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RESEARCH ARTICLE

TRAINING AND DEVELOPMENT OF VISUALLY IMPAIRED PERSONS THROUGH TECHNOLOGY: A STUDY WITH SPECIAL REFERENCE TO THEIR EXPERIENCE, SATISFACTION AND EXPECTATIONS IN TAMIL NADU, INDIA

Sathyaseelan, S.¹ and Goswami, I.²

¹Social Work (HRM), Research and Development Centre, Bharathiar University, Coimbatore, Tamil Nadu, India.

²Department of Management Studies, Info Institute of Engineering, Kovilpalayam, Coimbatore, Tamil Nadu, India.

ABSTRACT

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Era of „inclusion“ bolsters the integration of persons with visual impairment into the mainstream. In the current scenario it is mandatory that the higher education system in India should play a pivotal role to ensure education to be delivered in an inclusive system. The learning capacity, employability of visually impaired persons can be substantially improved by technology enabled education system. It requires developing certain policy guidelines and regulations, which would ultimately enable them to have full access to modern education and its range of services and opportunities. An attempt has been made through this paper to present the experience, satisfaction and expectation of visually impaired trainees who have been trained in three different technologies enabled training units in Tamil Nadu. Only if the training experience is good, satisfaction level is high and expectations of the trainees be fulfilled, they will be able to surface out and march ahead of their sighted counterparts in the fields of educational and employment.

Corresponding author:

sakiforacause@gmail.com

INTRODUCTION

The most phenomenal innovation in the field of education for the visually impaired persons is the integration of Information and Communication Technology in the educational system, which ultimately fosters inclusive education system. It's a challenge as well as an opportunity for each and every educational institution to survive the demand

for information and skill by the visually impaired persons.

If we consider the normal scenario, in India most of the higher educational institutes are still embarking on the same blackboards, overhead projectors and educational videos as modern teaching-learning tools. The system is struggling to

survive and grow under emerging expectations and demands from different stakeholders of education system including the differently abled population. So far it has not been able to come-up with confidence either due to poor curriculum or inadequate tools for curriculum delivery or due to lack of application of modern technology and required skills. However, within the limited facilities available, the able bodied persons can access and use them for updating and upgrading their knowledge and skills. It is needless to mention that the differently abled persons are the worst sufferers because most of them are still out of reach of training opportunities for exploring available Information and Communication Technologies in order to achieve their personal and career aspirations.



Figur 1. Visually Impaired Beneficiaries undergoing ICT training at Model Resource Centre, Loyola College, Chennai

The case of visually impaired persons is very sensitive and they need special care and service settings. The birth of assistive technology for the visually impaired has brought new hopes for them. The most significant contributions of such technology have been witnessed in the field of education, employment and entrepreneurship for the visually impaired persons in India. In Tamil nadu, the ICT Enabled training units play the role of taking technology to the visually impaired persons through their training programs. The researcher has made an attempt to present the experience, satisfaction and expectation of trainees through this paper.

RESEARCH METHODOLOGY

A combination of exploratory and descriptive research design have been used for the present study .the target population is estimated to be 87 , the multi stage sampling technique was used to choose 3 districts , 3 centres and 67 respondents for the study , an interview schedule was prepared , pretested and used for data collection .

Objectives:

The objectives of the study have been as under:

- i) To study the demographic background of the respondents.
- ii) To make an assessment of the relationships between experience and satisfaction levels of the trainees,
- iii) To make an assessment of the relationships between experience and expectation levels of the trainees,
- iv) To make an assessment of the relationships between satisfaction and expectation levels of the trainees.

Hypothesis formulated for the study:

To fulfill the above objectives the following hypotheses have been formulated and included in the study.

H01: There is no correlation between experience of trainees and their satisfaction,

H02: There is no correlation between experience of trainees and their expectations,

H03: There is no correlation between satisfaction of trainees and their expectations.

Statement of problem

We live in the age of Information. ICT"s play a vital role in the current scenario. ICT is defined as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information" These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephone.

Information service delivery to the visually impaired has been recognized as the driving force and primary gadgets for almost all progressive initiative that rely on knowledge based and skills oriented development activities in all spheres of human endeavours.

In recent years there has been a groundswell of interest in how computers and the internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings.

Unfortunately the Visually Impaired Persons (VIPs) are not yet compatible to use the conventional resources, neither they can see nor read those texts like others because most of study materials are available in printed format only and it poses a major challenge and limits the VIP's to have access them independently like their sighted peers . Hence there has been the need for assistive technology software and hardware to crop in, to enable the VIP's to access printed materials, Audio and Video materials easily with the help of computer, a scanner and Optical Character Recognition Software (OCR) Application.

Braille method acknowledged as one of the traditional method used by VIPs has been outdated in the current scenario due to its draw back viz: volume of Braille materials and the lengthy process of generating Braille materials.

It thus becomes imperative that VIPs should not be left out of the available opportunities due to lack of knowledge in handling various ICTs that are popularly used in the education and employment sector, trained VIPs can excel both in education and employment and can work more effectively than their sighted counterparts

An equal access for individual to partake in ICT training and the use of ICT for information processing should be made available and accessible to all VIPs" irrespective of their physical and other status because only ICT"S can overcome the limitations posed by the traditional Braille method, hence several research attempts are essential to understand and measure the efficiency of ICT"S, so

that it could be promoted for wider use to empower the target population.

Universe of the Study

The universe of the study comprises, all the visually impaired trainees who have registered themselves with the training units in selected districts between March 2012 to February 2013 and the target population was estimated to be 87.

Sampling procedure, technique and sample size

The multi stage sampling technique was used to choose training centres and the respondents. As shown in Table No.1 Lottery method was used to select the training centres. Further, a census method was used in selecting trainees from the selected training centres .accordingly 3 centres were selected from 3 districts namely Chennai, Coimbatore and Salem and in total 87 samples came out to be the total number of sample size. Respondents who were not willing to talk, comfortable and absentees were excluded and hence the actual number of sample size came out to be 67.

Source of data Collection

Primary sources of data:

Primary source of data was collected through interview method from trainees by making visits to their respective training centers. before visiting each training unit, prior permission was obtained from the concerned agency directors.

Secondary sources of data:

Secondary source of data were collected from journals, books, newspaper, web and other sources.

Tools for data collection

As part of development of interview schedule, first researcher had a formal and informal interviews and consultation with experts in the field of disability social and medical research, experts of statistical and electronic data processing and trainers in the training centres. Later, it was finalised and used for the study. The interview schedule was first administered to 15 trainees, selected randomly in order to see the suitability of the questions for the study. While analysing the responses, the researcher found that

Table 1. Training Centres and Sample selection

S. No.	Name of the District	Total No. of training centers	Total No. of Trainees	Sampled No. of respondents	
				Included	Excluded
1.	Chennai	1.) MRCDS, Loyola College	47	39	8
2	Coimbatore	2.) District Central Library	28	19	9
3	Salem	3) Tiruveni Arakattalai	12	9	3
Total			87	67	20

certain modifications were necessary in the questions on personal profile of the respondents. With the consent of the research supervisor, a few modifications have been made in the interview schedule.

Scope of the research

The scope of the study will be limited to understanding the experience, satisfaction and expectation of visually impaired trainees undergoing training in various centers in select districts of Tamil Nadu viz: Chennai, Coimbatore and Salem. The present study will enable the disability field experts to have a clear view about the experience, satisfaction and expectation of the respondents and as a result, ICTs can be made more accessible and available for these the marginalized people who strive hard to surface out in the society.

Data analysis and interpretation plan

The collected data were subjected to a number of closely related operations such as establishment of categories, applying the established categories to the raw data through coding. After completion of coding work, the coded data were classified and tabulated. The tabulated data were condensed into a few

manageable groups and tables and subjected for further statistical analysis.

Statistical methods were used for analysis

The data were analysed by using SPSS (Statistical Package for Social Science) version 20. The statistical analysis include percentage analysis , one way annova and correlation test .

Difficulties encountered by researcher

1.) At the initial phase of the study due to dearth of literature, the researcher had to devote two complete years to understand the concept and to frame the conceptual frame work.

2.) The difficulty faced by the researcher was time frame involved in data collection, which lasted for nearly one complete year as the study covered all the centres in three districts.

3.) The researcher also had difficulties is collecting foreign reviews, which was later resorted by the advice of the research supervisor through his ideas in collecting foreign reviews by directly communicating with professors across the globe by emails.

4.) During data collection with majority of the respondents, the researcher had to communicate the

interview, concepts in tamil language also which also a reason for extension of interview timing.

Inclusion / Exclusion

For the purpose of this study, all the trainees available in all the select centres were included based on certain inclusion criteria that they were:

- 1.) Visually impaired within the definition because study is confined to training of VIPS only.
- 2.) Both male and female candidates were included to give equal importance to all the gender.
- 3.) The trainees who were not comfortable, not willing to talk, absent were excluded from the study.

Operational definition

(a) Visually Impaired Person (VIP)

Visual impairment, also known as vision impairment or vision loss, is a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses. Visual impairment is often defined as a best corrected visual acuity of worse than either 20/40 or 20/60. The term blindness is used for complete or nearly complete vision loss. Visual impairment may cause people difficulties with normal daily activities such as driving, reading, socializing, and walking. There are 4 levels of visual function, according to the International Classification of Diseases -10 (Update and Revision 2006): Normal vision; Moderate visual impairment; severe visual impairment; and blindness. Moderate visual impairment combined with severe visual impairment is grouped under the term "low vision". Low vision taken together with blindness represents all visual impairment. In this study visually impaired persons are those who participate in ICT trainings organized by various agencies in Tamil nadu.

(b) Information and Communication Technology (ICT)

ICT (Information and Communication Technology / Technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various

services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system.

ICT in the present study refers to the related technology which is available and made accessible for the VIP's in the training centers covered in the study.

(c) Training and development

Training and development is vital part of the human resource development. It is assuming ever important role in wake of the advancement of technology which has resulted in ever increasing competition, rise in customer's expectation of quality and service and a subsequent need to lower costs. It is also become more important globally in order to prepare workers for new jobs. For the present study training and development means and include, training and development of visually impaired persons through ICT's viz: ICT hardware and ICT software's.

(d) ICT Software

Software is the applications and programming instructions needed to make the computer hardware do useful work. For the present study, ICT Software means and include the following: Screen Reading Software, Screen Magnifying Software, Typing Teacher Software, Optical Character Recognition Software, Voice Recognition / Dictating Software, Daisy Book Creation Software, Braille Transcription Software, Optical Braille Character Recognition Software, Dictionary software, and Mobile Screen Reading Software.

(e) ICT Hardware

Hardware is a generic term for any part of the computer that you can physically touch, pick up, hold, move around the room etc. In other words, hardware are the physical parts that make up the computer. Within the scope of the present study, ICT Hardware means and include the following:

Scanning and Reading Appliance (OCR), Instant Reader (OCR), Electronic Video Magnifier and Reading Aid, Daisy book Reader, Talking Dictionary, Talking Calculator, E-Book Reader, and iPods.

(f) ICT specific Braille products

Braille is a system of raised dots that can be read with the fingers by people who are blind or who have low vision. Teachers, parents, and others who are not visually impaired ordinarily read braille with their eyes. Braille is not a language. Rather, it is a code by which many languages - such as English, Spanish, Arabic, Chinese, and dozens of others - may be written and read. Within the scope of the present study ICT specific Braille products means and include the following : Refreshable Braille display (PC Monitor for the VIP), Braille Embosser, PIAF (Pictures in a Flash) device, and Tactile Graphic - Audio System.

(g) Computer skills

In the present study , computer skill is synonym for computer literacy and it means the ability to use computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving. Under the scope of the present study , the computer literacy skill includes : Keyboarding, File / Folder Management, Trouble-shooting during PC Operations, MS Office package, Accessing and Managing PDF File, CD writing, and Windows Media Player.

(h) Web-based operations

The World Wide Web is an open source information space where documents and other web resources are identified by URLs, interlinked by hypertext links, and can be accessed via the Internet. It has become known simply as the Web. In the present study web-based operations means and includes the following : Internet Surfing, E-Mail Management, Reading Online (News, Audio Books), Using Social Networking sites, Forums, Groups and online Communities, Using Online telecommunication Applications, Using Specific Social Networking site / Discussion Forums for

Visually Impaired, Appearing for online tests / exams, and Online entertainment / games for VIPs.

(i) Development of skills

A skill is the learned ability to carry out a task with pre-determined results often within a given amount of time, energy, or both. In other words, the abilities that one possesses. Skills can often be divided into domain-general and domain-specific skills. Skills development is the intended output of education and training efforts and an enabler for growth. Skills development can be defined as what we do to improve productivity in the workplace and the competitiveness of our businesses and to improve the quality of life of workers, their prospects of work and their mobility. In the present study development of skills means and includes the improvement of following skills viz: listening, typing / keyboarding, reading, writing / drafting, and easy memorising skills.

(j) Trainee

Trainee is commonly known as an individual taking part in a trainee program or a graduate program within a company after having graduated from university or college. In the present study the term trainee means: the visually impaired persons undergoing ICT training in the training units.

Measures:

Experience of Trainees in the Current training program

To measure the experience level of trainees during the training programme, a scale was constructed, it consist of 22 items, focusing on 4 different parameters of experience, such as Conduct of Training Program, Mobility / Accessibility of trainees, Trainer and Quality / Availability / Cost Factor of AT Software's and Hardware's .this is also a likert type scale having 5 response categories starting from 1)Highly Boring 2)Boring 3)Neutral 4) Exciting 5) Highly Exciting. So there are total 22 keyed items assigned with scale values 1 through 5. The scholar has tested and recorded that the scale as a whole as split half reliability coefficient by cronbach alpha=.774

Satisfaction level of Trainees in the Current training program

To measure the satisfaction level of trainees towards the ICT training program , a scale was constructed ,it consist of 34 items , focusing on 5 different parameters of satisfaction , such as Conduct / Behaviour & Skills of Trainers , Content , Duration & Assessment of the Program , Learning of Operations / Instructions during your course , Development of Skills during the course and Support Services .this is also a likert type scale having 5 response categories starting from 1.Highly Dissatisfied
2.Dissatisfied3.Neutral4.Satisfied5.Highly satisfied
.So there are total 34 keyed items assigned with scale values 1 through 5 . the scholar has tested and recorded that the scale as a whole as split half reliability coeffcieint by cronbach alpha=.719

Expectations level of Trainees

To measure the expectation level of trainees towards the ICTS, a scale was constructed, it consist of 20 items, focusing on 4 different parameters of

expectations, from government, educational set ups, NGOs and industries .this is also a likert type scale having 5 response categories starting from 1) Strongly Disagree 2) Disagree 3) Neutral 4) Agree 5) Strongly Agree .So there are total 20 keyed items assigned with scale values 1 through 5. The scholar has tested and recorded that the scale as a whole as split half reliability coeffcieint by cronbach alpha=.873

RESULTS AND DISCUSSION

To test the following hypothesis, pearson’s correlation analysis method was followed

H01 : There is no correlation between experience of trainees and their satisfaction, The above table -2 - pearson’s correlation test was applied to find out the relationship between the variables of experience and satisfaction of the respondents towards the training program. From the above table - 2 it is inferred that it is significantly associated with each variables. This indicates that there is a high positive correlation (r=.807, p<0.01 sig) between the experience and satisfaction of the respondents towards the same.

Table 2. Correlation Results based on the experience of the trainees and their satisfaction

	EXPERIENCE	SATISFACTION
EXPERIENCE	1	.807**
Pearson Correlation		
Sig. (2-tailed)		.000
N	67	67
SATISFACTION	.807**	1
Pearson Correlation		
Sig. (2-tailed).000		
N67		67

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3. Correlation Results based on the experience of the trainees and their expectation

		EXPERIENCE	EXPECTATION
EXPERIENCE	Pearson Correlation	1	.849**
	Sig. (2-tailed)		.000
	N	67	67
EXPECTATION	Pearson Correlation	.849**	1
	Sig. (2-tailed)	.000	
	N	67	67

**. Correlation is significant at the 0.01 level (2-tailed).

H02 : There is no correlation between experience of trainees and their expectations, The above table – 3 - Pearson’s correlation test was applied to find out the relationship between the variables of experience and expectation of the respondents towards the training program. from the above table -3 it is inferred that it is significantly associated with each variables . This indicate that there is a high positive correlation (r=.849, p<0.01 sig) between the experience and expectation of the respondents towards the same.

H03 : There is no correlation between satisfaction of trainees and their expectations. The above table - 4 - pearson’s correlation test was applied to find out the relationship between the variables of satisfaction and expectation of the respondents towards the training program. From the above table - 4 it is inferred that it is significantly associated with each variables. This indicates that there is a high positive correlation (r=.687, p<0.01 sig) between the satisfaction and expectation of the respondents towards the same.

MAJOR FINDINGS OF THE STUDY

Experience and satisfaction

The majority (53.4%) of the respondents show high level of excitement, To conclude, there is relationship between variables of experience of trainees and their satisfaction, it indicates there is a highly positive correlation (r=.807, p<0.01 sig). Hence it is inferred that it is statistically significant and associated with each variables so the null hypothesis H02 is rejected.

Experience and expectation

To conclude, there is relationship between variables of experience of trainees and their expectation, it indicates there is a highly positive correlation (r=.849, p<0.01 sig). hence it is inferred that it is statistically significant and associated with each variables so the null hypothesis H03 is rejected .

Satisfaction and expectation

Majority of (51.5%) of the respondents show high level of satisfaction towards training program. To conclude, there is relationship between variables of

Table 4. Correlation Results based on the satisfaction of the trainees and their expectation

		SATISFACTION	EXPECTATION
SATISFACTION	Pearson Correlation	1	.687**
	Sig. (2-tailed)		.000
	N	67	67
EXPECTATION	Pearson Correlation	.687**	1
	Sig. (2-tailed)	.000	
	N	67	67

** . Correlation is significant at the 0.01 level (2-tailed).

satisfaction of trainees and their expectation, it indicates there is a highly positive correlation ($r=.687$, $p<0.01$ sig). Hence it is inferred that it is statistically significant and associated with each variables so the null hypothesis H04 is rejected.

Other Findings

- The results reveal that respondents in the age group of 15 to 25 years (46.2 percent) dominate other age groups , 25-35 years (35.6 percent), 35-45 (14.2 percent) and Upto 45 years (4 percent) .hence it can be concluded that the sample is comprised of heterogeneous group of respondents in the age group of 15 years and above 45 years.
- The results reveal that male trainees (75.7 per cent) are high and remaining 24.3 per cent are female .it shows that in tamil nadu the population of Visually impaired trainees is dominated by male .
- The results reveal that majority (59.5 per cent) of the trainees stay with parents , 36.4 percent of respondents are not under the support and care of parents and only 4 per cent live in residential schools .
- The results reveal that majority 47.4 per cent are dependents, 40.5 per cent are students and

only 12.1 percent are employed. It can be observed that students and dependents take training in order to improve their education and employment prospects.

- The results reveal that the majority the respondents (38.5 per cent) have stated that their family income is between Rs 15001-30,000, (33.6 per cent) upto Rs 15,000 and 27.9 percent 30,001 – 50,0000 .
- The results reveal that (68.4 per cent) of the respondents are totally impaired and 31.6 per cent are partially impaired. Totally impaired persons need more attention and care when compared to any other impaired person as they are totally dependent on others for all activities.
The results reveal that majority of respondents (98 percent) are visually impaired more than 10 years and only (2 percent) are impaired between 7-10 years.
- The results reveal that 88.7 percent of the respondents posses 75-100 percent of visual impairment and 11.3 percent posses 50-75 percent of visual impairment. Hence it's evident that totally impaired trainees outnumber the partially impaired trainees.

Conclusion

To conclude, it is evident from the research findings of the study that, it's a positive aspect that the visually impaired have broke their traditional stigma and are striving hard to learn and compete on their own through these type of trainings in educational and employment arena.

The study findings have also revealed that the majority of the visually impaired trainees have experienced exciting training experience during their course of training, which projects the fact that the service providers are playing their role properly in catering to the training needs of the visually impaired persons in Tamil nadu.

This study also revealed the fact that a major portion of the visually impaired trainees are highly satisfied with the training program offered by the agencies .however agencies should endeavor to satisfy each and every visually impaired trainee who walks in to their training unit in order to enable each and every visually impaired surface out of the issues and challenges they face in educational and employment sector.

The study also throwed light on the expectations of the visually impaired trainees, it was evident that a major portion of the respondents have high level of expectations from the outer society. It has to be understood that training services alone do not have the potential to contribute fully for independent living of the visually impaired persons on the contrary, the attitude of the educational bodies ,industrial bodies and the society in large will have a drastic impact on the growth of the visually impaired persons.

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