

EFFECTIVENESS OF IN-HOUSE TRAINING ON TECHNICAL EMPLOYEES IN BIOTECH INDUSTRY

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ABSTRACT

Evaluation and effectiveness of In-house training is the measurement of improvement in the employee's knowledge, skill and behavioral pattern within the organization as a result of the training program. This measurement helps to design training program for future associated benefits of industrial employees. Thus, it indicates whether the program has been able to deliver its intended goals and objectives. The purpose of this study is to review the training model and to find out the effectiveness of conducted in-house trainings by training department of our organization as Biotech industry. Bharat Immunologicals and Biologicals Corporation Limited is a Biotech industry and located in Bulandshahr city of Uttar Pradesh state in India. The study was conducted with 119 numbers of technical employees; they are actively engaged with production, Quality control and other departments in our organization. Training cycle was adopted according to need in our organization. According to the cycle, six in-house trainings were conducted in our organization and tagged with training code from BTC-001 to BTC-006 in month of January, February, March, April, May and June 2016, respectively. Evaluation and effectiveness of In-house training was determined was assessed for employee performance through questionnaires in pre- and post-assessment and grading system such as grade A, B & C was used to measure the training effectiveness after completion of all the six trainings. Out of 119 technical employees, only 106 participants from production (64 numbers) and quality control (41 numbers) departmental employees of our organization were included in the study for evaluation and effectiveness of the in-house trainings by using grading system. After evaluation of all trainings, We observed that no employee of both departments was placed in grade C and increased the employees number in grade A; 38 numbers instead of 18 in production and 22 numbers instead of 09 from Quality control department. Result of the study shows remarkable impact of all in-house training on the employee's performance after completion the trainings. Present study is conducted first time in our organization. The training cycle play crucial role to perform in-house trainings for the technical employees in Biotech industry. In-house trainings will be used continuously to nourish the employee skill and have remarkable impact on employee performance.

Keywords: *In-house training, technical staff, biotech industry, training cycle, evaluation and effectiveness*

1. INTRODUCTION

Employee is an important key element of any organization. The success or failure of the organization depends on the employee development and their skills performance towards specific jobs description. Therefore, organizations are always keen to nourish technical and scientific employee skills in Industries. Biotech Industries is one of the most popular scientific organizations in relation to public interest and it has great impact on the public health. In Biotech industry, technical skill development of the employee is one of the most important responsibilities of training department of the organization. Therefore there is need of different training program for improvement in employee performance and overall development. Employee development means to develop the abilities of an individual employee and organization as a whole; hence employee development consists of individual or employee and overall growth of the employee as when employees of the organization would develop the organization, organization would be more flourished and the employee performance would increase (Antonacopoulou, 2000). Therefore, there is a direct relationship between employee development and employee performance. As when employees would be more developed, they would be more satisfied with the job, more committed with the job and the performance would be increased. When employee performance would increase, this will lead to the organization effectiveness (Champathes, 2006).

Training methods could be classified as cognitive and behavioural approaches. Cognitive methods provide verbal or written information, demonstrate relationships among concepts, or provide the rules for how to do something. These types of methods can also be called as off-job training methods. On the other hand, behavioural methods allow trainee to practice behaviour in real or simulated fashion. They stimulate learning through behaviour which is best for knowledge development, skill development and attitude change. These methods can be called as on-job training methods. Thus; either behavioural or cognitive learning methods can effectively be used to change attitudes, though they do so through different means. Cognitive methods are best for knowledge development and behavioural methods for skills (Blanchard and Thacker, 1998). The decision about what approach to take to training depends on several factors that include the amount of funding available for training, specificity and complexity of the knowledge and skills needed, timeliness of training needed, and the capacity and motivation of the learner.

In-house training is commonly used cost effective way with designing basics and specific training programs for technical employee in Biotech industries. Bharat Immunologicals and Biologicals Corporation Limited (BIBCOL), Bulandshahr, Uttar Pradesh, India is a Biotech industry. BIBCOL is actively involved in industrial production such as oral polio vaccine, Zinc dispersible tablets etc. Training department of the industry is taking care of various trainings components and tools for industrial employees. In-house training is one of the major component with qualified and experiences trainers. The objective of the training is continued learning process has always been leverage with an organization and now it has become rather an over arching trend of social needs, emphasizing that organizations must inculcate learning culture as a social responsibility. It has been also proved by many studies in the past that there are sound connections between in-house trainings and improvement practices in employee of any organization. In previous years, in-house trainings were performed in our organization without training cycle and

grading system for evaluation and effectiveness of the training programs on company employees. On the basis of need of in-house trainings for technical employees from production and quality control departments, the present study conducted for evaluation and effectiveness of six in-house trainings after implementation of training cycle and grading system in BIBCOLD, Bulandshahr, Uttar Pradesh, India as a Biotech industry.

1.1 Literature review

Training throughout the last decade has seen a significant growth in importance and influence in different industries in the market. According to Milhem et al., (2014) organization's number of training hours dedicated to their workforce increased in average from 4,000 hours in 2009 to 4,540 hours in 2010. Consequently, organizations found out that investing in employee training plans has a major influence on an organizations' success, and as a result emphasized on training to gain competitive edge in the market and to keep their employees on the top of their job. Organizations are investing millions of dollars on training and educating their workforce on new skills. As statistics indicate, investments made by organizations on training are continuously growing. However, many organizations set their training plans in an unplanned and unsystematic manner without identifying the training needs of the department or the organization, and as a result the trainings implemented will not be successful and might even have negative consequences. Hence, as investments in trainings continue to increase, organizations should clarify to their workforce the need for the training and its impact on the organization. As mentioned by Sultana (2012), the more a trainee is motivated, the quicker he or she will acquire a new skill and improvement in existing skills.

Training can improve the performance and productivity of the employee and ensure that they have the relevant skills. Training focuses on doing activities today to develop employees for their current jobs and development is preparing employees for future roles and responsibilities. There are two major types of training, In-house training and On-job training (Alo, 1999). In-house training is normally handled by managers and mentors to help employees adjust to their work and to equip them with appropriate job related skills including theoretical and practical knowledge. In-house training may consist of teaching or coaching by more experienced people or trainers at the desk or at the bench. According to Aloy (2000) In-house training would include lecture, vestibule training, role playing, discussion and evaluation through pre- and post- assessment. He encourages line managers to be closely involved to bring reality into the classroom, to ease the transfer of learning, and to make sure that those involved in In-house training are carefully selected, briefed, monitored and evaluated so as to ensure that they make the right contribution.

Evaluation of training is the most important aspect of in-house training. There are different models to evaluate training, still training evaluation is the weakest and most under developed aspect of training. There are number of issues which lead to ignorance of evaluation as well as faced in the course of evaluation. It causes expenses that can be ill afforded in a constrained financial area and also it takes time to practice (Iyer, 2009). There are several reasons for underdeveloped evaluation. They are; evaluation means different things to different people, it is perceived to be difficult, tedious and time consuming task which trainers do not like to pursue, people tend to assume the training will simply work, trainers feel threatened by the prospect of an objective evaluation of training and its outcome (Sims, 1993). Investigator states that the main reasons for failure of evaluations

are: inadequate planning, lack of objectivity, evaluation errors of some sort, improper interpretation and inappropriate use of results. Other issues are failure to train the evaluators on the techniques of evaluation, inappropriate data gathering instrument and focus on unimportant details.

On basis of published studies in past years, investigators were used different models and systems to evaluate training effectiveness according to the nature and budgets of organization. Srivastava. et. al. (2001) evaluated the effectiveness of various training, programme offered by the in-house training centre of Tata Steel, Shavak Nanavati Training Institute (SNTI), India. Effectiveness of training was measured in terms of various outcomes such as satisfaction level, reaction and feedback of participants, and change in performance and behaviour as perceived by participants, their immediate supervisors, and departmental heads. It was found that the satisfaction level of participants, their superiors and divisional heads were above average for all types of programmes. The participants were benefited from the programme but transfer of learning was not as expected from the supervisors. Ramachandran (2010) has made an analytical study on effectiveness of training programme of different cadre of employees working in a public sector organization. The result reveals that employees differed in effectiveness of training program on the basis of demographic characters. It is also inferred that experience and education of the employees of the organization is predominating and determining factor in training program. Al-Ajlouni, Athammuh & Jaradat (2010) viewed that the evaluation of any training program has certain aims to fulfill. These are concerned with the determination of change in the organizational behaviour and the changes needed in the organizational structure. Scholars asserts that evaluation of any training program must inform whether the training program has been able to deliver the goals and objectives in terms of cost incurred and benefit achieved, the analysis of the information is the concluding part of any evaluation program. They also stressed that the analysis of data should be summarized and then compared with the data of other training programs similar nature. On the basis of these comparisons, problems and strength should be identified which would help the trainer in his future training program. Saharan (2011) highlighted that most organization are taking feedback from employees for training effectiveness to maximize its benefits. In the ceaseless drive for a competitive edge, companies subscribe to the belief that smarter, better trained workers increase chances for success. The study expounds the perspective of employees having different qualification and experiences towards objectives behind imparting training in organizations.

In-house training is one of the most important and commonly used in industries to train their employees. This training is directly related to employee task and tasks specific trainers are easily available within organization. We assumed that the In-house training will play vital role in nourishing theoretical and practical understanding of scientific and technical employee performance in our organization. The purpose of the present study is to investigate the impact of in-house trainings on technical employees of production and quality control departments through pre- and post-assessment questioners in our organization and effectiveness of the trainings is measured by adopted simple grading system i.e. grade A, B and C corresponding to marks percentage secured in pre- and post-assessment.

The objective of the present study was to analyze impact of conducted In-house training programs on technical employees in BIBCOLD, Bulandshahr, Uttar Pradesh, India as a Biotech industry and the trainings for the employees were effective to nourish technical

skills of the industry. On the basis of training need, total six trainings were taken under consideration and conducted in our organization with the following objectives:

- (i) To identify, design and conduct in-house training for technical employees of production and quality control departments on the basis of need.
- (ii) To develop and maintain the training records in our organization.
- (iii) To evaluate and effectiveness of the trainings on the departmental technical employee skills

2. METHODS AND PROCEDURE

2.1 Training cycle

According to Management Services Commission (1981), Training Cycle involves identifying deficiencies, designing inputs, out puts and identifying learning strategies which should be evaluated to produce feedback which can be used to improve subsequent training. According to Imanyi (2002) systematic training cycle would include identifying training needs, planning the training, carrying out the training and evaluating the training to know whether the training program is worthwhile. The present study was carried out as per standard cycle for In-house training and it was previously described by Imanyi with minor modifications as described in figure 1.

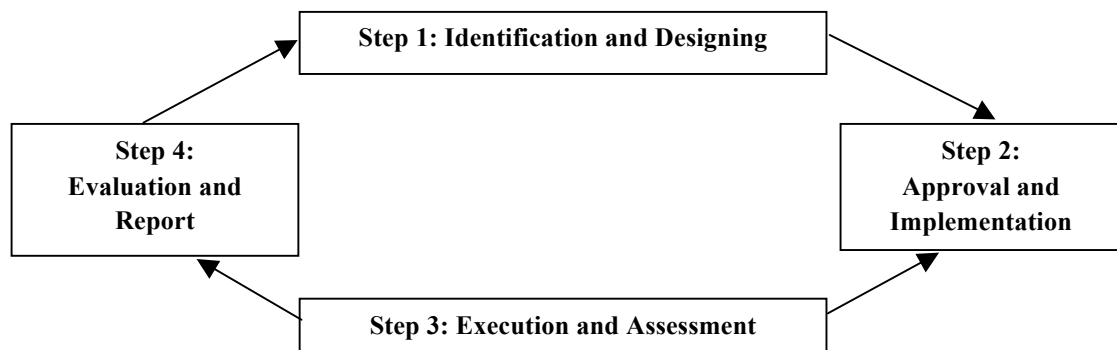


Figure 1: In-House Training Cycle

2.2 Training program

The In-house training is combination of practical and theoretical knowledge for technical employees as per requirement of their job responsibilities (Roll-Hansen, 2012). Educating the employee by In-house training has following advantages as well as cost-effective as compare to other training programs:

- (i) The training can be scheduled and frequency at your convenience.
- (ii) The training is more focused, consistent and relevant to your work needs.
- (iii) The training is useful to develop learning attitude, self confidence and update technical knowledge.

On the basis of above point of view, annual training program was designed and executed according to need of technical employee after approval of Training Head. In present study, we included only six months data (January to June 2016) for assessment and evaluation of technical employee progress. Month-wise detail of performed In-house training is compiled in Table 1.

Table 1: Month-Wise detail of performed In-House Trainings in year 2016

Month	Training Code	Title with Covered Topics
January	BTC-001	Basic training on GMP, GLP and Documentation for Biotech Inidustry 1. An Overview on GMP and GLP 2. GMP: Documentation and Records 3. GLP: Documentation and Records 4. Documentation for Biotech Industry: Need, Record, System and Review
February	BTC-002	Cleaning, Sanitation and Maintenance of Outside and Inside Premises of Production Unit 1. Traceability of Documents and Records 2. Cleaning and Sanitation in Manufacturing and QC facilities 3. Maintenance of Outside Premises of Production Unit 4. GMP & Central Store: Cleaning, Sanitation and Maintenance
March	BTC-003	Personnel hygiene, Equipment handling and Aseptic processing in Production and Quality Control Testing for Biotech Product 1. Personnel Hygiene and Gowning Procedure 2. Aseptic Handling and Processing in the Manufacturing Facility 3. Aseptic Handling and Processing in testing Laboratories 4. Handling of Equipments in Manufacturing Facility 5. Handling of Equipments in testing Laboratories
April	BTC-004	Basic working Procedures in Biotech Industry 1. Standard Operating Procedure and In-Process Form 2. Weighing Tasks and Procedures 3. Pipetting Techniques in Laboratory Testing Procedure 4. Working in a LAF
May	BTC-005	Preparation and Sterilization of culture Media for Microbial culture Maintenance 1. Preparation and Sterilization of Solution 2. Preparation and Sterilization of Culture Media 3. Determination of pH 4. Maintenance of Microbial Culture in testing Laboratory
June	BTC-006	Crucial techniques in Biotech Industries 1. Non-Destructive filter integrity testing 2. Thermal mapping of Steam Sterilizer and Dry Heat Sterilizer 3. Operation, maintenance and data recover of TOC Analyzer 4. Cell Maintenance and Preservation 5. Cross contamination validation of Blending room

2.3 Organising training

According to Obisi (2011), the training division will coordinate and administer the training programs. For quality outcome of the training, we emphasised on three most crucial points related to the trainers, the trainees and the training itself.

- (i) **Trainer:** For in-house training to be effective, the best is to have the appropriate expertise within the organisation. An advantage using an existing employee to become a trainer is that trainer already has experience in the field and knowledge of the work within organization. An in-house trainer acquainted with title knowledge, preparation of power point slides, effective presentation skill and dealing with topic related difficulties. Finally trainers are an officer of grade not less than Manager Designation from production, quality control, quality assurance and other departments.
- (ii) **Trainees:** It is also necessary to make the employees use the newly acquired skills from the training program. Therefore all technical employees from production, quality control, quality assurance and other departments are included in In-house training as trainees.
- (iii) **Training:** The training itself is an equally important in terms of length of training, frequency of program, well equipped infrastructure, resources for in-house training and strategic choices regarding the organisational setup. The trainings were performed as described in Table 1 such as title with topic cover in the month, 02 hours/single setting/day length, two days/week for single topic, pre- and post- training assessment for every participant evaluation, monthly report prepared and submitted to Training Head. Finally training documents of the assessments and the monthly reports were maintained in the respective file record with identified through unique file number by Training department.

2.4 In-house training and its participant

A total 119 numbers of employees were participated in six in-house trainings from different departments of Bharat Immunologicals and Biologicals Corporation Limited (BIBCOL), Bulandshahr, Uttar Pradesh, India viz. 64 employees from production, 41 employees from Quality Control and 14 employees from other department of the organization. As described in Table 1, In-house trainings (Training Code BTC-001 to BTC-006) of the employees were designed according to need of the participants and organized in month of January to June 2016 after approval of the Training Head. Records of individual participant for the trainings were maintained such as mark attendance, lecture deliver in form of power point presentation, demonstration & video play, develop questionnaires for pre- & post-assessments, evaluation and monthly report submission.

2.5 Format of questionnaire

The questionnaires were designed for pre- and post-assessments of the trainings. They were divided in to three major parts:

- (i) The first part was provided detail information of individual employee such as name, designation, employee code, Department with section, signature with date, objective of training, duration and venue.

- (ii) The second part was provided detail of training division such as marks (Total & obtained), name with signature of evaluators (preparation of questions and the answer keys) and rechecked by another senior officer.
- (iii) The third part was provided detail of exercise format such as instruction to the participants for the sessions and multiple choice questions.

2.6 Data presentation and analysis

Study data was compiled and presented in tabular form and graphs and effectiveness of the trainings was analyzed with the help of Microsoft excel in computer. Effectiveness of the trainings was determined by simple grading system of employee performance in pre- and post-assessments after completion of all six trainings. In present study, the simple grading system has only three grades and the grades were based on different ranges of percentages; ranging from 80 to 100 % for grade A, 40 to 70 % for Grade B and 0 to 30 % for Grade C. Each employee was placed in respective grade on the basis of obtained percentage in pre- and post- assessments of the trainings.

3. RESULTS, DATA ANALYSIS AND DISCUSSION

It is well understood that In-house training is a most effective tool through designing basics and specific training programs in cost effective way and it is always useful to improve employee understanding towards their work within organization (Roll-Hansen, 2012; Hameed & Waheed, 2011). Therefore the training is crucial and result oriented of each employee in any organization. In present study we developed and used in-house trainings to improve theoretical and practical knowledge of technical employees in our organization as a Biotech industry. The hypotheses in this study specifically address the relationship between employees with training experiences who have positive attitudes about training and those positive training attitudes are perceived to improve technical skills as well as job proficiency.

Monthly training programs were prepared and performed as described in table 1. All training titles were covered at least four topics except BTC-003 and BTC-006 and the both trainings have five topics. Employees were participated actively with positive and learning attitude in training code from BTC-001 to BTC-006 and were evaluated after assessments. A total 119 employees were participated in these six in-house trainings and table 2 is showing complete detail of the participants in each training program.

Table 2: Detail of Employee Participation in In-House Trainings

S. No.	Training Code	Number of Employee
1.	BTC-001	29
2.	BTC-002	15
3.	BTC-003	19
4.	BTC-004	30
5.	BTC-005	08
6.	BTC-006	18

Maximum thirty numbers (25.21%) of employees was trained in BTC-004 and minimum 08 numbers (06.72%) in BTC-005. For easy and better understanding purpose, the data is also expressed in the percentage as shown in pie graph (Figure 2).

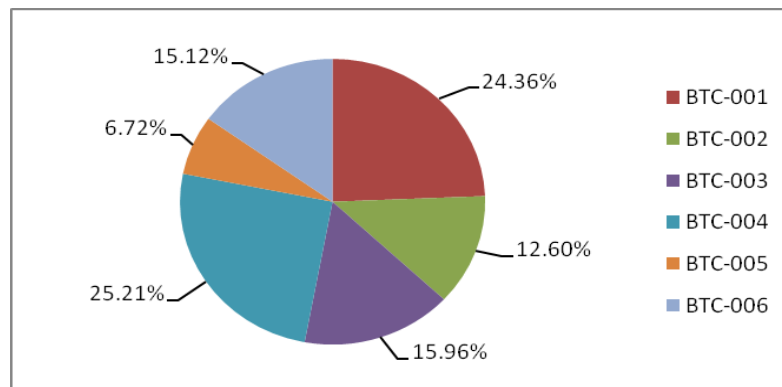


Figure 2: Employee participation percentages of In-house trainings

We cover all departments' employees in the six in-house trainings. Out of 119 employees, 53.78% (64 numbers) from production, 34.45% (41 numbers) from quality control and 11.76% (14 numbers) from other departments of our organization were participated. In present study, we are taking care two major technical departments' for evaluation and effectiveness of In-house training in Biotech Industry viz. production and quality control. Percentage participation of the departmental employees in all the trainings are presented and summarized in figure 3.

Production employees were participated with high percentage in these training as compared to quality control employees except BTC-002 (46.66%) and BTC-005 (75.00%). Other department's employees were not participated in BTC-006 training.



Figure 3: Percentage of Employee Participation from Production, Quality Control and other Departments in In-house trainings

The study data was compiled to find out the effectiveness of the In-house trainings. On the basis of pre- and post-training assessments, each employee was placed according to obtained percentage in different grade such as Grade A for percentage range from 80 to 100 %, Grade B for percentage range from 40 to 70 % and Grade C for percentage range from 0 to 30 %. Overall data of the trainings was expressed with grading system in table 3.

Table 3: Evaluation of employee after completion of In-House Trainings

Employee Department	Grade	Total employee participation in training programs (Code BTC-001 to BTC-006)			
		Pre-Assessment		Post-Assessment	
		Numbers	Percentage	Numbers	Percentage
Production	C	08	07.54	00	00.00
	B	39	36.79	27	25.47
	A	18	16.98	38	35.84
Quality Control	C	04	03.77	00	00.00
	B	28	26.41	19	17.92
	A	09	08.49	22	20.75
Total		106		106	

Out of 119 employees only 106 numbers of employees were participated 64 numbers from production and 41 numbers from quality control in training code BTC-001 to BTC-006. After completion of the trainings, pre- and post-assessment of employee were performed and employees were listed in grade C, B and A; 12, 67 and 27 numbers in pre-assessment and 00, 46 and 60 numbers in post-assessment respectively. Effectiveness of the trainings was analyzed after post-assessment of participants that no employee from production and quality control was placed in grade C and number of employee were also increased in grade A; 38 nos. instead of 18 nos. in production and 22 nos. instead of 09 nos. in quality control department. In spite of this, employees from both departments were decreased in grade B like only 27 nos. in production and 19 in quality control.

As inferred from the responses of the trainers (Koirela & Dhungana 2015) and trainees (Roll-Hansen, 2012), the in-house training course objectives were accomplished and it indeed contributed in enhancement of employees' skills and knowledge, which in turn contributed to the overall outcome. The current impact assessment also indicated that the in-house training courses have multiple impacts such as employee attitude, improvement in technical skill, enhanced confidence level, improved quality of work and output (Truitt, 2011; Shah 2016). The courses, which they attended also facilitated them in time management and prioritization of technical work and gained confidence in problem solving. The majority of the employees are of the view that the training courses designed in-house were based on the utility at work place. Moreover, the environment in which the employees assigned were adequately conducive for them to apply knowledge and skills gained from the trainings. Overall the courses have contributed to the personal development such as improved communication skills, work knowledge and other relevant skills necessary for

performing routine and assigned responsibilities. Many investigators reported that training is a tool and a way to acquire new and different set of knowledge; skills and attitudes that are work related, and can have short and long term benefits for the employee and the organization. From the many positive effects and benefits of training on companies and organizations, working conditions and career development are considered the most vital, especially to manufacturing companies. Recently, Tangoukin et. al., 2016 suggested us with the support that investing in training is a wise initiative with added value and not just an additional expense that organizations have to incur. Training and development plans which are being implemented regularly, not only widen their employee's knowledge, abilities and skills, but provide various opportunities, such as: increase in employee job satisfaction, improvement in performance and motivation through multi-skilling and commitment to the job and the organization. Khawaja & Bashir (2013) described their study facts that training leads to important benefits for individuals and organizations. The existing analysis of literature proposes that these benefits vary from individual and organizational performance. To understand the benefits of training and development program, they implemented different level and different disciplinary perspective of employee development program. Investigators also involved the discussion, how to increase the benefits of training. These features include giving attention to the training design, delivery, and transfer of training. After completing the study, they strongly believe that it is very beneficial for the organizations to develop the employee development programs. If organizations are capable to support all employees in meeting their requirements then both, employees and organizations will get the long term benefits. It is also very important for the organizations to timely evaluate the success of employee training and development program.

Now-a-days most of the organizations have built up different programs for the training and development of their employees. Usually companies offered education reimbursement package to their employees so that they can improve their knowledge and education. It has been found by the Corporate University that almost 10 percent of employees are entitled for this benefit (Rosenwald 2000). Furthermore, only senior management and those employees who are at top level are entitled for education reimbursement. As a result thereof, many organizations conduct in-house training programs for their employees that are more beneficial and cheap. Training section of the organizations attempts to concentrate on particular job proficiency whereas the corporate department is proactive with an additional strategic approach. Training and development program is a planned education component and with exceptional method for sharing the culture of the organization, which moves from one job skills to understand the workplace skill, developing leadership, innovative thinking and problem resolving (Meister, 1998). Employee development programs includes a variety of teaching technique, schedule, and helping learning environment that ensure employee to improve their skills and later apply on their jobs (Gerbamn 2000).

There is huge literature on in-house training conducting, performing and assessment for organizational employees, which were applied for employee's satisfaction and performance towards their job tasks. Therefore present study conducted and performed and employees of our organization had indicated positive response and interest for the in-house trainings delivered during the period. These responses indicated that there is possibility of delivering the future in-house training courses and monthly trainings are still continuing. Hence, the analysis and findings based on the responses of employees and trainers indicated that the overall impact of the in-house training courses was impressive and remarkable.

4. CONCLUSION

The in-house training impact study for technical employee was carried out for the first time in our organization and it was found effective for technical employee by adopting grading system in terms of their skill improvement, learning attitude, interaction with other departmental employee and healthy discussion within organization. Finally, result of present study revealed that the training programs were found more effective in term of grade A for employee percentage in production (18.36%) as compare to quality control (12.26%) department. In future, it will necessary to carry out frequent assessment for further improvement in the course delivery.

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