to work. I noted that in these cases there was a unanimous consent that children should complete their education prior to getting married. The interviews disclosed the evidence of empowerment, the sources of transformation and brought to the foreground the contextual setting to explain the gendered roles.

Analysis and Discussions

The Indian subcontinent is a cultural mosaic and is defined by its heritage, linguistic regional affiliations which are anything but homogenous. The concentration of socially and economically deprived groups i.e. the SCs and STs also indicates the varying magnitude and breadth of socio-economic exploitation in the different regions of India. In this study I have tried to depict this inter-regional diversity through the contextual setting which gives us a glimpse of the multicultural and multi-plural society of the country. Therefore, qualitative comparative analysis is vital to elucidate cross case patterns to steer policy focus on socio-economic contexts to have a sustainable impact. I found that the patriarchal settings in the districts of Bhilwara and Howrah influence justify and normalize women's role in society. It however varies between contexts and locations and is significantly mediated by additional social markers such as race, ethnicity, socio-economic positions, caste and religion (Kabeer, 1994; Stromquist, 2015). To understand the complexity of the gendered relations questions asked were about their status at home, their role as mothers and daughters and their family. The interview guide was constructed around three key areas –gendered relations, their views on the role of education/learning and transformation. Some of the key questions asked were: describe your household-your role, number of family members, your responsibilities and duties, number of dependents (if any); Has being exposed to adult education/literacy classes changed the way you think? If yes elaborate; define transformation in your own words. The critical points raised by the informants viewed transformation as control over resources, ability to take decisions and act in their own interests. The analysis manifests that empowerment and transformation are symbiotic and would also be associated with positive achievements in terms of the health and survival of their children. The changes in the power relations are the impact of education which reconstructs households,

community and societal relations. When women are empowered their opinions are valued by member of the society and in this case the Panchayat (elected body of the village). By learning to think radically some have approached the Panchayat to speak about problems that women face, spread awareness and necessity of getting girls into schools by talking to parents convincing them to send their daughters to school, standing up against early marriage and taking up arms against personal violence in unison. Access to adult education and literacy provided women the knowledge and skills to procure better lives and to be able to reach out to other women sharing similar lives to develop collective identity. Education and economic independence gave them the strength to act autonomously and challenge the status quo. As is evident in the narratives the economic dimension of empowerment provides women with the material resources (credit, food) in addition to the cognitive resources (education, information, and training) to bring about transformation. Households are often the center of power relations and play an invaluable role in structuring the chain of power relations i.e. the way women should be treated and the delegation of household chores based on seniority and hierarchical relations. The informal groups organized by women both in their locality (Rajasthan) and in the micro-credit organization (West Bengal) provide them with informal spaces. These spaces are vital for removing the barriers preventing women from exerting decision- making power in the formal arena. One could perceive in these discussions that informal associations enabled a more flexible environment, provided a less threatening space offering a more practical solution to specific issues that are less likely to cut along party or ethnic lines. The multiple sources of information gave not only more insight into the study. It complemented the documents studied both national and international which evidenced that education is the vehicle of transformation. The focus group interviews in both regions of the country accompanied by semi-structured interviews also yielded the same results articulating the intrinsic role of education to promote women empowerment for a better future. The theoretical alignment (refer to Chapter 3) emphasizes that adult education is intrinsic for women to respond to their socio-economic needs so that they can lift themselves out of poverty. It equips them to contribute and participate in their communities. The triangulated inquiry increased the validity and credibility of the study and facilitated to establish a holistic and contextual portrayal of this study could be captured by increasing the understanding of the social complexity prevalent in the Indian subcontinent. The analyses draws out deeper issues related to globalization that pointed out the necessity of integrating technology to improve the quality of lives in rural areas. All informants had cellular phones which made it easier for them to stay connected with each other, report to the organization (West Bengal) and step up the possibility of being reachable for manual work in Rajasthan. Mobile phones also contributed to the transformative impact. All the women declared that owning a mobile phone had increased their income and their access to economic opportunity. The resources reallocated to pay for a phone subscription were from other personal items. The narratives in this study emphasizes the need of educating the poor marginalized women in rural India. It also shares but does not generalize some of the common issues such as child marriage,

dowry, domestic violence, poverty found in the subcontinent that are responsible for women disempowerment. The analysis elucidate and relate to the common concerns which the Government of India faces in terms of caste, class, poverty, inter-regional disparity, diversity and outreach.

Conclusions and Suggestions

Education for Rural Transformation (ERT) is an essential component to eradicate hunger, foster women empowerment and reduce food insecurity for the most vulnerable population. For the rural poor knowledge and capacity building offers them a life out of poverty, builds women's identity enabling them to participate fully in social and political life. Research indicates that increase linkages between adult education and economic independence have impacted fertility rates, improved health and sanitation practices and weakening traditions that dis-empower women (World Bank, 2014). Rural transformation is a cornerstone to a sustainable future. In this transformation 'women' play a pivotal role (FAO, 2013) as they are central to the development of rural areas and bolster national economies.   The measures taken by the organizations and individual initiatives provided opportunities for women to discuss their problems with others and exchange viewpoints in their meetings (Stromquist, 2002). In West Bengal these organizations provide the platform and "make visible hitherto hidden categories of women have needs and lay bare the connection between different aspects of women's lives" (Kabeer, p. 230, 1994). Whereas in Rajasthan concerted efforts of individuals enabled resources to equip the women to get back into education, and helped families to carve out a better future for their daughters. It signals the need to synchronize grass roots organizations with the 'well laid plans' of the government machinery and the international agenda to combat gender inequality. In spite of leading separate lives the women in Rajasthan and West Bengal shared a lot of similarity visible in their socio-economic background and their greater tendency to devote their incomes to family rather than personal welfare. It became evident in the study that personal income was intrinsic to their well-being-mental, social and political. In both districts the most critical need was economic and adult literacy was the catalyst or the agent for change as elicited by the women. The case studies equally highlights that strategic partnerships are vital to education for rural transformation. Brokering, international, national and local partnerships to promote sustainable development impacting lives, breaking out of intergenerational poverty cycle make literacy a potent weapon for change. The comparative case studies from across the world (refer to Chapter 2) reviewed in the present study underline the burning desire of the women to work towards empowerment and transformation. It was interesting to note that majority of women acquired functional, sustainable literacy and numeracy skills and acknowledged the need for mobile phones to be able to reach out to others and for secure livelihoods. This emphasized the impact of telecommunications as an effective tool for overcoming physical barriers. This stresses that the language of literacy programs, interventions must be contextualized to meet and address the challenges caused by social inflexibility and customs especially in

India. "Progress requires strong leadership, good governance, efficient organization and adequate financing" (UNESCO, 2006, p. 230).The empowerment skills women gain enable them to create more effective social skills which in turn support the empowerment of more women. It is a proactive process and must operate simultaneously on the two fronts (Stromquist, 2002).A system of privileges and deprivation has been created when certain diversities by passing through the process of differentiation have become hierarchical with the passage of time. Language, caste, region, religion, and physical space could be considered important elements when chalking out gender smart policies effecting rural and marginalized women in the Indian subcontinent.

Implications for Future Research

For the very first in India Census 2011 indicates that the gap in literacy rate between urban and rural areas and between males and females has also declined. The India Country Report 2014 on the progress towards the MDG Goals also laid emphasis that Goal 3 which is to promote gender equality and empowerment of women is on track. However, the state of Rajasthan is still unable to arrest the high literacy gap between men and women which is 27.1% unlike West Bengal which stands at 11.5 percent. The primary focus of the MDG report is on reducing gender gap in education by monitoring girls' enrolment on primary, secondary and tertiary levels of education (Government of India, 2014). Surprisingly it does not directly address the issue of Adult Education and Literacy nor the inter-regional diversities that downplay women's equality.

The study is an attempt to unpack the inter-regional diversities that exists in the Indian subcontinent. A longitudinal study would deepen our insights about the cultural context of the states to gain better insights into the problems faced by rural and marginalized women. Qualitative studies need to be carried out amongst the communities of the target groups to enhance knowledge and to make policies more contexts specific and effective. This would enable policy makers to align interventions both vertically and horizontally. If achieved adult education and literacy will be instrumental in alleviating poverty, improving maternal health, reducing child mortality and creating an environment for sustainable development.

The broader implications of carrying out the study spells out the goals indicated in the SDG 2030 Agenda that has been proclaimed by world leaders in September 2015. It reiterates that ERT and SDG are mutually complimentary and overlap having similar concerns in both agendas. It expounds that economically sustainable poverty reduction requires a process of poverty oriented structural transformation to reach the unreached. In rural areas reforms undertaken must give women equal rights to economic resources as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources in conjunction with national laws (Ahmed, 2016).

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Women's Education, Empowerment and Shift in Employment Market

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Empowerment has been identified as one of the key constituent elements of poverty reduction, and as a primary development assistance goal. The promotion of women's empowerment would lead to address the development issues and also ensure the social justice. A policy research report presented by the World Bank identifies gender equality both as a development objective in itself, and as a means to promote growth, reduce poverty and promote better governance. The value of concepts lies precisely in its fuzziness. So it would give the space for the policymakers, practitioners and academicians to define the concept with some measurable construct and that should be validated by the implementation of strategy and outcome.

An attempt has been made in this paper to study the women empowerment issues in the context of India measuring the change in the level of education and its impact on their economic aspects where socio-cultural issues act as moderators. The paper begins with a presentation of definitional and conceptual issues. Section II discusses measurement issues and the challenges to operationalizing women's empowerment empirically. Section III develops a theoretical model considering education as tool of women's economic empowerment. Section IV provides some conclusions and recommendations.

2. Literature Survey

2.1 Conceptualizing Women's Empowerment

"Empowerment" has been used to represent a wide range of concepts and to describe a proliferation of outcomes. The concept may often be promoted as empowerment of individuals and organizations of women (Sen and Grown 1987; Jahan 1995; Kumar 1993) but vary in the extent to which they conceptualize or discuss how to identify it. Empowerment means individuals acquiring the power to think and act freely, exercise choice, and to fulfill their potential as full and equal members of society. The United Nations Development Fund for Women (UNIFEM) includes the following factors in its definition of women's empowerment:

- Acquiring knowledge
- Developing a sense of self-worth, a belief in one's ability to secure desired changes and the right to control one's life;
- Gaining the ability to generate choices and exercise bargaining power;

- Developing the ability to organize and influence the direction of social change to create a more just social and economic order, nationally and internationally.

Another line of thought in development promotes social inclusion in institutions as the key pathway to empowerment of individuals. Bennett (2002) has developed a framework in which "empowerment" and "social inclusion" are closely related but concept wise they are separate. Bennett describes empowerment as "the enhancement of assets and capabilities of diverse individuals and groups to engage, influence and hold accountable the institutions which affect them." Social inclusion is defined as "the removal of institutional barriers and the enhancement of incentives to increase the access of diverse individuals and groups to assets and development opportunities." The empowerment process operates from below and involves agency, as exercised by individuals and groups. Social inclusion, in contrast, requires systemic change which may be initiated from above. Systemic change catalyzed by social inclusion is necessary to sustain empowerment over time.

Empowerment entails a process of change (Kabeer, 1999). The process by which an disempowered people (have no capability to make choices) has developed an capability to make choices. Our notion of empowerment is about change, it refers to the expansions of people's capability to make choices in a context where this ability was previously denied to them. The ability to exercise choices was represented in terms of three interrelated dimensions:
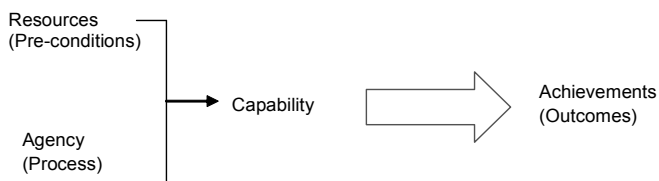
Resources indicate not only economic resources but also social and human resources. In a broader sense, resources are acquired through multiplicity of social relationship conducted in the various institutional domains which make up a society. Agency encompasses the motivation and purpose which individuals bring to their activity. The individuals try to explore 'the power within'. In the positive sense of the 'power to', agency refers to people's capacity to define their own life objectives and to pursue their own goals, even fighting against the adverse situation. Resources and agency together constitute capabilities; the potential that people have for living the lives they want (Sen, 1985).

2.2 Economic Empowerment of Women

Economic empowerment has been defined as a process whereby women's lives are transformed from a situation where they have limited power and access to

economic assets to a situation where they experience economic advancement and their power and agency is enhanced in the following areas (VeneKlasen and Miller, 2002) (change outcomes):

- Power within**:** the knowledge, individual capabilities, sense of entitlement, self-esteem, and self-belief to make changes in their lives, including learning skills for jobs or start an enterprise.
- Power to: economic decision-making power within their household, community, and local economy (including markets) not just in areas that are traditionally regarded as women's realm but extending to areas that are traditionally regarded as men's realm.
- Power over**:** access to and control over financial, physical and knowledge-based assets, including access to employment and income-generation activities.
- Power with: the ability to organise with others to enhance economic activity and rights.

Economic empowerment will only be possible and sustainable if there are changes at different levels: within the individual (capability, knowledge and self-esteem); in communities and institutions (including norms and behaviour); in markets and value chains; and in the wider political and legal environment (Golla et al., 2011).

The research gap in the concept of empowerment and its measure has been clearly indicated by an NGO activist cited in Batliwala (1993): "I like the term empowerment because no one has defined it clearly yet; so it gives us a breathing space to work it out in action terms before we have to pin ourselves down to what it means". It is not possible to provide an exhaustive study of various attempts to measure women's empowerment but the study on women's empowerment on developing and underdevelopment nation clearly indicated the decision making power of women that may be justified by their access and control over resources (Razavi, 1992;Hashemi et al., 1996;Sathar & Kazi ,1997;Jejeebhoy, 1997;Kishore, 1997). Still no study has revealed the relationship considering education as a measure of capability, constitutes of resources and agency and its impact on women's power to take decision in the labour market which is surrogate measure of achievement. An attempt has been made in the present study to measure the relationship between these two in the context of developing economy like India.

3. Theoretical Framework

In this paper, literacy rate is taken as source of capability of women in the Indian society to explore the power within them. The capability of women, measured in terms of education, has lead to the higher level of empowerment, measured in terms of their shifts from agricultural workers towards other workers i.e. factory workers, plantation workers, those in trade, commerce, business, transport, mining, construction, political or social work, all government servants etc.(Ref Fig 1)
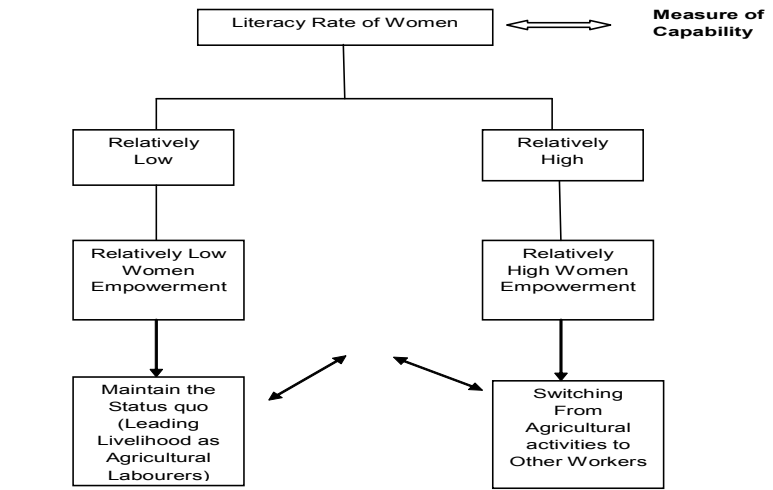
Fig- 1: Conceptual Framework of constructs of Women Empowerment

The consequences of changes in the educational level have an impact on socio-cultural dynamisms which ultimately leads to higher economic level. The economic empowerment of women has given the choice of taking decisions and their individual preferences (Ref Fig 2).
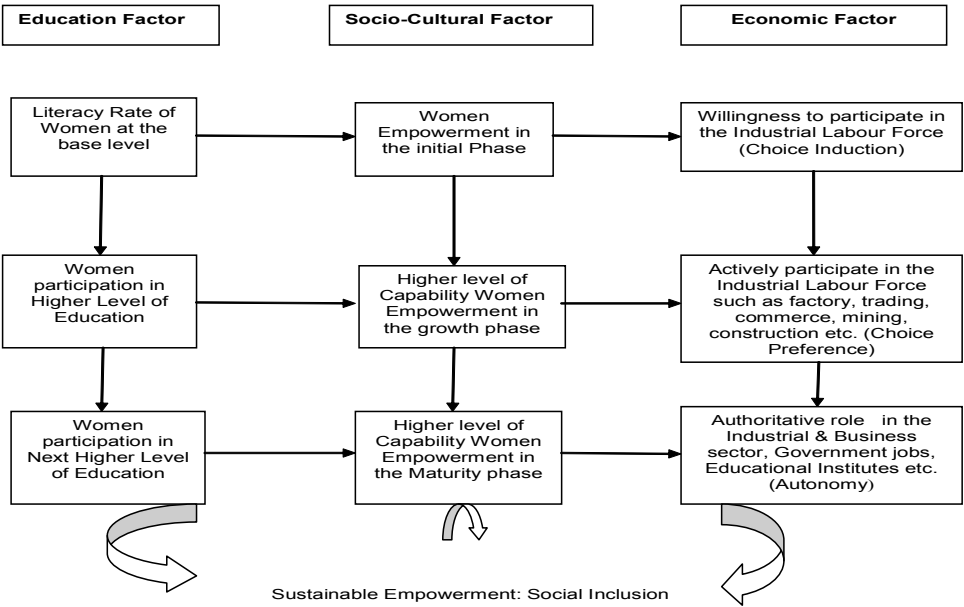

Sustainable Empowerment: Social Inclusion

Fig- 2: Theoretical Framework of Women Economic Empowerment through Education

4. Research Objectives

An attempt has been made to study the impact of literacy of women on their economic empowerment in the last two decades in the Indian scenario and also to measure the shift in socio-cultural aspects in terms of their engagement in the job market. The objectives are summarized as follows:

1.   To measure the impact of Female Literacy on the women empowerment that is manifested in the shift of the labour force from agricultural sector to the other sectors (industrial. Commerce, mining, construction, government etc) using the census data for 2001 and 2011.

2.   To analyze the impact of the relative growth of female literacy with respect to male counterpart on the shifting of the female workers from agricultural sector to other sector

5. Research Methodology

5.1 Sources of Data

The researchers used the data from the two reports -Statistical Profile of Women Labour 2007-2008 & 2009-201, published by Labour Bureau, Ministry of Labour & Employment Government of India.

5.2 Data Collected

The exhaustive dataset indicating sex-wise distribution of workers and percentage of cultivators, agricultural labourers, workers in household industry and other workers by states–2001 census as well as 2011 census was taken to understand the women participation in agricultural sector and other sector. The type of other workers that came under this category included factory workers, plantation workers, those in trade, commerce, business, transport, mining, construction, political or social work, all government servants, municipal employees, teachers, priests, entertainment artists, etc.

The dataset containing literacy rate sex-wise in India by States as per 2001 & 2011 census has been taken as a measure of educational development of women. The state wise ratio of female and male literacy for 2001 & 2011 census has been calculated to measure level of empowerment as well as social inclusion.

5.3 Identified Variables

The literacy rate of women state wise for 2001 & 2011 census are taken as measure of capability enhancement of women leading to higher level of empowerment. So it would be taken as independent variable.

The ratio of women & male literacy state wise for 2001 & 2011 census are taken as relative increase in the capability towards empowerment and it is also taken as independent variable.

The percentage of women participation in different employment sectors, namely, agricultural and others (which include factory workers, plantation workers, those in trade, commerce, business, transport, mining, construction, political or social work, all government servants, municipal employees, teachers, priests, entertainment artists, etc.) state-wise for 2001 & 2011 census are taken as dependent variables to measure the consequences of the women empowerment.

5.4 Method

Regression analysis has been performed taking women agricultural labourers and other workers as dependent variable with women literacy state wise as independent variables separately for 2001 & 2011 census period. Further, regression analysis has been performed taking women agricultural labourers and other workers as dependent variable with ratio of women and male literacy as independent variable separately for 2001 & 2011 census period.

6. Results and Analysis

Case - I: Women literacy rate census data for 2001 & 2011 are taken as agency of women empowerment and are taken as independent variable. Regression analysis is performed to measure the impact of women literacy rate on women agriculture labourers and other workers separately.

The mathematical model of regression analysis can be expressed as follows:

Percentage of Female Participation in Agricultural Sector (2001)

$$= \hat{\beta}_0 + \hat{\beta}_1 \text{Female Literacy Rate (2001)} \dots\dots\dots\dots\dots (1)$$

Table – 1
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Female Literacy Rate (2001)	63.158	-0.661*** (0.202)	-0.495	0.245

Dependent Variable: Percentage of Female Participation in Agricultural Sector (2001).The table shows regression results based on equation (1). The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The mathematical model of regression analysis can be expressed as follows:

Percentage of Female Participation in Agricultural Sector (2011)

$$= \hat{\beta}_0 + \hat{\beta}_2 \text{Female Literacy Rate (2011)} \ldots \ldots \ldots \ldots (2)$$

Table - 2
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Female Literacy Rate (2011)	102.424	-1.090*** (0.254)	-0.598	0.358

Dependent Variable: Percentage of Female Participation in Agricultural Sector (2011).The table shows regression results based on equation (2). The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The mathematical model of regression analysis can be expressed as follows:

Percentage of Female Participation in Other Sector (2001)

$$= \hat{\beta}_0 + \hat{\beta}_3 \text{Female Literacy Rate (2001)} \ldots \ldots \ldots \ldots (3)$$

Table – 3
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Female Literacy Rate (2001)	-45.916	1.338*** (0.230)	0.711	0.505

Dependent Variable: Percentage of Female Participation in Other Sector (2001).The table shows regression results based on equation (3). The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The mathematical model of regression analysis can be expressed as follows:

Percentage of Female Participation in Other Sector (2011)

$$= \hat{\beta}_0 + \hat{\beta}_4 \text{Female Literacy Rate (2011)} \ldots \ldots \ldots \ldots (4)$$

Table – 4
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Female Literacy Rate (2011)	-78.768	1.714*** (0.306)	0.698	0.487

Dependent Variable: Percentage of Female Participation in Other Sector (2011).The table shows regression results based on equation (4). The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The negative coefficients associated with female literacy rate in both the decades (2001 & 2011) indicate that the agricultural workforce has shown decreasing trend with increase in female literacy (Ref. Table - 1 & 2).Both the results are statistically significant also. At the same time, it is quite interesting to see that percentage of women labour force in other sector are positively related with women literacy rate in both decades (2001& 2011) and here also, both of the results are statistically significant (Ref. Table-3 & 4).

The outputs are quite consistent with our proposed theoretical framework. Female Literacy would act as capability of women that would lead to empowerment. Now, the literate women are more willing to take their own decision of life and they shift their jobs from agriculture to other sector like industry, business, commerce & trade, government etc. In the other sector, they have a choice and they have the flexibility to choose among alternatives.

Case-II: The ratio between female literacy rate and male literacy rate , a variable named as literacy rate ratio (R01 & R11 based on census data of literacy for 2001 & 2011) is considered to be a measure of gender disparity literacy rate in favour of female and this ratio acts as a catalyst for social inclusion in respect of literacy. If it increases, the extent of social inclusion of women in respect of literacy increases. Regression analysis is performed to understand the impact of relative measure of female literacy with respect to male counterpart on the job pattern of the women namely, agriculture sector and other sector.

The mathematical model of regression analysis can be expressed as follows:

Percentage of Female Participation in Agricultural Sector (2001)
$$= \hat{\beta}_0 + \hat{\beta}_5 \text{Lieracy rate ratio (2001)} \ldots \ldots \ldots (5)$$

Percentage of Female Participation in Agricultural Sector (2011)
$$= \hat{\beta}_0 + \hat{\beta}_6 \text{Lieracy rate ratio (2011)} \ldots \ldots \ldots (6)$$

The outputs of the above mentioned regression analyses are represented in the Table-5.

Table-5
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Literacy rate ratio (2001) (R01)	86.515	-83.483*** (24.378)	-0.512	0.262
Literacy rate ratio (2011) (R11)	143.310	-143.473*** (36.456)	-0.565	0.319

Dependent Variable: Percentage of Female Participation in Agricultural Sector for the decades 2001 @ 2011 respectively. The table shows regression results based on equation (5) & (6).The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The mathematical model of regression analysis can be expressed as follows:

$$\text{Percentage of Female Participation in Other Sector (2001)}$$
$$= \hat{\beta}_0 + \hat{\beta}_7 \text{Lieracy rate ratio (2001)} \dots\dots\dots\dots (7)$$

The mathematical model of regression analysis can be expressed as follows:

$$\text{Percentage of Female Participation in Other Sector (2011)}$$
$$= \hat{\beta}_0 + \hat{\beta}_8 \text{Lieracy rate ratio (2011)} \dots\dots\dots\dots (8)$$

The outputs of the above mentioned regression analyses are represented in the Table-6.

Table-6
Summarized Results of Coefficients of independent variables

	Constant	Unstandardized Coefficients	Standardized Coefficients	R-square
Literacy rate ratio (2001) (R01)	-75.223	145.225*** (30.956)	0.633	0.400
Literacy rate ratio (2011) (R11)	-128.407	206.231*** (47.508)	0.603	0.363

Dependent Variable: Percentage of Female Participation in Other Sector for the decades 2001 @ 2011 respectively. The table shows regression results based on equation (7) & (8).The figures in the brackets indicate the standard error. *** indicates significance 1 percent level respectively.

The results clearly indicate that the job persuasion of the women in the agricultural sector is negatively related with the relative measure of female literacy and both the cases are statistically significant (Ref Table 5). At the same time, the involvement of women in the other sector in both the decades shows positive correlation with the literacy rate ratio in both the decades and here, also, both the results are statistically significant (Ref Table 6). Therefore, it can be concluded from the above results that increase in the extent of social inclusion of women in respect of literacy ultimately leads to women empowerment whereby the women can make their choices in regard to their livelihood.

The statistical analysis is quite consistent with our proposed theoretical framework. Incremental improvements in the female literacy with respect to male would lead to the shift of job from agriculture sector to other sector mainly industrial, business & commerce, government etc. in case of female. The more participation of women in a comparatively high skilled sector justifies both the women empowerment as well as social inclusion.

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Perceptions of District Education Officers towards Technology Based Capacity Building Interventions - A Study of U-DISE Training Programmes

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The National University for Educational Planning and Administration (NUEPA) envisioned the Unified District Information System for Education (U-DISE) as a baseline for the effective and timely monitoring of various interventions made for the schooling system. As per the U-DISE 2015-16, there are total 15,22,346 schools imparting school education including all categories of schools from primary to secondary and higher secondary. The U-DISE is aimed at keeping a track of the resources, their utilization, deployment and replenishment. Over the years, the U-DISE database has successfully provided data in a comprehensive format and has been used as a planning tool. It has been the basis for decision making by policy makers. Under the U-DISE, every year data is collected from 1.5 million plus schools imparting education across the country. This data is collected at the local level with schools sending the data to the national level.

The District Education Officer (DEO) plays the key role in the planning, implementation and management of educational activities of the district. The DEO is responsible for ensuring that the targets set by the Government at the distract level are achieved. The DEOs are also responsible for data collection and compilation for U-DISE. In order to maintain the quality of the data, it is important that capacity building of DEOs be undertaken so that an informed and empowered workforce with appropriate know-how is developed. Training also has to be provided whenever data capture formats of U-DISE are redesigned to accommodate new requirements in the school sector. Trainings also help to obliterate common errors and other issues at the data entry stage.

The uniqueness of the U-DISE programme has been the use of technology based interventions in capacity building in order to meet the massive training target number of data respondents while ensuring that no training transmission loss takes place. Over the years various technological interventions have been adopted for development of necessary understanding and skills amongst the large number of persons associated with the U-DISE data submission i.e. Block Resource Centre Coordinators, Cluster Resource Centre Coordinators and District MIS In charges from all states and union territories of India.

This study examines technological interventions adopted during the past eight years (2009 to 2016) to develop necessary understanding and skills among the

District Education Officers with respect to U-DISE Data Capture Format. The capability of the technology as a tool of capacity development has been analyzed not only in terms of the primary data obtained from the feedback of the trained District Education Officers but also secondary sources of data. The findings would help to further strengthen capacity building programmes for education department officials at state, district and cluster level.

Keywords: *Capacity Building Unified District Information System for Education, Data Capture Format, Technology.*

Introduction

India has one of the largest schooling systems in the world. As per the U-DISE 2015-16, there are total 15,22,346 schools imparting school education including all categories of schools from primary to secondary and higher secondary. Out of these, 14, 49, 078 are elementary schools. The massive scale of operations involves different resources such as teachers, students, support staff, infrastructure, materials and finances.

A baseline is always needed to check the functioning of any system and for timely monitoring of interventions made for its improvement. To create such a baseline for the education system in our country and to assess problem areas and points for potential improvement, the National University for Educational Planning and Administration (NUEPA) envisioned the Unified District Information System for Education (U-DISE).

U-DISE is an acronym for Unified District Information System for Education developed by NUEPA and MHRD. The mandate of U-DISE is to collect information from all recognized and unrecognized schools imparting formal education from class I to XII. U-DISE has been developed through the integration of the existing systems namely District Information System for Education (DISE) of the Elementary level and the Secondary Education Management Information System (SEMIS) of the Secondary level EMIS. It collects information on student enrolment and performance, infrastructure and teachers. U-DISE has the school as the unit of data collection and district as the unit of data dissemination. It is under implementation in all the districts of the country.

Utilization of U-DISE data has been made mandatory for evidence based planning under the Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyam (RMSA) programmes. The District and State SSA and RMSA plans are reviewed based on the information available from the U-DISE for the last data collection cycle and resources allocated during the review and appraisal of Annual Work Plans and Budgets. The system is capable of generating reports required to develop district and state level plans and are accessible through a user - friendly interface. Based on

this data, NUEPA annually brings out publications such as 'District and State Report Cards'; web-enabled 'Elementary Education in Rural and Urban India'; 'DISE Flash Statistics, including Educational Development Index'; and 'Elementary Education in India: Progress towards UEE; and Analytical Reports & Tables'. In addition the system generates the 51 reports used for State Elementary Education Plans. The reports are used extensively as a requirement of the annual planning process. The data are passed back to the schools in the form of school report cards. This data is useful for planning infrastructure and teacher deployment, for monitoring performance against plans and for tracking.

In view of the utility of the U- DISE in the planning, implementation and management of the education system of the district, it was felt necessary that District Education Officers (DEOs) should be trained at regular intervals. The DEOs play the most important role in taking the educational plan of the district forward. Further the DEOs have to ensure that other stakeholders are also familiar with the overall district and state plans. The importance of training for DEOs was also felt necessary due to the technical nature of the U-DISE data base. The data collection under U-DISE is done through the Data Capture Format (DCF) which contains static and dynamic data of a school. The static data involves information on the school location, type, management, and the level of school. The dynamic data covers information on the enrolments, repeaters. Schools are provided with a DCF that has the static data pre filled from last year and have to update the dynamic data. Regular training is necessary so that the DCF can be filled up accurately so that the veracity and quality of data can be maintained.

In view of the dynamic nature of the data, there was a felt need for regular and continuous training through the use of technology. The inherent capabilities of use of technology in training would help to ensure that all changes, modifications made in the U-DISE capture format can be reflected at a faster pace and in a more efficient manner.

The Study

The U-DISE data capture format is the means for collecting data on a variety of variables ranging from facilities in schools, profile of teachers, enrolment, information on various interventions like school grants, mid day meal, teacher grant to repeaters and examination results, etc. Over the years U-DISE data capture format has not only extended its scope and coverage but has also adapted to the changing needs and requirements.

As the data capture format seeks at obtaining information pertaining to a variety of variables, it is reviewed and revised every year. The U-DISE data reflects a multi-state data-collection process in which various types of officials are associated with the data collection. First, school headmasters answer a nationally-standardized

survey-questionnaire. Second, cluster officials examine the responses for completeness and accuracy. Third, district officials aggregate the data and check it for computational and consistency errors. Fourth, state-level officials conduct further checks. In a final step, each state is responsible for hiring external agents to conduct post-enumeration audits and cross-check data with site visits (Kaushal, 2010).

An important requirement towards maintaining quality of data is capacity development of officials involved at various levels. For example the cluster resource centre and block resource centre are decentralized agencies, which can monitor/train and act as resource points and they need to be strengthened and their efforts need to be utilized to the maximum extent in all activities related to the provision of data. In this context it is pertinent to point out that a Review Report (2014) on state level U-DISE in Bihar, Madhya Pradesh, Meghalaya and Odisha concluded that only the technical staff was able to use the system. Interestingly, these staffs were not able to verify, analyze or present data found in the system while all others relied on the MIS staff to assess data. The report consequently recommended that the U-DISE interface be made easier to integrate for technical and non-technical users and training workshops be organised. An important area of concern, apart from the vast number of diverse officials to be trained, is the apprehension in mind whether the capacity building provisions can reach at the remotest areas and also grass root level.

Keeping these factors (space, time, numbers and diversity) in view, an initiative was taken by NUEPA in the year 2009 of organizing capacity building programme by means of teleconferencing through EDUSAT. This was followed by Online YouTube videos, interaction on toll free numbers and also audio-video CDs and DVDs. In addition to this, technological inputs such as Online YouTube videos and video tutorial CDs and DVDs were also developed and used. The expectations at the end of the programme were that the participants would have a better understanding of the revised U-DISE Data Capture Format. It was expected that they would also realize the importance and the objective of collection of U-DISE data. After this capacity building, the participants were expected to fill up the U-DISE data capture format without any errors. They were exposed to the items in the U-DISE Data Capture Format. In addition, they were introduced to the changes brought in the U-DISE DCF as per the changing data requirements with time.

The objective of this present study was to examine the perception of one level of officers namely District Education Officers (DEOs) towards the technology based interventions that were conducted as a part of their capacity building. The expected outcome envisaged was that this feedback would help to further improve the training programmes and thus contribute to strengthening the quality of data collected under the U-DISE in the instinct.

Research Methodology

This study was conducted through survey method. An online survey was developed to gather data regarding the perception of District Education Officers (DEOs) towards their technical capacity building.

As with any research technique utilizing technology, online surveys have numerous advantages and disadvantages. On the positive side, online surveys tools speed up data collection and analysis processes. Web-based surveys are also often easier to complete than comparable paper-based questionnaires (Kaye & Johnson, 1999; Medlin, Roy, & Chai, 1999). E-mail surveys can also extend the reach of survey research to a diverse set of respondents while maintaining their anonymity (Sheehan & Hoy, 1999). At the same time, however, slow Internet connection speeds, lengthy procedures, unclear instructions, novel Internet tools, unsolicited respondents, and a general lack of time all negatively impact online surveys (Bosnjak & Tuten, 2001; Solomon, 2001). Moreover, e-mail solicitations tend to have many undeliverable addressees as well as respondents who are offended by perceptions of aggressive e-mail solicitation (Sheehan & Hoy, 1999).

Although these issues can be a problem but this was not so in the case of the present study as the researchers in the team had readily accessible online group of officials who had undergone capacity development through technology based interventions. The data was collected from these officials by means of online survey form.

The feedback form was prepared based upon Kirkpatrick's (1998) four-level model. According to Kirkpatrick (2001), the four levels of evaluation are: Level-1- Reaction: participant reaction or satisfaction ratings, Level-2 - Learning: participant change in knowledge, skills, and attitudes, Level -3 - Behaviour: participant change in job behaviour and Level-4 - Results: the final results in terms of quality, quantity, safety, costs, profits, and Return on investment (ROI). In the context of the present study, at Level-4, the final results in terms of two aspects only i.e. quality and quantity was taken into account.

As regards the sample, the total database of over 7000 email IDs of the trainees was available to the researchers. However in view of the limited nature of the study, only District Education Officers who had undergone capacity building in DISE data capture format in the technology based programme were selected for this study. The email IDs of District Education Officers (Education Officers in case of small Union Territories) were selected by means of stratified random sampling method. The sample constituted at least one official from each state and union territory. The total number of states and union territories covered was 36. The survey was conducted in the month of January 2017. The total number of respondents was 100 DEOs.

The design of the online survey form was sharp and focussed. It was felt that DEOs should not be burdened with a long and complex form. The items of the form were of multiple choice types so that filling up the form was simpler. A short form was also felt necessary so that problems of internet connectivity in far flung areas would not come in the way of filling an online form.

Review of Capacity Building Programmes for U-DISE using Technology based Interventions

NUEPA has been conducting training programmes for U-DISE using both face to face as well as technology based interventions. The trainees for such trainings have been of different levels and can be broadly divided into two categories i.e. institution (school) and area level functionaries (such as district education officers, block education officers). Diverse category of officials from schools under SSA and RMSA were beneficiaries of these capacity building programmes. The participants included Additional Chief Educational Officer (ACEO), Assistant Block Resource Centre Coordinators (ABRC), Assistant Elementary Educational Officer (AEEO), Assistant District Project Officer (ADPO), Assistant Project Officer (APO), Block Elementary Education Officers (BEEO), Block Resource Centre Coordinator (BRCC), Block Resource Teacher Educators (BRTE), CEO (Cluster Education Officer), Cluster Resource Centre Coordinator (CRC), Data Entry Operator (DEO), District Education Officer (DEO), EMIS Coordinator, Head Master (HM), Principal, Section Officer (SO).

The number of beneficiaries of the training through technological interventions is as follows:

Table -1
Capacity Building using technological intervention by
Teleconferencing through EDUSAT

Date and Year	Number of Participants
09 September, 2009	4790
21 September, 2010	
27 September, 2010	
07 September, 2011	4811
14 September, 2011	
07 September, 2012	5012
14 September, 2012	
04 September, 2013	5134
06 September, 2013	

Source: www.dise.in. Kaushal, S. (2011a), Kaushal, S. (2011b).

Table-2
Capacity Building through YouTube

Content	Total Views*
Instructions on How to use Web Portal	51,660
Instructions and Presentation on How to use/operate Web Portal - Part 2 of 2	7,420
Instructions and Presentation on How to use/operate Web Portal - Part 1 of 2	4,378
Instructions for filling Student DCF, 2016-17(Hindi Language.)	3,242
Video on Instructions for filling Student Data Capture Format for the year, 2016-17 (English Language)	10,537
Questions & Answers: Student Data Capture Format, U-DISE, 2016-17.	4,535
Description of Student Data Capture Format. (Hindi)	4,866
Description of Student Data Capture Format (English)	9,833

*as on 28th Feb 2017

Table-3
Participation in Regional Technical Workshop

Year	Number of Participants
2009	533
2010	559
2011	579
2012	615
2013	641
2014	652
2015	683
2016	770

Table – 4
Capacity Building through Interaction on toll free numbers

Calls on Toll Free Numbers :About 150 calls per day
Capacity Building by audio video CDs and DVDs All 680 districts are provided the CD/DVD/Pen drives having the videos

Discussion on the Findings of the Study

The analysis of data was conducted based upon the programme content, level of engagement with the participants, popularity of the technological intervention and the desire of the participants to re-enrol for further training in the future. The data analysis revealed the following:

Programme Content and Transaction

The perceptions of the participants regarding the programme content and its transaction were assessed in terms of three aspects, namely the content design, presenters and usefulness of the Hands On practice sessions supporting such technology based interventions.

Content Design

The content design (in terms of time allocated thoughtfully to the subject matter and relevance) of the capacity development interventions were perceived to be either extremely helpful (37%) or very helpful (47%) by most of the respondents. But a few differed in their view as they found it either somewhat helpful (14%) or not so helpful (2%).

Table-5
Content Design of the Capacity Building Programmes

Participants' Perception	Responses (%)
Extremely helpful	37
Very helpful	47
Somewhat helpful	14
Not so helpful	02
Not at all helpful	-

Fig 1: Content Design of the Capacity Development Programmes
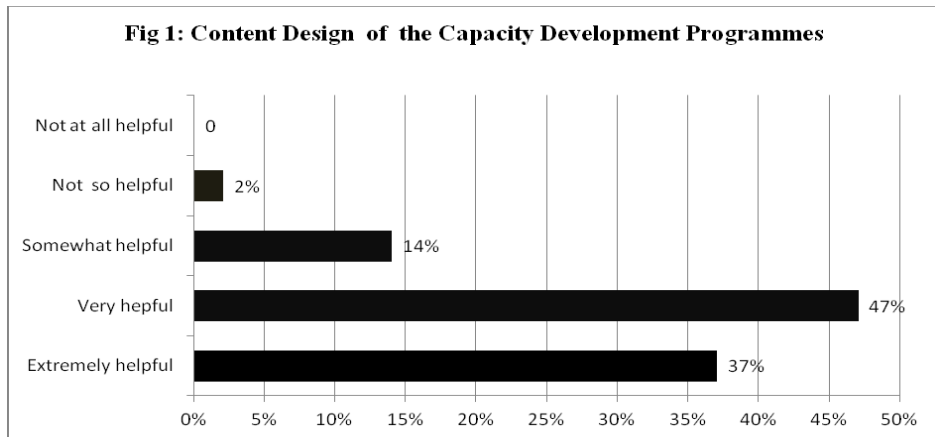
Interaction with Participants

It is seen that a programme is considered successful when the presenters are able to engage with the audience. Hence the need for interactive programmes is very important. In this case, majority of the respondents (92%) found presenters extremely

engaging or very engaging. The remaining few (8%) found them to be somewhat engaging.

Table-6
How Interactive were the Presenters?

Participants' Perception	Reponses (%)
Extremely engaging	43
Very engaging	49
Somewhat engaging	08
Not so engaging	-
Not at all engaging	-

Fig 2: How Interactive were the Presenters ?
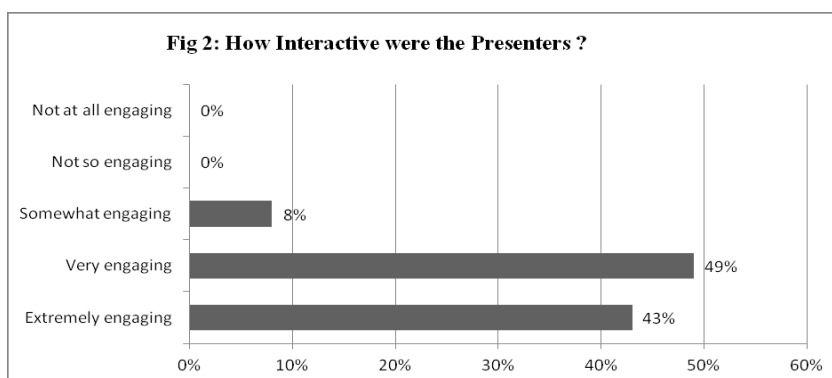
Hands-on Practice

One of the issues related to technology based interventions is that of real time hands-on practice i.e. whether participants would also like to engage in face to face hands on practice. In this study, an effort was made to find that whether the DEOs would like their training to be supplemented with face to face inputs and how helpful would such hands-on practice be to their overall training.

Table-7
Need for Hands-on Practice in Technology Based
Capacity Development Programme

Participants' perception	Need for Hands-on Support (%)
Extremely helpful	30
Very helpful	63
Somewhat helpful	06
Not so helpful	01
Not at all helpful	-

Fig 3 : Needs for Hands-on Practice in Technology Based Capacity Development Programme
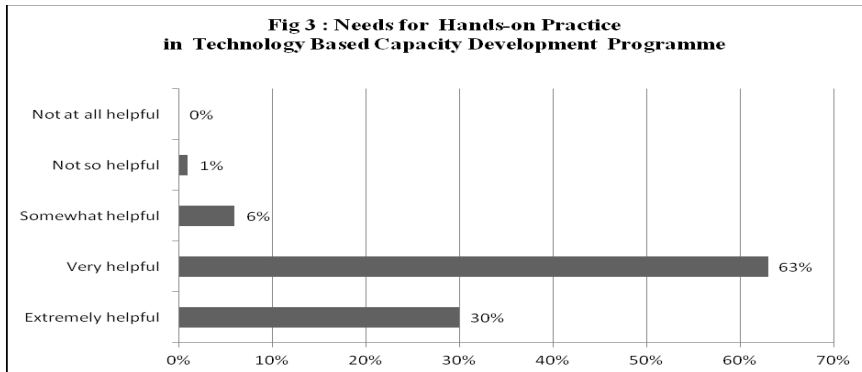
In the present study, it was seen that the respondents perceived that if such technology based interventions are supported by hands-on experience then such kind of a support is either extremely or very helpful (93%). A very few regarded it as somewhat helpful (6%) or not so helpful (1%).

Usefulness of Technology Based Interventions

Perception regarding the usefulness of these interventions was explored with respect to the rating of the interventions in terms of usefulness, type of benefits and also skills perceived to be accrued from them, as well as the type of technological intervention which was most useful and whether the participants would like to participate in such programmes in future.

Perception of Usefulness

It was seen that more than three-fourth of the respondents rated the usefulness of the technology based interventions as excellent (41%) or very good (37%). The remaining rated it either as good (13%) or fair (9%). None of them found it to be poor in terms of usefulness. This shows that the technology based interventions in the U-DISE workshops are being appreciated in terms of their usefulness.
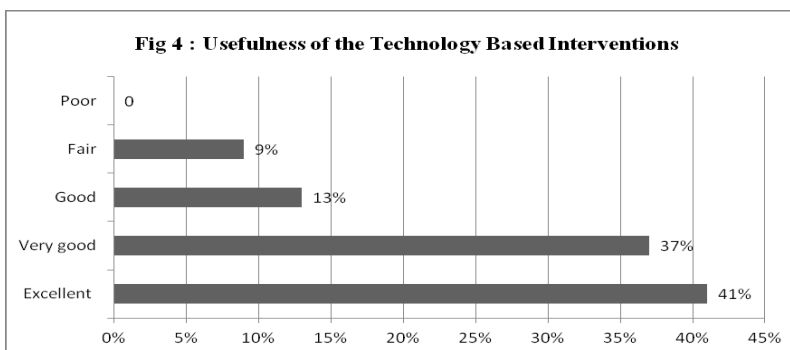

Fig 4 : Usefulness of the Technology Based Interventions

Table-8
Usefulness of Technology Based Intervention in the U-DISE Workshops

| Participants' Perception	Responses (%)
Excellent	41
Very good	37
Good	13
Fair	09
Poor	-

Benefits from Technology Based Interventions

The respondents cited many reasons underlying this fact to show that they had gained benefits from these interventions. They gained in terms of increase in their competency at their workplace as it was related to their field of work (77%), gaining knowledge about U-DISE (64%). Some DEOs felt that these intervention provided them a good opportunities to interact and share views with other state, district level officials (53%), increasing their confidence level (49%), know best practices (42%) and other reasons such as development of understanding and appreciation of the need for accuracy and timeliness of the U-DISE data (10%).

Table-9
Benefits from the Technology Based Capacity Development Interventions

Benefit from the Interventions	Respondents (%)
Competency Increase	77
Gained new knowledge	64
Confidence level increased	49
Interaction opportunities	53
Knew best practices	42
Others	10

Fig 5 : Benefits from the Technology Based Capacity Development Interventions
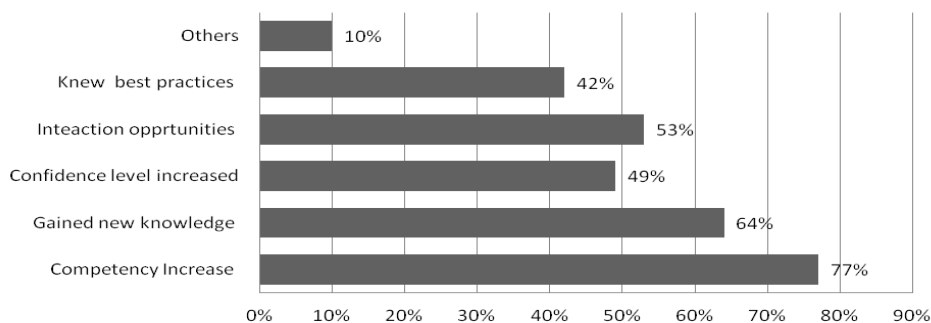
Skills Enhancement

Training Programmes aim at raising the proficiency level of the trainees. In this case the objective was to ensure that participants are well equipped to handle the various tasks related to U-DISE Data Capture Format. The respondents submitted that they had gained many skills, of which maintaining accuracy in data feeding was the highest (75%). This was followed by reporting data and writing analytical reports (64%), generating educational indicators from U-DISE data set (61%), digitizes data (57%), making presentations by including analytical indicators (53%), and time management (34%). A very small number (4%) felt that they could feed data faster.

Table-10
Skills Enhancement from Technology Based Interventions

Skills Attained	Responses (%)
Ability to digitalise	57
Maintaining accuracy in data feeding	75
Reporting data and writing analytical reports	64
Making presentations by including analytical reports	53
Generate educational indicators from U-DISE data set	61
Time management	39
Other	04

Figure 6 : Skills Enhancement from Technology Based Interventions
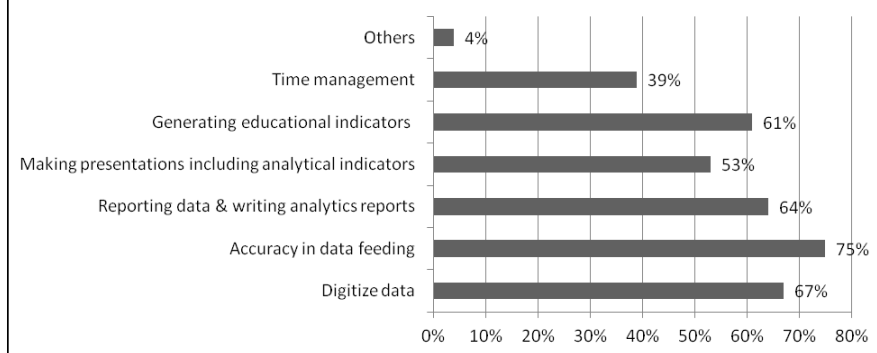
Usefulness of Different Kinds of Technology Based Interventions

During these trainings, a number of different kinds of technology based interventions were used. As regards the technology based interventions, it was seen that nearly three-fourth of the respondents (74%) found YouTube videos most useful for U-DISE capacity building, followed by Audio/Video Tutorial CDs/DVDs (41%), Edusat (18%) and interaction on toll free number (13%). Some (9%) found the recorded Edusat programmes available on the website as very useful.
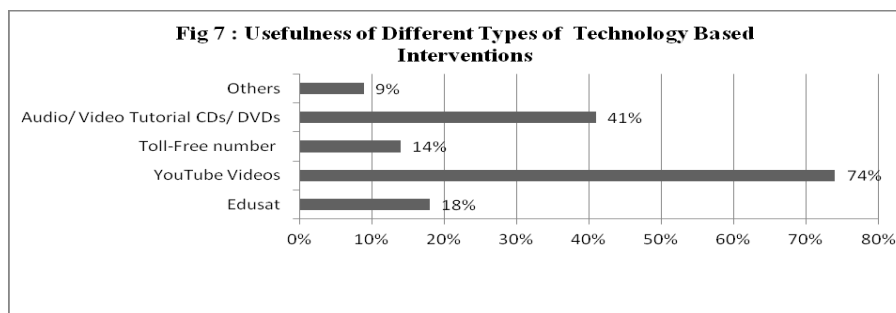
Fig 7 : Usefulness of Different Types of Technology Based Interventions

Table-11
Usefulness of Different Kind of Technology Based Interventions

Technology Based Intervention	Most Useful (%)
Edusat	18
YouTube videos	73
Interaction on toll-free	13
Audio-video tutorial	39
Other	09

Participation in Future Trainings

The dynamic nature of the U-DISE demands that trainings be conducted on a regular basis. It was therefore felt that feedback of participants towards their future participation be sought.

Fig 8 :Willingness to Participate in Future Capacity Building Through Technology Based Interventions
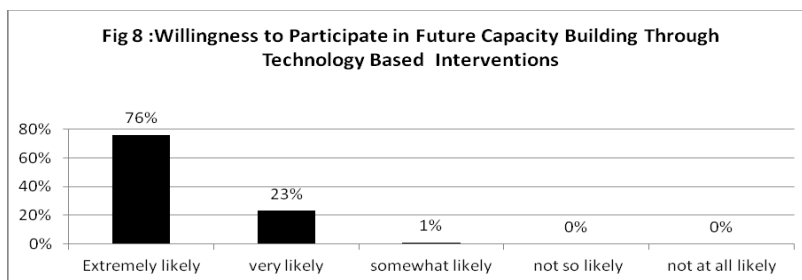
Table-12
Willingness to take Benefit of Continuous Technology Based Interventions

Willingness of Respondents to take Benefit	Number of Respondents (%)
Extremely likely	76
Very likely	23
Somewhat likely	01
Not so likely	-
Not at all likely	-

It was seen that majority of the respondents (99%) expressed their interest in taking benefit of such intervention (extremely likely or very likely) again in the future. This indicated that the participants found the trainings useful and worthy of continuous involvement.

Conclusion

The findings suggest that the technology based capacity development interventions were very useful. The content design of the technology based capacity development interventions was helpful at varying levels. The satisfaction levels were high as all the respondents regarded it as excellent, very good or good. The participants saw immediate benefits of the workshop in their practical life in the following order of decreasing priority: Increase in competencies, gain in new knowledge, opportunity to interact with the officials at different levels, increase in confidence level, and get to know best practices.

An interesting outcome was that the participants' feedback upon the technology based intervention was excellent, very good or good in term of usefulness. And yet they expressed that such sessions should be supported by Hands On practical sessions. It is possible that the comfort of a human interface remains important and therefore face to face trainings should also be conducted on a regular basis. It is suggested that blended mode of training with a mix of face to face and technology based interventions be designed to obtain best results.

The fact that social media is a emerging tool for training is also evident from the perceptions. It is not surprising that many (74%) found YouTube to be the most useful technology based intervention. These results are in congruence with the findings of various researchers such as Liu (2010) who found that YouTube was one of the most popular tools. In their work, Fralinger and Owens (2009) too confirmed YouTube as the most preferred learning tool. The ease of internet access in remote areas will further help in facilitating dissemination of training materials. The Government is encouraging the use of MOOCs for skilling as well as online platforms. These may also be used for further skill development purposes.

According to Debra Wilcox Johnson, learning new behaviour or enhanced skills is the most powerful outcome of any training. As per the Training Magazine (2000), the most prevalent skills taught online were technical or information technology related. In congruence with the above mentioned thoughts the respondents too perceived that they gained in multifarious ways from these interventions. They were more competent at their workplace, gained new knowledge, and increased their level of confidence, became more interactive. Knowledge gained helped participants perform their jobs better while using the database. The participants were clear about the skills gained as they cited that they were able to digitalize data, maintain accuracy in data, analyze data, prepare analytical report, make presentation using analytical

indicators, generate education indicators using U-DISE data and also do time management.

In conclusion, it may be reiterated that the U-DISE is a reflection of implementation of key aspects of various school education programmes such as of Right to Education, Comprehensive and Continuous Evaluation of Children, improving access to education for weaker sections and providing facilities to Children with Special Needs. It is therefore important that the high quality of data is maintained. The perceptions of DEOs in terms of benefits gained through skills learnt indicates that the technology based capacity development interventions have contributed significantly towards maintenance of the quality of data. The extended use of such the technology based interventions will strengthen capacity building programmes and will also help to make U-DISE a valuable tool for policy makers and planners of school education in India.

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Innovation and Opportunities to Marginalized Groups in India: Experiences of Community Learning Centre

Nitish Anand
Rajesh

The term marginalization refers to individual or groups who live at the margin of society. The marginalizedpopulation is known as the worst affected people throughout the world who are always experiencingone or the other kind of problems in their day to day life. Marginality depends upon control over their lives, and the resources available to them. It effectively pushes these groups of people to the margin of society economically, politically, culturally and socially following the policy of exclusion. It denies a section of the society equal access to productive resources and avenues for the realization of their productive human potential and opportunities for their full capacity utilization. This pushes the community to poverty, misery, low wage discrimination and livelihood insecurity. As the objective of development is to create an enabling environment for people to enjoy a productive, healthy, and creative life i.e. development of society based on social justice.

It is widely acknowledged that education has an important role to achieve a greater degree of social justice. Education is the key to fostering the just society. However, a large number of the population are still excluded from the educational system and hence cannot participate meaningfully in the economic, social, political and cultural life of their communities. It is also associated with poverty in the nation. Although the institutionalized way of education has limited capacities to intake the learners for training and also it largely neglect the series of the community who did not take education with respect to time or those who did not prove themselves in throat cut competition or the neo-literate. With the development of Justice and Equality in the neo-colonial word with new world institutions like United Nation advocated the decentralization of Education system for all in the word and provided it as the basic human right to all over the globe and ensure that in geopolitical word each and person could gate minimum education. With the development of non-formal education system has availed the hope for the learners of all types to gate learning opportunities, India is also an active member of UN, which abide the all the laws and policies to their national policy,Development of Community Learning centers (CLC) is understood as the one of the many effectsof decentralization of education in India, CLC is the place where any kind of illiterate, neo-literate can approach to impart the learning,which also understands as the key for providing the learning experiences and Vocational skill for the sustainability in society. Basically, it advocates for the lifelong learning and acts as a problem solver for the community which has to remain behind in the race of Education i.e. the vulnerable communities.

115

According to the United Nation a Community Learning Centre (CLC) is a local educational institution outside the formal education system, for villages or urban areas, usually set up and managed by local people to provide various learning opportunities for community development and improvement of people's quality of life. The aim of a CLC is to empower individuals and promote community development through life-long education for all people in the community, including adults, youth, and children of all ages. The main beneficiaries of a CLC are people with fewer opportunities for education, for example, pre-school children, out-of-school children, women, youth, and the elderly. They are principally focused on literacy and continuing education in support of Education for All (EFA).However, the community learning center in India has amply created the environment for the optimizing the opportunity for serving the best to the marginalized section of that community, but the method and process have been the traditional one which is less innovative and effective as compare to the other formal institution so,questions comes what kind of innovation is needed for the CLC to enhance the opportunities for the marginalised section of population? Now the question comes what is innovation? Innovation is defined as "the process of making changes to something established by introducing something new." It applies to "…radical or incremental changes to products, processes or services." Over the years there have been many changes in the way education is designed and delivered in parts of the world. (Olabisi Kuboni n.d.) and Community Learning Center has also evolved as the center for deliberation to the vulnerable section of the community

To understand the above-discussed problems in deep this research study is conducted underthe certain objectives, these are –

- The role of community learning center for the development of opportunities to the marginalized section in India.
- Innovative practices in Community Learning Center (CLC) to the welfare of vulnerable section of the community.
- Opportunities provided by the CLC to the welfare of marginalized section of community.

Like any other research study, the very research also adopted the certain methodology, where Delhi was chosen for study,under it five community learning center was selected by the purposive sampling method for greater representativeness of data, at the same time schedule was used for interview, in general mix method used for data collectionfrom100 respondents (70learner and 30 trainers) chosen randomly .where most of the respondents were illiterate and neo-literate.

CLC Organization, Management, and Objectives in India

CLCs have come into existence largely at the initiative and with the support of local community groups, non-governmental organizations (NGOs), external donors

and/or development agencies. In certain cases, they've been created through support from local and national government authorities. CLCs are principally managed, supervised and financed in collaboration with local, national and external support, however.

In India, CLCs are principally initiated and supported by local communities and NGOs with assistance from aid agencies, donors and development partners. Local management and executing bodies have taken up responsibility for organizing and overseeing CLC operations with modest start-up financial contributions from local community members. In certain cases, they generate resources by organizing income-generating activities such as collecting voluntary contributions, receiving charitable funds from philanthropic sources charging CLC membership fees. CLCs that principally focus on literacy and non-formal education also sometimes receive financial assistance from the government. CLCs that are organized and supported by leading NGOs who are working the Corporate Social Responsibility.

The community learning centers have had a considerable positive impact on the promotion of literacy and continuing education. UN also recognized the rich potential of CLCs in their Education for All (EFA) campaigns, literacy promotion, and community development activities and, thus, consider CLCs an important part of their strategies for reducing illiteracy and attaining EFA.

The various CLC activities for development of the community people fall into the following areas:
(a)   Functional literacy and continuing education: diverse learning opportunities; remedial measures for the vulnerable population
(b)   Skill development and human resource development: training in livelihood skills, income-generating activities (IGA) and leadership.
(c)   Community development services: exchange of ideas; activities for community development, resource mobilization; discussion of issues related to family and community; venue for extension and development service providers
(d)   Awareness and cultural development: raising awareness about education, health care, family planning, human rights, gender, and environment; socializing and recreation.

Innovation and Education for Marginalized groups

Deprived/ Marginalized Groups happen simultaneously at the micro and macro levels i.e., individual, group, community and global level where accessing of education are known as the significant contributor for this misery.India still, has the highest number (300 million) of illiterate persons in the world,who never got an opportunity to go to school, it may be due to no availability of school/other educational institution, but the development of Adult education, so the community learning centre helped in recent days to bridge the gap in education.

Today, technology is a significant driver behind all the majorchanges in education,where at the one end it facilitate indesigning and delivery at the other end it provided flexibility to the learner with respect to time, place and distance. With the technological advancements, it is transforming the traditional education process as well as providingthe learning experiences and livelihood skill to the billions of people who remain under-served in a rapidly developing world.

Technologies that are now available to help to increase the potential to learners and educatorwith the development of information and communications technologies (ICTs),itdoes not replace all previous way of education,but it has provided additional possibilities for learner by enhancing the support, interactivity, and access to education.

With the emergence of education facilitating technology like smartphones, eBook readers, 'Podcasts' and 'Vodcasts',Internet and low-cost computers, as well as solar electricity, cell phone access, and other technologiesprovide the opportunity to assist the individuals and communities in places under-served by traditional educational institutes. Technology and other innovations enable educational design and delivery to be adapted to the needs and environment of students enrolled in Open and Distance learning (ODL) or non-formal learning and traditional educational programs. Thus, technology can also help programs shift to a 'learner-centered' approach to education.

Community learning center for Education & Development

The challenge of closing the ever-widening gap between the haves and have-nots also the education, to bridge the gaprapidly it is needed to view education from a new perspective where innovation is key to achieve the targeted and this his may include making use of affordable and accessible technologies to expand access to education. It may also require other innovative process or service strategies that do not rely on technology. For this it is required a shift in focus, to target educational and training programs to align more closely with what people identify as their most urgent needs where the community learning center in almost every society may fulfil the need provide the non-formal way of education according to the need of the community,with special focus on most vulnerable marginalized groups to solve their problems.

Encouragethe unconventional education through community learning center by adoption of innovation is one of a number of solutions, that can meet the challenges like improved efficiencies, lower costs, increase accessibility, and greater success in achieving development goals through education in the need of hour for the nation,whereencouragement of education center with proper appropriation of technology can be the strong solution.

Major findings and Discussion-
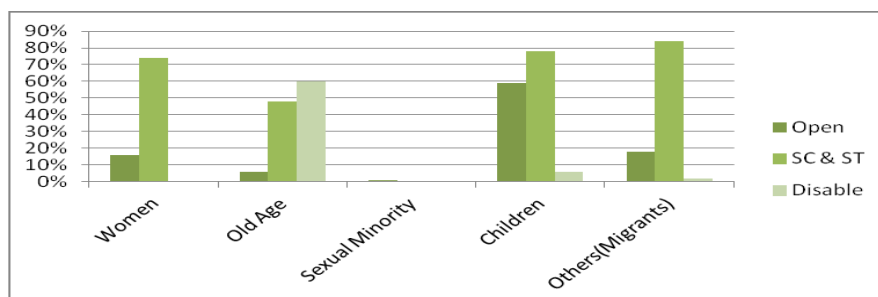Vulnerable Population in the CLC

Figure- Vulnerable population joining the CLC

During the study it found that vulnerable population that are involved in CLC 16% are the women among of which 74% belongs to SC & ST, 6% Elderly population among of which 48% are SC & ST and 60% of their population is disable, where less than one percentage population of Sexual Minority,59% children among of them 78% are SC & ST and less than 6% are disable, where 18% are migrants among of which 84% are SC & ST and less than 2% are disable. The data shows that the CLC represent the different kinds of the vulnerable population.
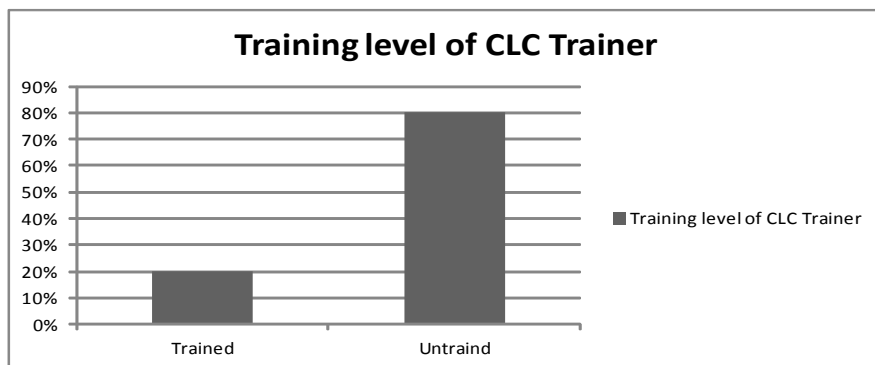
Training of the trainer in the CLC-

Figure- Training level of Trainer in CLC

If we talk about the innovation in CLC it became important to understand that whether the trainer which provide the training to the recipients in CLC are compatiblewith innovative practices,where training became the important intervention for enhancement of compatibility to the trainers who further add-on and provide the innovative intervention for the learners in community learning center.

Where it was found that 80% transfer have no training to deal with the regular work of community learning, they have no training like B.Ed. and JBT training to provide the effective learning experiences to learners.

Population gating the various type training in CLC-

Figure- Types of skill training provided in CLC

Skill provided by CLC
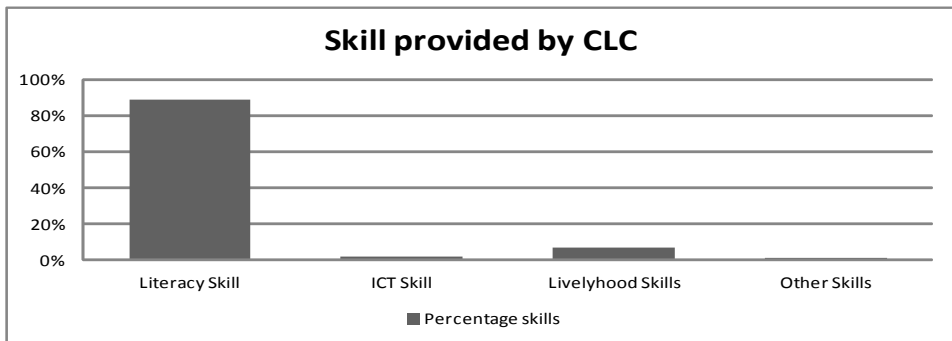
89% population in CLC are getting the Literacy skills i.e. reading, Writing and basic thematicskill,where very fuel, 2% population are getting ICT skill other than literacy,where 7% population are also acquiring livelihood skill like, carpentry, beautician and likewise which shows that the skill that CLC isproviding is not much innovative and less demandable in market

Uses of Smart technology for training in community learning Center

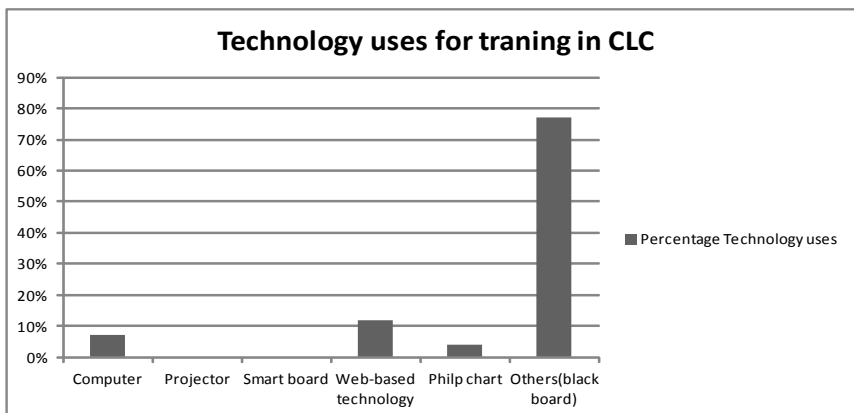**Technology uses for traning in CLC**

Figure- Technology uses during Training in CLC

From the study it is found that the technology uses the community learning center for training is largely traditional in nature, it may bedue to less trained trainers

are unable to use it frequently, where77% uses the blackboard only and 7% there is uses of computer where 12% uses of web-based technology and 4% chart during training, there are no projector and smart board for providing the training in CLC.

Motive behind the Vulnerable Population to Join the Community Learning Center
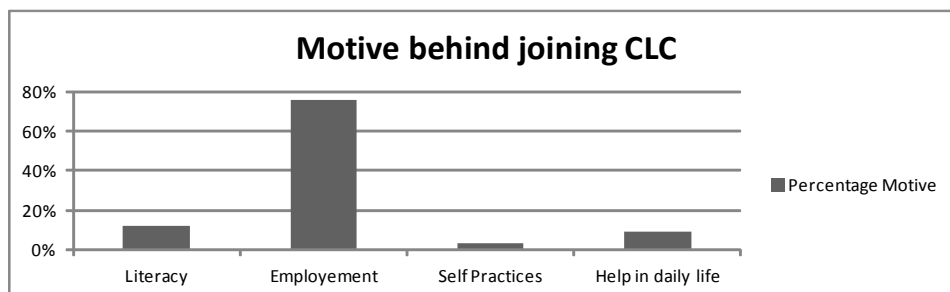
Motive behind joining CLC

Figure-Motive of respondents behind joining the CLC

However there is the majority of the population is provided the literacy skill by the CLC but it was a surprising when it is asked to learner about the motive behind joining the CLC, where 76% said they have joined it for future employment,9% joined it to get rid the daily hassle of life. Where 12% joined it to gate literacy skill. Which shows that learner wants CLC to act as a platform from where after completing the course they could gate earning capabilities where 3% said after successfully completion they would prefer to impart same skill to others.

During the research study, it was found that community learning centers in Delhi and   NCR   are   seriously   suffering   due   to   lack   of   innovation practice,communitycentershardly use the ICT and related technology in teaching, learning, training and various other issues which can be discussed by bellow points-

▪ Lack of training among volunteers/workers who are working in thecommunity.
▪ Failure of development of adult teaching learning technology and sensitizationmechanism with respectto time and also afailure of community learning center to respond the current need of thecommunity.
▪ Failure of government and other implementing agencies in organizing, development & execution of adult education program through community learning center with respect to time.
▪ Lack of quality action research study to improvise the efficiency of community learning center with respect to time.
▪ Beside it resource allocation ,which is defacing the community engagement process for the empowerment of vulnerable population.

Community learning center is known as the one the important center of learning

and skill training for needy one ,it is one,that known for rendering the service for the vulnerable section of community and help to bring on the front stage of development process but CLC has failed to attract the various marginalized section i.e. Transgender and sex workers. Today we are in the arena of knowledge society where the community learning centers are the important structure,by virtue of it; at any age and time one can come to prolong its lifelong learning instinct.

In the neo-colonial economy, development has become one of the important topicsof discussion in the world where Indian constitution alsosupports the equitable concept of development i.e Sustainable development but its implementation policy has largely remain mockery for the people of the land. As education and training havebecome the most important key for the emancipation of vulnerable section of society, where community learning center can be the main center for delivering the education through non-formal and informalsetup,especially for the illiterate,neo-literates and persons with arudimentary level of education. Recently India has evolved as one of the important centres for world both in the terms of labour force and market, and according to the various report of word bank & UNO the very country have most lag youth labour force who can not only fulfil the need of country human resource but it will also fill the need of world human resources demand of skill labour force. where community learning center can be used as the platform for providing the vocational training/skill training and further accreditation. It will help the country to solve the problemslike Poverty reduction by increasing per capita income with purchasingpower. So it is need of thehour to give proper attentiontowards community learning center and take it as anopportunity to involve thecommunity in the reconstruction of thecountry for the development of learning society and knowledge economy.

Opportunities
Linkages between CLC & Jan sikshanSansthan

The Community learning center in India works largely on the same concept as Jan Shikshan Sansthan (JSS) , earlier the scheme of Jan Shikshan Sansthan crafted by the government of India has been one of the important centers for the development of marginalized section, JSS are the institutes of Peoples education focusing on the poor,the illiterates, the neo-literates, the underprivileged and unreached population, JSS are a unique institution which not only to provide just skill development but link literacy with vocational skill and provide large dose of life enrichment education (LEE) to the people. But in recent time role of these kind of institution for empowering the vulnerable community are shrinking to certain extent, which further pulling the marginalized section from socio- economic justice, during the study it has found that due to weak policy and lack of innovation, development, and integration of technology, welfare of marginalized section suffered most. Where the limiting the role of community learning center and not giving the main importance on policy level has led the worst situation for the community which has been benefited by the various activity of community learning center. recently lack of funding these center has to make suffer

to the needy one, with weak networking between the governments, corporate, NGO and various likewise institution has created the serious stagnation in cohesive effort for the welfare of marginalized section of community ,further lack of ability to use the resource in an effective manner, lack of infrastructure and allotted space is also creating the difficulty in development of continuing education and for future sustainability for community.

Actually CLC is a multipurpose institute of the people, by the people, and for the people to promote learning new knowledge, skills and behaviors to improve people's quality of life and living standard, but due lacking in various front it has posed quality threat, where the linkage between the CLC and JSS may lead to the good initiatives in crisis for the welfare of vulnerable society.

Lifelong Learning for Community

The commentary on Goal 3, related to lifelong learning, held that 'All young people must be given the opportunity to gain the knowledge and develop the values, attitudes, and skills that will enable them to develop their capacities to work, to participate fully in their society, to take control of their own lives and to continue learning' (UNESCO, 2000, 12). In the commentary on literacy (Goal 4), the Dakar Framework document appropriately noted that there were some 880 million people who could not read or write among of them two-thirds are women, yet, the education of adults,remain at the periphery of national education systems and budgets' (UNESCO, 2000, 13),among of them most of the population are vulnerable wich is needed to add the process of lifelong Learning (LLL) to provide them livelihood opportunity and coping capacity. one of the major thing which attract the learner towards the LLL is, it helps to development of competency for sustaining in the global society where any members of the community at any place,at any time,in any age group can access the learning which is outcome oriented and help vulnerable members of community to solve their instant problems themselves where the communityLearning Centre can be the center for lifelong learning for the vulnerable.
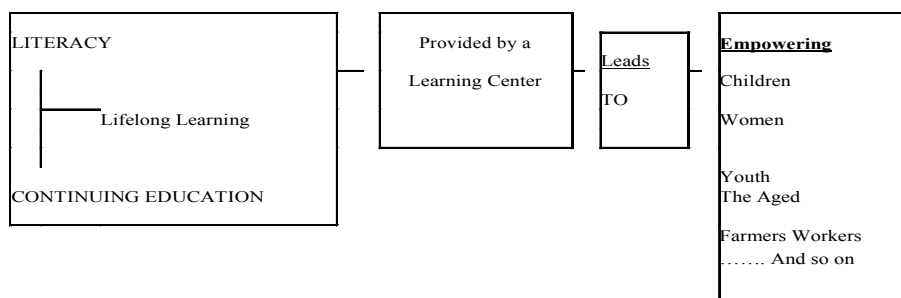

Figure - LIFELONG LEARNING MODEL FOR COMMUNITY

Engagementof Adult Education Department and University with Community

Adult education center/cell/Department which was created during 1976-1982 with a specific motive to enable the adult learner and to help them so that they could become a viable citizen of the country,was one of the important steps to prove the justice to the vulnerable section of the community by bridging the gaps. in 1977 UGC also gave the directive to all the department of the University system where it said that extension is the third dimension besides two i.e. teaching and research. but hardly any department express it and it lost somewhere, but during the development of 11th and 12th plane the very things has developed as the Lifelong Learning which has changed the whole process of acting and thinking in new dimension where the university of Delhi started M.A in Lifelong Learning & Extension to generate the trained human resources and act under the new vision i.e VISTTAR by Department of Adult Continuing Education and Extension (DACEE) University of Delhi, VISTTAR is an attempt to integrate community with university through extension and outreach activity, 'Vistaar' – means extension, is a perfect blend of theory with practice whereby students get practical exposure of guidance in their chosen area. The main purpose of this initiative is developing and offering need-based Lifelong Learning / Education programmers for students and members of the marginalized community. The Vista project not only orients the students with the skills required in community development but would equally sensitizes them towards various issues of these marginalized groups of the society. The critical component of Vista is the Stack holders of Adult education i.e. the students (Undergraduate, postgraduate, research scholars, counseling students and professors) and the community, although extension work under the visitor has been the future of Adult Education of department,where the students of DACEE can be invested these community learning center after the theoretic building by department, it will somehowsolve the trained trainers problem to CLC on the other hand field exposed give the hand on experiences but ,it is equally important to bring other Department of the University under the leadership of "Adult Education Department" to render the services and training for the vulnerable community. It will help to strengthen the institution to institution coloration for the development of community engagement and long-term planning.

Despite a half-century of discussion and discourse aimed at innovation and progress, traditional paradigms and ways of thinking persist in education. The Education for All (EFA) movement, launched in 1990 at the World Conference on Education for All in Jomtien, Thailand and followed up by the EFA Dakar Framework for Action in 2000 with the adoption of six global education goals, which are in themselves a remarkable initiative of the international community is a testimony to the endurance of conventional, but the narrow perceptions of education and learning still prevail. India is still searching anew way to achieve total literacy it is only due to the lack of intent of adopting the innovation technique for mass mobilization and diminishing the role of community learning and participation on all level.

The very research study has shown that the condition of the community learning center is not up to the mark, the allocation of resource either economic and human resources are not sufficient and trained enough to perform the huge task of empowerment, the weak link among the community and policymaker still prevail which is deteriorating the situation of vulnerable population day by day. Lack of development, innovation, and implementation of technology in India is creating the big wall for the assimilation of the larger population of the vulnerable community. Lack of networking between the institutions who work for these kinds of the population.

The study found that innovative practices and adoption of smart technology for the quality output is need of hour for the CLC, as recent government policies priorities to revive the ruler population & marginalised community where strengthening the CLC and same type of institutions, which is working for the community at grass root level may solve the problems for this it needed to understand the role Lifelong Learning and collaboration of government with CLC for the effective execution of policy programme for the marginalised population .

Beside it, the major recommendations can be as following-

- **Revive the JSS**- India has more than 200 Jan Sikshan Sansthan which is working on traditional ways,that is not enough according to the time,pace and demand of Community need,forgreater efficiency and to meet the challenges ofsociety ,it needs to revive the JSS.
- **Smart community Learning Center**- If Government is aspiring for the Smart village Community or smart city ,it is needed to help in the development of smart Community Learning Center, which work on grassroots level for generating the smart thinking, smart approach to management and enable the community to use smart technology loaded with Information Communication Technology , where it will also help in the development of E-Governance as well as it will solve the socio-economic problems of vulnerable community.
- **Collaboration and linkages**- There is needed of Collaboration and linkages between CLC,JSS,University,NGO,Government Institutions and any other organizations working for the community for the effectiveness of CLC. Need to bridge the link between university and community through the extension service.
- **Need to understand the Importance of Adult education** for the strengthen of community where Department of Adult Education with the Collaboration of Indian Adult Education Association can play the key role in policy formation and practices and Evaluation of Community Learning centers.
- **Need to Develop the CLC as a center for Skill training** under the "PRADHANMANTRI KAUSHALVIKASH YOJANA" for the upliftment of vulnerable population to generate competency for livelihood and sustainability.
- **There is also need of massive certification** of these sections of the population by coloration of CLC and MHRD ministry.
- **There is need of quality training** to the people who are working for community learning center.

- **Need to generate the online portal** and link the entire community learning center in India for effective management and quality control.
- **Need to adopt VISTAAR model** by all the universities of India as an idle model to work on community development, research, and development task could be performed for the community engagement.
- **There is also need to develop community research center** as a separate wing under Department of Adult Continuing Education and Extension university of Delhi. Which will play the leadership real for other department and university engagement in community learning center?

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