Educational Paradigms of Information Technology for Human Resource Training: Myths and Potentialities across the NGOs of Balochistan

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Abstract

Training techniques equip the decision makers and human resources with the ideas, concepts and competencies to solve organizational problems in effective and efficient manner. The present global scenario indicates that the need of learning organization has arisen by the emerging trends of creativity and revolutionary technology in the organizations. Through the centuries, Information technology (IT) has invaded all areas of work including human resource training and the notion of learning has transformed the theory of human resource development as profitable strategy by linking the training process with pedagogical aids. This paper analyses the myths and potentialities of innovative techniques in the information age. The study depicts different educational paradigms of information technology in the training process of human resource. It also reflects the position of NGOs in Balochistan as learning organization which elucidates the general applications and principles of IT training techniques across these organizations in the province.

The exploratory study investigates several aspects of the use IT in training of human resource by using participatory and triangulation approaches in order to optimize the synergies between methods and disciplines. The rationale for multi-method research assisted to map out the issue in various dimensions of variables and data analysis. The study ends up with practical measures and a recommended framework for educational paradigms of IT in training of human resource for selected organizations.

Introduction

Emerging trends and novel ideas of globalization have entirely revolutionized the notion of management and its functions. Training and development processes have now been transformed into the shape of an institution rather than an activity. The organizations now strive hard to opt for vocational education and training to be the part of strategy formulation in order to achieve the efficacious work. Verifications have been made through research that learner's perception could be enhanced by improved training methodology. The success of training programs would specifically be dependent on the methodology of training process. Innovations in terms of information technology (IT) have introduced ever-increasing number of training and development techniques over the past years. Training methods and programs can be regarded as techniques when blended with contemporary tactic and presented artistically. As technology failed to capture much interest in mainstream teacher education; 'educational technology' as a separate discipline or at least a separate study program began to grow in higher educational institutions along with arts studies, social and pure sciences in many developed countries. Therefore, the relationship of technology and training, at least prior to the introduction of computers have been categorized as marginally integrated with most growth-proceeding in isolated and parallel paths. Similarly, information technology as an aid to training of human resource has also been adopted by the NGOs around the globe.

The integration of IT with pedagogical processes introduces a new wave of experts from outside transitional trainers by creating an atmosphere of intense competition. There could be more to motivate this integration than the conventional benefits of cross-fertilization in the information society of 21st century. Along these lines, IT has paved a way for effective, fast and labour-saving methodology for building up the skills and expertise of human resource. It would have caused a major change to the nature of work leading towards performance gains. Turner. S (2003) mentioned in an article at Ghana that technology can work as a catalyst in changing the learning environment form teacher-centred to learner-centred process. She added that in technology-rich open environment learners' active involvement in seeking and analysing information, exploring and sharing new ideas, encountering and solving problems on interdisciplinary projects is significant. This eventually would open up new opportunities for learners to reach their potential as critical thinkers.

The underlying relationship of such technologies may principally be with performance improvement in training processes through innovation. Considering the criterion measurement, the major effect of IT may be on people and attitudes. Thus the fundamental principal of its introduction in training and capacity building

disciplines could be the improved performance and overall efficacy in the setup of NGOs. On the contrary, it has often been argued that the use of information technology as powerful techniques may replace the trainer and thus dehumanises the training process. This notion may not certainly be true as programmed instructions and intelligent tutoring system can unquestionably replace the trainer to some extent with an integrated human effort. However, the training would be a complex process for socializing the personnel with close interaction between human beings. The study portrays the theme that educational design of IT can appropriately be to complement rather than to replace the trainer. For instance, groupware, courseware, programmed instructions and web-based training can be the strong tools for enhancing learning in training process. Trainers' perception, intelligence and wisdom can be significant ingredients to make IT operational in its various educational paradigms. However, there could be a number of innovative techniques aided by IT that must be incorporated with suitable framework within educational implications for effectiveness. According to N. Rushby (1990) of the several possible educational frameworks, the major instances are enumerated with a focus on innovative educational designs of IT as follows.

Table 1
Educational Paradigms of IT & Major Instances with Educational Design

Educational Paradigms of IT	Instructional Paradigm	Revelatory Paradigm	Conjectural Paradigm	Emancipatory Paradigm
1.	Instructional Dialogue	Simulation	Model Building	Intelligent-Tutoring Systems
2.	Tutorial Packages	Animation	Virtual Reality	Web-Based Learning
3.	Drill & Practice			
4.	Instructional Games			
5.	Problem Solving			

According to table 1, the *instructional paradigm* of information technology proposes the best way of learning the subject material that could be broken up into many smaller sub-tasks of learning and then to concentrate on each in turn. N. Rushby further stated that the trainees in reward would be encouraged for their attempts and then may proceed for the next one. In case, the trainee would encounter a problem on a particular point then he would be held at that point until he had mastered it or alternatively directed to do some remedial measures into the task that could be presented in smaller parts or may be presented in another way. In this context, the core theme of this paradigm is that the trainees could be reinforced at every opportunity for best learning by dividing the skill task into smaller parts. This approach of electronic media would focus on the subject matter of the task. This offers the main task into many planned sequenced sub-tasks thus presenting the structured way of learning accompanied by clear feedback. The underlying principle for designing this sort of framework could be that it may demand high level of calibre and intellect from the trainer because the operation would demand proper guideline of tutors at every step. Moreover, this paradigm would equally be suitable for management training and technical task training in the setup of NGOs in Balochistan which is the largest and least developed province of Pakistan. The western border regions of Pakistan are the poorest and economic activity has not yet changed much over the years. Nevertheless, Balochistan possesses and economic potential that can best be utilized to benefit population. There are substantial reserves of coal, oil and gas. The province of Balochistan is still on the stage of development lacking application of advance technology in various disciplines, specifically in the field of education. Therefore, research study has been conducted to explore the extent of using educational IT for training of human resource in Balochistan.

The results of survey show that NGOs of Balochistan are practicing the Instructional Paradigm of IT and its educational productivity is appreciated by the trainers and trainees of NGOs. The organizations perusing to produce quality education are using instructional dialogues for the training of trainers (TOT) which apparently prove to be effective for better learning outcomes. Moreover, instructional games can have enormous applications in the training sessions such of AIDs prevention, environmental protection, agricultural development and sanitation because it can be designed to present a problem and can offer many solutions to that specific problem thus providing the opportunities to practically deal the issues in the environment of NGOs. Additionally, a sophisticated exercise can build confidence and independence resulting in development of collaborative learning. This might enable trainees to recognize the level of their previous learning and help to shift the focus of attention from what 'is being learnt' to 'how learning is used'. It would simply give meaning and value to the training program.

N. Rushby mentioned that r*evelatory paradigm* refers that some features of IT could guide the trainees through a process of learning by discovery in which the subject matter and the underlying theory may progressively be revealed on the trainee. This scheme reflects that the IT tools act as a mediator between the

trainee and a hidden model of real world situation, for instance, simulation and animation in which the hidden revelation inside the simulated environment would prove to be thought provoking, eye-catching and self-motivated for trainees. Semi-structured observations reported that such techniques are considered as vital source of learning in the NGOs of Balochistan because these offer thought provoking environment for the trainee to resolve a problem and prove to be self-motivated to make efforts for the solutions. Although, NGOs are not currently using sophisticated setups of such educational software due to heavy costs and high level of expertise but simulations and animation packages are practiced by trainers for effective teaching. E. Klopfer et al reported in an Educational Arcade Paper that simulations bridge the gap between the classroom and the real world in the illustration of well-designed learning games by presenting it in a manner that is more digestible and engaging for students by allowing them to retain, connect and transfer learning from these experiences to future learning experiences.

Taking into account the idea of N. Rushby, the *conjectural paradigm* refers that the use of IT to assist the trainee for manipulation and testing the ideas and hypotheses could be a tremendous healthy exercise. Such packages of (Computer Assisted Learning) CAL-technology might be most difficult to design and run both for trainee and trainers. The emphasis should be on trainee's ability to explore the information and skill through this technique. This framework could provide a real world situation for drawing hypothesis and testing. This enhances the computer literacy skills because the trainee would be much nearer to the computer than instructional and revelatory packages. The speculative form of packages could conveniently be conceived by an instance of model-building, expert systems, virtual reality and artificial intelligence. In this context, B. Ferry, et al (2004:296) highlighted the common features of overlapping learning principles for simulation and video games.

> "Studies into the complex learning situations presented in video games and other simulations by researchers such as the Cognition and Technology Group at Vanderbilt (1990), Gee (2000), Jonassen, (1997), Reigeluth and Schwartz (1989) have identified various overlapping learning principles that share four common features. First, they involved socially shared intellectual work that is organised to achieve a task. Second, they contain elements of the traditional apprenticeship process (described by Lave, 1991) that encourage student observation and comment, make explicit much of the know-how acquired, and permit the participation of the relatively unskilled players. Third, they are organised around strategies needed to acquire a particular body of knowledge. Fourth, the process of playing a simulation or video game is focused on the individual but makes use of a learning group to support decisions and provide reflection. This emphasises inquiry, skill development, collaboration and reflection (Tan, Turgeon, & Jonassen, 2001)."

The text emphasises on the skill development, inquiry of problems, collaborations and reflection on the part of learners through simulations. According to the perception of trainers in the survey of NGOs, the only distinction may be perceived as revelatory software framework which could provide handling and solving problems with the available situation while in model-building situation, the trainee can have an approach to literally change the external conditions of simulated models. This approach is used to teach complex technical skills by testing hypothesis which is useful tool for the NGOs working on the issues of Micro-credit financing schemes and small business setups. Moreover, the scheme appears to be a rich source for teaching research skills by deep analysis for drawing conclusions.

On the other hand, the significance of *Emancipatory paradigm* of IT is to reduce the workload of trainee. The trainees may involve in contributing authentic and inauthentic labour for accomplishing a task. According to N. Rushby, the labour required to learn a skill may be authentic while extra unusable labour done to accomplish the task would be inauthentic labour. The introduction of IT emancipates the extra labour which could not be useful for learning the task. The labour saving aspect of technology would lead towards time saving and cost saving exercises in training. The trainer must decide the extent which might be needed by the trainee in order to get expertise from learning. E-learning, web-based training, knowledge-based systems, intelligent tutorial systems, video conferencing and voice technology could be the powerful features for labour saving framework. The revolution of IT has promoted a culture of swift and systematic learning. Semi-structured observations report that such packages are literally supporting emancipatory paradigm of IT in the NGOs during training. E-learning, web-based training and video conferencing are the best source of learning by making maximum gains in terms of knowledge and expertise through saving time and labour in the competitive environment of NGOs. Therefore, the emancipatory paradigm of technological aids has tremendous uses in the labour saving framework for the NGOs of Balochistan. V. Koller, et al (2000) criticised Technology-Based Leaning Strategies as follows;

> "Another key feature of TBL is that it emphasizes 'learning solutions' and 'learning results,' and
> is contextual and can be personalized. As such it allows for a new way to integrate learning

with work. Rather than training workers on every possible procedure that they may need throughout their working lives, in an e-learning or TBL model, workers have access to the training module for a given process only if and when they need it, perhaps delivered via a handheld computer. In addition, technology is already in place that allows TBL delivery systems to anticipate future information and learning needs by recognizing patterns in learning styles and delivering training in chunks as needed by the learner. Since much of TBL technology is so new, no leading paradigm has been established regarding the most effective delivery of content for the various modes that are available.   In fact, a number of technologies ended up on the trash heap in just the past few years, after appearing to be tremendous breakthroughs when first introduced."

In view of the above reference, TBL is rapidly emerging in various principles as training designers and educators learn how to use these tools for better effect. Recent trends include the gravitation towards online-delivery of content and adoption of learning objects while smaller units of instructional contents can be assembled and restructured for use in multiple modes and methods of learning for further educational use. However, Adoption of widespread TBL strategies in education and training has become more of its priority.

From the above viewpoint, various educational paradigms of information technology appear to be an incredible contribution towards training of human resource in the setup of NGOs. The research study has been conducted among the NGOs of Balochistan province existing under different legislative provision. The study is based on the stratified random sampling technique with respect to different categories of areas of conduct under the registration legislations and international NGOs from the universe extended to Balochistan province. The details of NGOs working under different legislative provision are as follows;

Table 2
Detail of NGOs Registered in Balochistan

No.	Legislative Provision	No of NGOs
1	The Societies Registration Act, 1860	339
2	The Voluntary Social Welfare Agencies (Registration and Control) Ordinance, 1961	1370
3	Cooperative Societies Act, 1861	888
4	The Companies Act, 1984	19
5	International Non-Governmental Organizations INGOs	67
	Total	**2,683**

Table 2 shows 2,683 organizations registered with five different registration authorities for operation. According to registration authorities, the attachment with a specific authority provides security and ease to work on projects. The legislation defines the path to work and classifies the area of activities for the NGOs. Alternatively, the International NGOs perform under the supervision of their head offices in Islamabad or other relevant foreign countries. The INGOs are performing under their pertinent legislations of specific country having proper management control for the specific projects. It has been disclosed that the NGOs are categorized as functional and non-functional at present and apparently proves that 4.6% of total NGOs are performing in pursuance of their goals. The NGOs are performing having different themes and projects while some of the organizations share common objectives depending upon the financial support in order to train human resource from public and private sector.
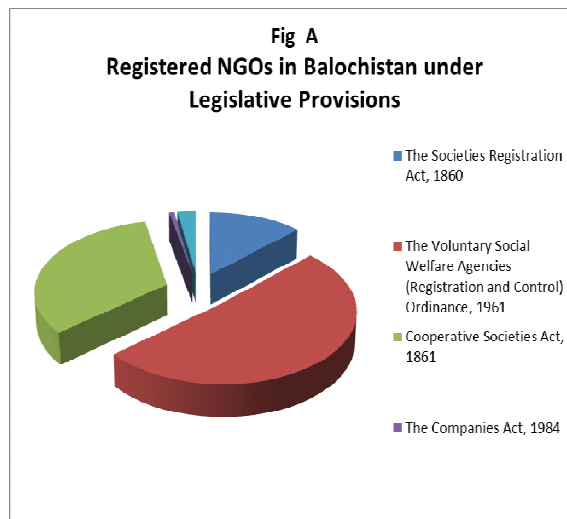

Fig A
Registered NGOs in Balochistan under
Legislative Provisions

- The Societies Registration Act, 1860
- The Voluntary Social Welfare Agencies (Registration and Control) Ordinance, 1961
- Cooperative Societies Act, 1861
- The Companies Act, 1984

Table 3
Distribution of NGOs Selected and Interviewed
(16% of Total Population)

	International NGOs		Voluntary Social Welfare Act- 1860		Societies Registration Act- 1860		Cooperative Societies Act- 1862		Joint Stock Companies Act- 1984		Total No. of NGOs	
	Total NGOs	16%	Total NGOs	16%	Total NGOs	16%	Total NGOs	16%	Total NGOs	16%	Total NGOs	16%
Balochistan Province	28	5	50	8	29	5	8	1	8	2	123	21

According to (fig B), the optimum accuracy of the sample has been achieved by forming up the strata of legislative provision. 16% of total NGOs in Balochistan have been chosen on proportional allocation from each stratum on random basis. In this manner, twenty one NGOs have been selected and interviewed for data collection based under different strata. The NGOs under different legislations could not be interviewed either for becoming defunct or not permitted to disclose their information by their head office management authorities. Therefore, four NGOs were replaced with those under the same ordinance in order to keep the sample size intact.

fig B
Distribution of NGOs selected
(16% of Total Popultion)
■ International NGOs
■ Voluntary Social Welfare Act- 1860
■ Societies Registration Act- 1860
■ Cooperative Societies Act- 1862
■ Joint Stock Companies Act- 1984

The responses of trainees are observed in terms of their mean perceptions in order to analyse the extent of effectiveness and current use of various educational paradigms of IT packages during training. The scale of 1-5 degrees was presented to record the responses of trainees which follows as, (1-Stronly disagree, 2-Disagree, 3-Uncertain, 4-Agree, 5-Strongly agree). The scale as a tool for ranking the responses has been set by the researcher in which 1-2 is accepted as negative, 3 as inconclusive and 4-5 as positive.
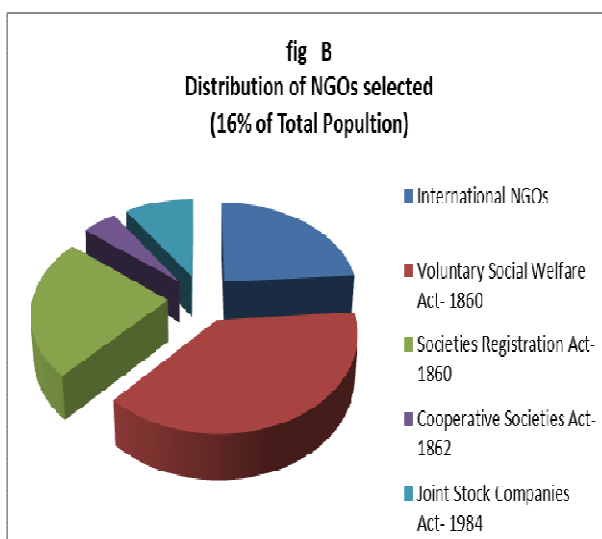
Table   4
Perceptions of Trainers about the Effectiveness & Current Use of Educational Paradigms of IT in NGOs
of Balochistan during Training

	Mean Perceptions of Educational Paradigms for the use of IT			
	Instructional Paradigm	Revelatory Paradigm	Conjectural Paradigm	Emancipatory Paradigm
Effectiveness	3.8	3.9	4.2	4.3
Current Use	3.5	3.7	2.8	3.9

According to table 4, it has been revealed that the trainers perceive about conjectural and emancipatory aspects of IT in training as more effective with the mean scores of 4.2 and 4.3 respectively as compared to instructional and revelatory design. On the contrary, the mean perceptions of trainers about the current use of educational paradigms of IT depict that conjectural aspect of IT is less frequently being applied during training as compared to the other paradigms. It appears that model building, expert systems and virtual reality are not installed for educational purposes as compared to instructional and web-based packages.
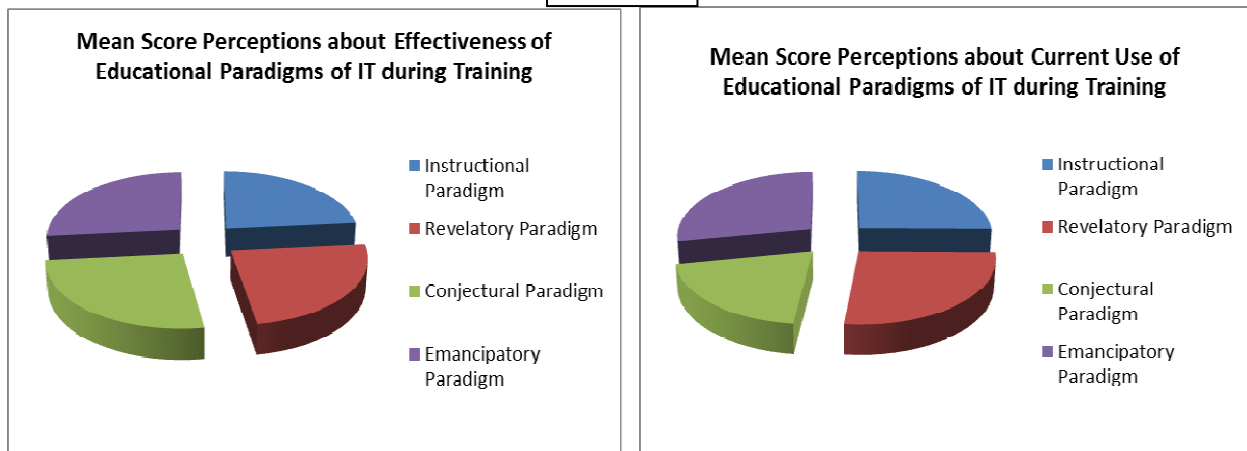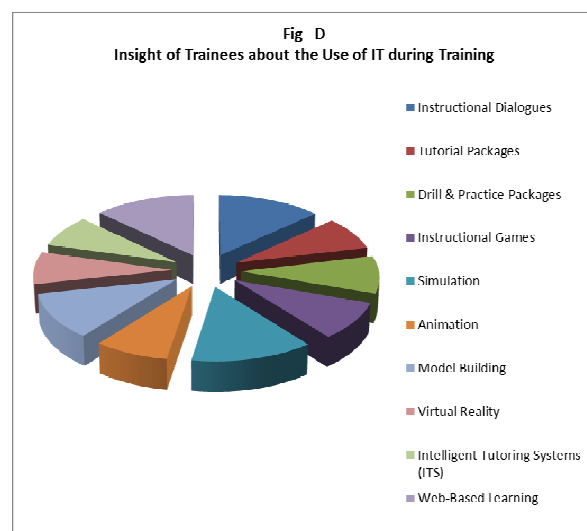
Fig   C

Mean Score Perceptions about Effectiveness of Educational Paradigms of IT during Training

- Instructional Paradigm
- Revelatory Paradigm
- Conjectural Paradigm
- Emancipatory Paradigm

Mean Score Perceptions about Current Use of Educational Paradigms of IT during Training

- Instructional Paradigm
- Revelatory Paradigm
- Conjectural Paradigm
- Emancipatory Paradigm

Table   5

Insight of Trainees about the Use of Information Technology during Training

Educational Paradigms	IT Packages used for Training	Mean Scores
Instructional Paradigm	Instructional Dialogues	4.1
	Tutorial Packages	2.5
	Drill & Practice Packages	2.8
	Instructional Games	2.8
Revelatory Paradigm	Simulation	4.1
	Animation	2.5
Conjectural Paradigm	Model Building	3.4
	Virtual Reality	2.4
Emancipatory Paradigm	Intelligent Tutoring Systems (ITS)	2.4
	Web-Based Learning	4.0

Fig D depicts the details regarding trainees' awareness about the use of IT in training programs. The software packages like instructional dialogues and simulations are best used in training sessions with the mean score of 4.1 which shows that instructional and revelatory paradigms are being applied during training programs through these packages. Web-based learning programs prove to be more effective and common source of emancipatory paradigm which assist in training sessions of NGOs while conjectural paradigm appears to be little less frequently used in training programs. The results of mean score and structured observations depict that use of web-based and instructional software is most popular and convenient method of training in the NGOs as such packages are affordable and expedient for trainers to be handled. Conjectural paradigm pertaining to model-building and virtual reality needs more technical expertise on the part of trainers and trainees, therefore, trainees appeared to be inconclusive about such packages.

Fig D
Insight of Trainees about the Use of IT during Training

- Instructional Dialogues
- Tutorial Packages
- Drill & Practice Packages
- Instructional Games
- Simulation
- Animation
- Model Building
- Virtual Reality
- Intelligent Tutoring Systems (ITS)
- Web-Based Learning

All the above mentioned educational IT techniques have been included as training techniques for obtaining trainers' perceptions. The perceptions covered three-fold responses including, current use, effectiveness and efficiency of these techniques for human resource in the NGOs. Referring to that evidence, the observations reveal that all such techniques gained positive responses in terms of greater means of data than traditional

methods of training, although, they have not currently been used by NGOs in the province. This clearly depicts that the implementation can be made possible in these organizations to enhance training and learning process. In this regard, mean scores about the insight of trainees for educational use of IT in training process have been collected in order to analyse the effectiveness of such techniques to develop professional skills and to know the level of awareness of trainers about these IT techniques.

Table 6
Insight of Trainees about the Educational Use of Information Technology in Training

Questions	Mean
Effectiveness of Educational Paradigms of IT for HR Professional skills	4.09
Appropriateness of Educational Paradigms of IT with Success of Training Programs	4.36
Trainers avoid using educational IT techniques due to lack of awareness	2.55

The data in table 6 shows the mean perceptions obtained from trainees in the NGOs of Balochistan about the educational use of IT during training. This shows that the mean perception of trainees is 4.09 (nearer to the highest degree on set-scale) unveiling the perception that educational paradigms of IT can have a tremendous positive effect on personnel's professional skills. The comparison of means reveals that the ratio goes highest with 4.36 for the perception of trainees about appropriateness of educational paradigms of IT for successful training programs. This ratio is nearest to the high degree on the set-scale, therefore reveals that there exists a general agreement on the relevance of educational paradigms of IT with success of training processes. As it appears from the study that trainers avoid using IT-aids due to lack of awareness about IT. Its mean is reported as 2.55 which is somewhere in the middle point presenting uncertainty by trainees about this statement, therefore, it is inconclusive. On the contrary, according to the perception of trainers in the

Fig E
Insight of Trainees about the Educational Use of IT during Training

- Effectiveness of IT for HR Professional Skills
- Success of Training Programs &the Application of IT
- Trainers Awareness about Using IT

structured observations, extra care and wisdom is required to design and run the simulation package on the part of employees for teaching a skill. Hands-on experience must be a pre-requisite to train the employees before using this technique in training. This feature of innovation can be blended with other techniques of role play, case-study analysis and tray-training. However, simulation and animation techniques having revelatory aspect are practiced by the NGOs of Balochistan.
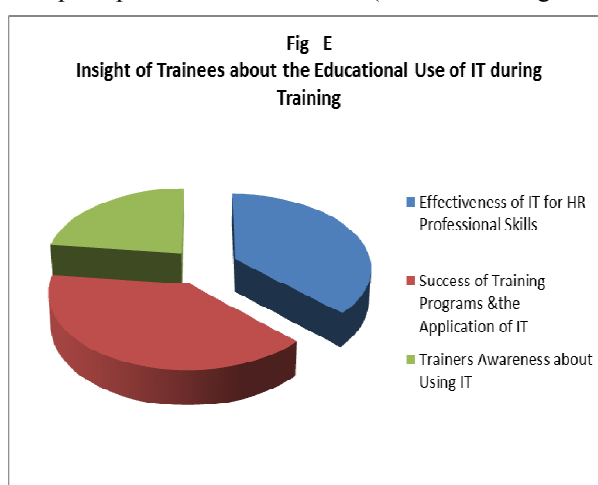
The overview of the above cited text presents a vivid depiction about the myths and potentialities of IT techniques across NGOs in Balochistan. This revealed that information technologies started to be a part of education then transformed as an aid for training process by organizations. Moreover, major types of educational paradigm of IT have been exposed in four detailed categories including instructional, revelatory, conjectural and emancipatory concepts. These paradigms of IT have been supported by semi-structured observation of trainers and trainees of NGOs. In the instructional outline, the possibilities of individualising instructions, the trainee may feel protected from the mistakes and be able to learn after a few trials with fewer inhibitions. The revelatory form can be used to mediate between the trainee and a hidden simulation model of the real world and in the user friendly form, it can reduce the amount of non-essential tasks to reach the objectives. Explicitly, conjectural paradigm provides a real world situation that can provide a degree of control and more options to the learners to reach towards the destination. Likewise, emancipatory paradigm provides the presentation of a typical scenario to trainees accompanied with certain tools to get data from the available dictionaries, directories and previous knowledge-base that can save inauthentic labour. The results from perceptions of trainers and trainees about the applications of educational paradigms of IT in training process revealed that instructional, revelatory and emancipatory paradigms are being applied as general principles of IT during training but conjectural paradigm has little less application as it involves heavy cost and expertise for installation and handling. In the same context, technological issues have also been discussed as confronted challenges for adoption of innovation. Consequently, the text supported that the integral partnership of IT as contemporary approach along with educational paradigms could result in performance improvement of workforce for retaining excellence among human resource in the NGOs.

Referring to the above conclusions, a framework of recommendations sets a successive pathway for further research dimensions for the NGOs.

- The study overall reveals that there is a dire need to develop awareness about the educational designs of IT during training process as technical and human capital have not appropriately been employed to get the maximum advantage out of available resources.

- It would be more appropriate if NGOs work in collaboration with the public and private partnership in order to develop more authentic network of educational IT for training and development processes of human resource.

- The present study raises theoretical questions such as biographical characteristics of different age-groups, gender, academic qualifications, job experiences and IT-expertise can have any impact on the perceptions of trainers and trainees about the educational use of IT. Further research studies can be conducted to address such questions.

- This study paves the way to conduct further research studies to probe the observed issues from different perspectives about the nature of training of human resource by adopting different approach of analysis other than triangulation.

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