ISTD

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Contents

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From the Desk of National President

Employee Learning & development has never been more critical than in today's dynamic and competitive business landscape. In this rapidly evolving scenario, organisations must invest in the growth and skill development of their employees to stay ahead of the competition. In the digital age, technology is constantly advancing, leading to skill gaps in the workforce. Regular training helps bridge these gaps by keeping employees up-to-date with the latest tools, technologies, and industry best practices. It ensures that the workforce remains relevant and competent.

Well-trained employees are more proficient and productive in their roles. Training provides employees with the knowledge and skills needed to perform their tasks efficiently and effectively, leading to improved job performance and higher-quality outcomes. The business landscape is marked by rapid changes, from market dynamics to customer expectations and regulatory compliance. Training equips employees with the agility to adapt to these changes and make informed decisions, which is crucial for an organisation's survival and growth.

In today's competitive job market, employees are more inclined to join and stay with organisations that invest in their professional growth. Offering L & D opportunities is a significant factor in attracting top talent and retaining valuable employees. Training encourages a culture of innovation and creativity. Employees who receive continuous learning opportunities tend to be more creative, open to new ideas, and capable of problem-solving, all of which are vital for driving innovation within the organisation. Engaged employees are more committed, motivated, and loyal to their organisations. Training & development opportunities signal to employees that their growth and career advancement are valued, leading to higher levels of engagement and job satisfaction. Effective leadership is crucial for any organisation's success. T & D programmes help identify and nurture future leaders within the organisation. Developing leadership skills ensures a robust pipeline of talent for key positions.

In industries subject to regulations and compliance requirements, training is essential to ensure that employees understand and adhere to legal and ethical standards. This reduces the risk of costly legal issues and reputation damage. Well-trained employees are better equipped to provide exceptional customer service. Training helps employees understand customer needs and expectations, leading to higher customer satisfaction and loyalty. In an increasingly globalised world, organisations often have diverse workforces and clientele. Training in cross-cultural communication and diversity awareness is essential for fostering inclusion and avoiding misunderstandings. While T & D require an initial investment, they can lead to significant cost savings in the long run. Well-trained employees are less likely to make errors, require less supervision, and have lower turnover rates, reducing recruitment and training costs.

Training, or Learning & development is indispensable in today's scenario, where the pace of change and competition are relentless. Organisations that prioritise employee growth and skill development are better positioned to thrive, adapt, and lead in their respective industries. Ultimately, investing in L & D is an investment in the organisation's future success and sustainability.

Anita Chauhan

Ability to Balance Investment in Innovations

There are various types of innovation, each with its unique benefits and disadvantages to a company. These innovation types require different management styles to implement change effectively. *Open innovation* is an approach that operates with the philosophy of keeping an open mind to ideas generated externally instead of just those that originate inside the company. This approach is the opposite of closed innovation, where the focus is only on internal ideas.

One is not limited to the ideas of internal workforce in the case of open innovation. Instead, one can collaborate with external business partners, entrepreneurs, and new talent in other industries to contribute to strategic growth. Intellectual property created between a company and its vendors, outsourcing partners, and others in the network can ultimately be shared to benefit both the parties. Open innovation can present a sizable competitive advantage because one has access to a larger flow of ideas and also new experts and teams to evaluate and implement these concepts. This approach requires a unique management style that can balance external partnerships with the input from the employees of a company. At the same time, one must keep strategic outcomes in mind when selecting which concepts to invest in the company resources and time.

Incremental innovation provides a lower barrier to change by looking to existing tools, markets, and business processes for opportunities. For this reason, and because it allows greater innovation control, this method is a common way to begin the innovation journey for many companies. A company may already have an incremental innovation management system without realising it, as many organisations often lack the systems to monitor, capture, and enhance naturally-occurring innovative ideas. Therefore, incremental innovation is easy on the surface but requires astute leaders who understand the process and the importance of encouraging innovation. Moreover, those leaders must possess the discipline to put systems in place that evaluate new ideas as they relate to strategic objectives for that department or the business as a whole.

Sustaining innovation seeks to improve current processes and avoid investing too many resources in 'reinventing the wheel'. This type of innovation goes well with managers who have an in-depth knowledge base of their market. They know the problems of their customers and how to solve them, but the only question being how to do it most efficiently. *Disruptive innovation* is a higher risk approach that involves using technologies or creating alternative solutions that are new to a company, and quite often, new to the market at large, as well.

An example of disruptive innovation is the iPhone. The first iPhone created an entirely new category – the touchscreen smartphone. It surprised other companies and the consumer market when released and gave Apple a significant head start. However, disruptive innovation requires managers who have a high-risk tolerance and the ability to balance investment in innovations while maintaining current operations that are already proven to bring in revenue.

Architectural innovation takes a process or innovation that already works in one area of a business and applies it across the 'architecture' in different areas of operation. For instance, a company may have a backend technology that could create additional value for the consumer-facing applications. Since the company may have already proven that it works in one area, it is relatively low risk. Typically, this innovation works well with management styles that focus on consumer needs and marketing, as the true challenge lies in getting the market to adopt it. While similar to disruptive innovation, *radical innovation* goes one step further by creating entirely new industries and consumer habits. It is high risk because it is like performing business 'backward' in a sense creating a desire for something that no one knew they had. Think of the first airplane, phone, or television. Leaders who have outstanding vision and the ability to manage multiple departments are best suited to oversee this type of innovation.

The readers of IJTD are requested to go through the contents of the journal and help us in improving the usefulness of this publication by offering suggestions based on their critical review and constructive observations. The prospective contributors to this journal are advised to follow APA pattern (latest Edition) for presenting the references.

Dr. Upinder Dhar

Storytelling as the Most Effective Method in Corporate Training – An Analysis

Dr Paresh Chandra Mohanty *
Meena Nayak**

ABSTRACT

Trainers use various methods to communicate training contents to trainees. This research paper documents the opinion of 340 employees (170 from managerial cadre and 170 of subordinate level) on effectiveness of ten methods used in various training programmes by the researchers. Data was collected through mixed-method approach: opinion of respondents through questionnaire and their personal interview. Out of the ten methods: Lecture, role play, management games, storytelling, video analysis, group work, in-basket exercise, brainstorming, and exercises, both the groups rated storytelling as the most effective one. In this research paper literature review is done on ten methods used in those training programmes. Viewpoint of various researchers are obtained on the benefit of storytelling, its neuroscientist analysis and why storytelling has such a great impact on learning. The findings of the study are congruent with various learning theories of storytelling as one of the most effective learning tool and teaching method. It is also found that storytelling has a powerful impact on learning, retaining and retrieving training content with ease. The findings will inspire trainers to use storytelling in training delivery, along with various other training methods they use, for greater impact. Researchers may further this study for benefit of training and development.

KEYWORDS

Learning, Training Methods, Classroom Learning, Brainstorming, Groupwork

INTRODUCTION

Researchers have proved that continuous training and retraining are required to improve the asset quality of employees in an organisation. But the fact is, though billions of dollars are spent and millions of human hours are sacrificed, not many training programs deliver the desired result. The reasons for such failure are attributed to – training is boring, not at the right level, participants don't engage in learning process, too focused on lecture versus practice, not applicable and so on. For this it is imperative to explore the factors that make a training program effective.

Rapidly growing but still underdeveloped India spends more than ₹ 300 crore on training each year. Along with it, thousands of working hours of employees are also consumed in such training programmes. Such a magnitude of expenditure need to be matched with the benefits derived

* Corporate Trainer & Director, Talent Sigma Professionals Pvt. Ltd. Email:paresh.mohanty@talentsigma.in
** Soft Skill trainer & Communication Coach

from training. It can happen when trainees like the training programmes, learn and use them at the organisation to make it competitive. To make training programme effective trainers should generate a learning appetitive in trainees through effective communication and keep them motivated to learn. Adult learners need to learn quickly and apply the essence of learning at the work place to justify the amount of money and time invested in training. Due to limited time and resources, instructors and industry-based trainers need to be able to apply effective teaching and learning techniques to meet expected learning objectives.

Usually, we take four stages of training—training need analysis, setting training objectives & training program design, training delivery and evaluation of training. The learners and trainers actually meet training delivery stage, where learning is generated and trainees carry the essence of training to their point of use. A successful training delivery is affected by the sagacity of the resource person, trainee motivation to learn, use of appropriate training methods, help of audio-visual aids and the training environment. Though all these factors are influential in making a training delivery effective (generating learning) choice of appropriate training methods by the faculty makes tremendous impact in learning process.

Since training is directed towards improving precise knowledge and specific skills, a choice of strategy has to be made to convince people and influence their behaviour. This is about appropriate use of communication media, by the training enabler, for the accomplishment of a training session from all time lecture method to role-play, exercises, brainstorming, group work, management games, storytelling and many more. "Amongst a host of methods available, the trainer selects the techniques to integrate – a) the objectives of the programme; b) the learners' competencies; c) the resources available and d) his/her own competencies to handle a technique" Gautam V. & Gautam S. (2008).

All these methods used by trainers are effective at some point of training delivery. But this research confirmed that storytelling is the leading methods

that is accepted by all segment of learners irrespective of their maturity level, when they learn and retain the essence of learning for their present and future use.

OBJECTIVES

This study intends to investigate and document the impact of ten training methods—lecture, role-play, management games, storytelling, video analysis, group work, in-basket exercise, quiz, brainstorming and exercises as communication media to generate learning in trainees, and why storytelling is rated as the best among them. The focus of the research is to:

- To find out which training methods, used in training programmes are the most effective in generating learning.
- To research and document how and why storytelling as a teaching and learning method has such a great impact on adult learning.

REVIEW OF LITERATURE

Training Methodology

The researchers used the following training methods in various training programmes conducted by them, in various organisations in India. Out of 340 trainees, 170 were of managerial level and the rest were of sub-ordinate cadre. A brief sketch of each method used in those training programmes are summarised below.

The Lecture Method: Everywhere in the world this is one of the oldest training methods used in any type of learning. Also, this is the most widely used and abused technique of training. Usually defined as an information discourse delivered to an audience, it clearly implies a one-way communication to a number of people by someone who is knowledgeable in his subject. Most of the content under educational and training curriculum, in general, is still covered by this method only. The supremacy of this method in terms of its uses has been acknowledged. Once accepted, it requires re-emphasizing often and re-orienting trainers to recall this method in its true form.

Role Play: It was first used by J.L. Moreno in the year 1923. It is a technique in which people are presented with roles in the form of a case or script of a situation, and then they act out the roles. Role play is a spontaneous human interaction that involves realistic behaviour under artificial or simulated conditions. It is a method of human interaction that involves realistic behaviour in imaginary situations.

Management Games: Trainers use various games to create excitement in trainees and in the process generate learning. Such games are designed to break monotony in a training session and give a platform to trainees to practice various managerial skills. It is a simulation, which consists of sequential decision-making exercise structured around a hypothetical model or an organisation's operations which participants assume roles in managing the simulated operations. It attempts to reproduce the socio-psychological and economic dynamics of organisational behaviour in an artificial setting.

Storytelling: Since time immemorial storytelling is a means for sharing and interpreting experiences. Storytelling as a training method can be adaptive for all ages, leaving out the notion of age segregation (Atta-Alla & M.N., 2012). Stories serve many functions – telling a point with impact and clarifying a point on discussion. Stories generally work through the right hemisphere of brain (left-logical, right-radical). They create images and metaphors in listeners' mind. They often do not have logical and linear themes or plots. That is why stories have a greater appeal to the child in us. It has been accepted as the most successful method in all types of training in our time.

Video Analysis: Trainers use selective videos to make trainees understand a concept. A video is shown to the trainees and they are asked to analyse by commenting on the happenings. This makes trainees learn, think and make a view point. Trainees also learn from each other while interpreting in different ways based on their perception.

Group Work: This training method is intended for generating fellow feeling and group effectiveness. In a group, trainees brainstorm on a concept, differ, try to understand fellow trainees' perception and come to a conclusion which is proved to be better than individual effort. "Group work often involves experiential learning with its four stages: 1) Gain conceptual knowledge and theory; 2) take part in behavioural simulation; 3) analyse the activity; 4) connect the theory and activity with on-the-job or real-life situations" (Brown & Harvey, 2000).

In-basket Exercise: It is a method to improve skills like decision making, management acumen, analytical skills, etc. in an employee. This is also called a method promoting learning by doing. In this method, problems are written in various slips and kept in a tray in the left side of the player. He has to read all those problems and take his decision, which one to attend first and which is next till the last. Then all the participants analyse his view points and through brainstorming essence of learning comes out.

Quiz: A quiz is a form of game or mind sport in which players attempt to answer questions correctly about a certain or variety of subjects. Quizzes are used as a brief assessment in education and similar fields to measure growth in knowledge, abilities, or skills. This is a method always generates enthusiasm in learners in a training session.

Brainstorming: It is a practical exercise to stimulate creativity in a group and is a very useful training technique. Brainstorming s based on the premise that it is possible to generate more ideas collectively than the sum of the ideas, which would be produced individually. This arises from the interaction among members, which enables one member to trigger off news in another.

Exercises: An Exercise is a training instrument to know the opinion of a trainee on a specific matter. This can be conducted individually or in a group. This brings out the perceptions of trainees and helps them in thinking logically and taking a view point. In group exercises the trainees learn how to form a team opinion though they differ with each other.

STORYTELLING

Introduction: Corporate trainers have been using various teaching methods to effectively convey the information needed within minimum time frame at learning sessions. Story telling has been accepted

as an effective teaching pedagogy and learning process in such training programmes. Literature in storytelling reached a consensus that it offers a highly natural and powerful means to convey, learn and retain contents taught in training sessions. Prominent learning theories support storytelling from a number of prospective including; brain-based learning theories, reflective learning theories and transformational learning theories. A number of studies confirm that when presented in story format, learners learn, retain and retrieve information with much ease. Neuroscience research also agrees to those views and confirms that human brain is naturally wired to receive and remember every human experience when received in story format.

Genesis: Storytelling and its role in society predates written human history as oral storytelling was the only tool available to people to preserve and share cultural customs, beliefs and heritage. In ancient India Vedas were called 'Shruti' because they had no written form and people were remembering them by listening, through ages. The epics and puranas naturally lend themselves to storytelling along with upanishads and panchatantra in olden India. The entire odia bhagawata is a combination of 'sat sambads' (six dialogues) between learned persons and the learners, which are narrated in story forms. Steven E. Lindquist, who teaches at the Southern Methodist University in Texas (US), says his 'unassuming pedagogical strategy' is to unpack the upanishadic narratives before advancing concepts such as atman, brahman and moksha. This also enables the students to appreciate "the various historical horizons striving to preserve the upanishads as hallmarks of classical Indian thought."

The earliest record of storytelling is 4000 B.C. as stated by Ruth Sawyer in her book entitled Tales of Magicians (Abrahamson, 1998). Storytellers were highly esteemed in early Egyptian and medieval times and were also used by nomadic tribes such as the Gypsies. Stories are evident in Roman culture as well. Even more, storytellers in ancient times were often highly esteemed members of the community as they helped people make sense of complex cultural or religious issues, offered comfort in the face of difficulties, or provided simple entertainment (Parkin, 2004: " What Use is Storytelling", 2005). They often held such titles and Shamans, chief, elder, priest, or troubadours. Today storytelling is being accepted as a teaching method in all types learning sessions to the satisfaction of the trainees.

BENEFITS OF STORYTELLING AS A TEACHING METHOD IN GENERATING LEARNING

Corporate trainers and adult educators have accepted storytelling as a teaching pedagogy and learning process that more effectively convey the information needed within specified time frame. Given below the opinion of few researchers who analyses the benefits of storytelling from various aspects.

- Good stories can relax learners and reduce fear because they are entertaining and at times humorous. They can bring about a sense of belongingness in learning communities better than most traditional teaching methods (Richter & Koppett, 2000).

- Storytelling engages students on a level many teaching methods are unable to do so. (Rossiter, 2002).

- While listening a story as a training content, learners hear and immerse in that content on a deeper and richer level through emotional and personal connections and visual imagery (Abrahamson, 1998; Morgan & Dennehy,1997).

- Stories invoke emotions and learning experiences associated with emotions are more easily stored and recalled (Weiss, 2000).

- When stories stir emotions, the cognitive parts of the brain are activated to store the new information (Perry, 2000).

- Storytelling creates active engagement and leads to experiential learning. The vivid images stimulated by storytelling promote character identification thus engaging the learner as an active participant in the learning process (Richter & Koppett, 2000).

- Storytelling appeals to auditory, visual and kinesthetic learning styles and many of the intelligence areas including spatial, linguistic,

interpersonal and intrapersonal intelligences (Rose & Nicholl,1997).

- Stories provide a social context to learning and a healthy social environment is critical to learning and human brain's ability to function properly (Caine et al., 2005).

- They create a sense of meaning and form the very foundation of how humans make meaning of themselves and their environment (Rossiter, 2002).

- Storytelling increase learner confidence, improves their relaxed alertness and emotional engagement in the learning process (Rossiter, 2002).

- Storytelling involves learner emotions and neuroscientists confirm that emotions and learnings are highly linked together (Weiss, 2000; Caine et al., 2005).

- Stories not only improve an environment of relaxed alertness, they also significantly increase learning retentions because learning experiences associated with emotions are more easily stored and recalled (Weiss, 2000).

- It enhances the classroom environment and atmosphere. It reduces fear and relaxes learners as they are humorous and entertaining (Caine et al., 2005).

- It brings a sense of belongingness in trainees (Richter & Koppett, 2000).

- It engages students in learning activities, making them being present in the class both physically and mentally (Rossiter, 2000).

- Learning experiences associated with emotions are more easily stored and recalled (Morgan & Dennehy, 1997).

- When stories stir emotions the cognitive parts of the brain are activated to store new information (Perry, 2000).

- Storytelling leads to active engagement and generated experiential learning (Richter & Koppett, 2000).

- Stories allow individuals to experience the world well beyond their own lives (Heo, 2003).

- Storytelling appeals to auditory, visual and kinesthetic learning styles and many of the

intelligence areas including spatial, linguistic, interpersonal and intrapersonal intelligence (Rose & Nicholl, 1997) .

Why storytelling has such a positive impact on learning: Though numerous researchers' analysis available to analyse why storytelling has such a positive impact on trainee learning, few important opinions are given below keeping an eye on space limitation.

Storytelling as a teaching and learning tool surrounds the concepts of learner receptivity and hypnotic trance (Erickson et al., 1976). It is capable of inducing a state of openness or receptiveness that allows for unconscious learning to take place. Accelerated learning is likely to happen in this stage. The learner assimilated new knowledge and enters to a state of receptivity which is referred to as "hypnotic trance". They suggest a five-stage model that generates hypnotic trance.

(i) **Fixation of attention:** This is the beginning stage for creation of hypnotic trance. Learners listen a story and stay both physically and mentally in the class. Their entire thought process fixed at the classroom.

(ii) **Depotentiating habitual framework and belief system:** At this stage learner get completely immersed to the story which is called the hypnotic trance. They are not limited to previously learned materials.

(iii) **Unconscious search:** Learners develop an automatic tendency to unconsciously search their memories in an effort to make sense of new information.

(iv) **Unconscious process:** Students get open to new concepts and form new insight.

(v) **The hypnotic response:** The learning process is completed and a sense of satisfaction derived by the learners.

In their book, 12 *Brain/Mind Learning Principles in Action,* Caine et al. (2005) suggested that trainers must employ three elements of brain-based learning– relaxed alertness, planned emersion and active processing.

Relaxed Alertness: It is a state of mind in the part of the learner that when created improves receptiveness to learning. To create this state trainer are encouraged to provide an atmosphere of low threat and relaxation. At this stage learner feel at ease with themselves, the learning environment and emotionally get engaged in learning. On the contrary to an environment with threat and fears that blocks their learning process and trainees feel fatigue, helplessness, defensiveness, resistance and aggression. Neuroscience researchers add that, once any sensory information is received by the brain, it is screened through the hypothalamus and sent to amygdale and the hippocampus and amygdale check the information for emotional content and seeing stress, fear or other negative emotions produce a fight or flight response that make the student mind go blank (Dwyer, 2002). In an enjoyable atmosphere brain releases endorphins, which in turn affect neurotransmitters in the brain following connections to be made that improve learning and retention of new information (Rose & Nichol, 1997).

Planned Immersion: The second brain-based principle that supports effective learning is the ability of the teaching lesion to immerse students in the course content. It results in higher student information retention and to access executive functions of their brain, and allow students to perform better at complex tasks (Morgan & Dennehy, 1997). They experience the content in deeper and richer level through emotional and personal connections and visual imagery (Morgan & Dennehy, 1997). Neuroscience research confirms that "visual imagery" is the key element in building intelligence and in creating effective educational programme. It increases the size of the brain through the growth of new dendrites which facilitate impulses toward the body of a nerve cell thus spreading communication between cells and brain (Kinsella, n.d.). Storytelling brings together various pieces of information and makes them whole through meaning making (Caine et al.)

Active Processing: it is the art of understanding and making sense of experience and consolidating learning (Caine et al., 2005). Storytelling as a teaching and learning activity supports active processing as mentioned below. Storytelling appeals to all learning styles including auditory, visual and kinesthetic and many of the intelligence areas including spatial, linguistic, interpersonal and intrapersonal intelligence (Caine et al., 2005). It is often an entertaining, visual, experiential and an emotionally evoking activity learners are much more likely to retain the course content taught in strong format setting (Dunning, 2004, Kaye & Jacobson, 1999).

In their Book, Learning through Storytelling in Higher Education, McDrury & Alterico (2003) explained that storytelling is a teaching pedagogy due to its ability to engage learners in reflective learning.

It offers them a way to reflect on their new experiences, generalise the experience to other situations, decide how to translate their learning into future actions and then evaluate the result of their action. Reflective learning through storytelling make learners exposed to practitioners' tactic knowledge or the kind of knowledge that comes from experience. Storytelling offers merits of experiential learning by creating tactic knowledge along with creating episodic memory; memories based upon experiences that are stored upon experience that are stored in longer term memory and in longer term memory retrieved (Swap et al., 2001). If teachers and learners practice reflective learning through storytelling the end result will be learning that is more meaningful, challenging and stimulating. It creates a transformative self-knowledge and personal growth. Storytelling is a theory of learning all by itself.

RESEARCH METHOD AND COLLECTION OF DATA

For this research purpose mixed methodology- a combination of both quantitative and qualitative approach in research- was selected and data were collected from both primary and secondary sources. For sample collection, stratified random sampling method was used. Primary data was collected in the form of opinions of 170 managerial level employees of various organisations and those of 170 of sub-ordinate staff. Those respondents participated in training programmes at various geographical locations in India and expressed their view points through questionnaires and interviews. Secondary data was collected by scanning various research

articles and books by prominent authors on training methodology and storytelling. Through a designed questionnaire trainees were asked to rate the ten training methods used in the training programmes — lecture, role-play, management games, storytelling, video analysis, group work, in-basket exercise, quiz, brainstorming and exercises and to give reasons for their ratings. They were also interviewed by the researchers for further clarification.

DATA ANALYSIS AND INTERPRETATION

The findings are quantified in tables and charts for better understanding and explanation.

Managerial Cadre

FACTOR	RANK	NO. OF PARTICIPANTS RESPONSIBLE FOR ASSIGNING RANK (OUT OF 170)	PERCENTAGE OF FEEDBACK RECEIVED FROM PARTICIPANTS W.R.T. IMPORTANCE IN TERMS OF RANK
STORYTELLING	1	163	96%
MANAGEMENT GAMES	2	151	89%
QUIZ	3	139	82%
VIDEO ANALYSIS	4	131	77%
EXERCISES	5	122	72%
BRAINSTORMING	6	109	64%
GROUP WORK	7	101	59%
ROLE PLAY	8	98	58%
IN-BASKET EXERCISE	9	90	53%
LECTURE	10	86	51%

Manager
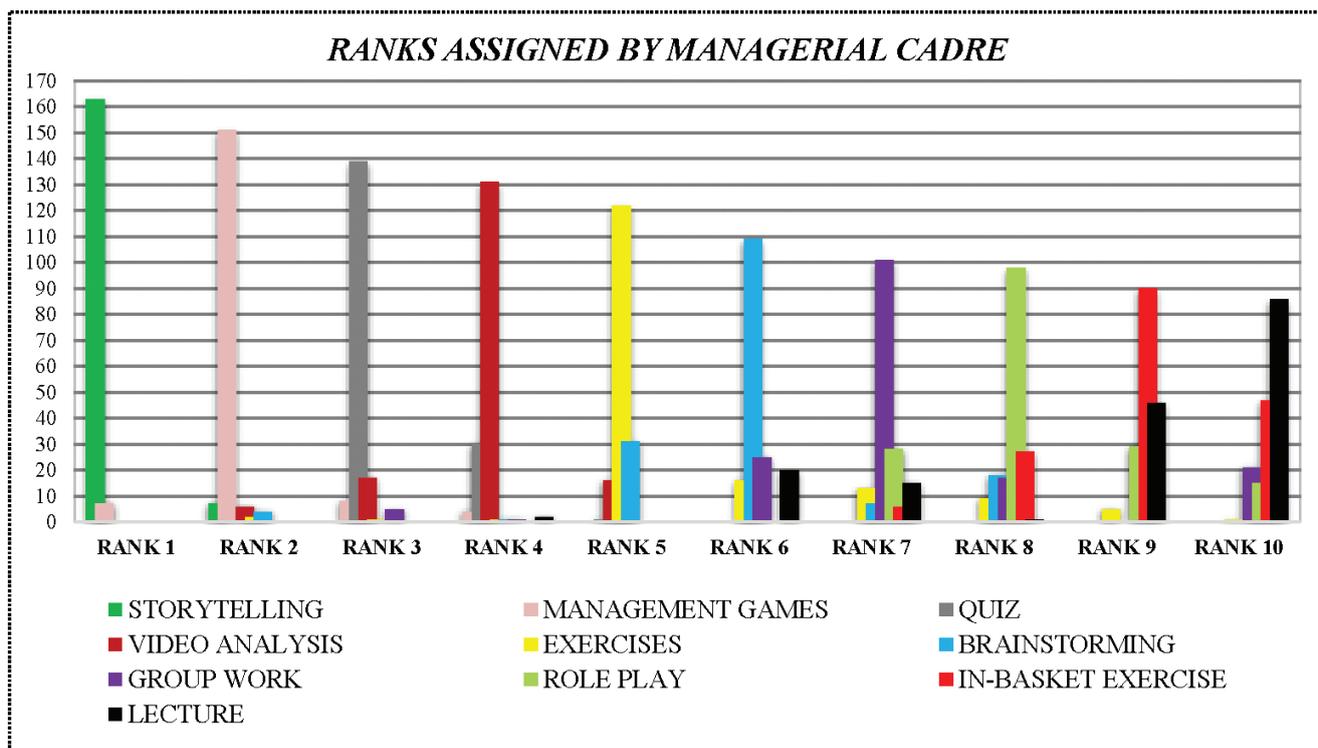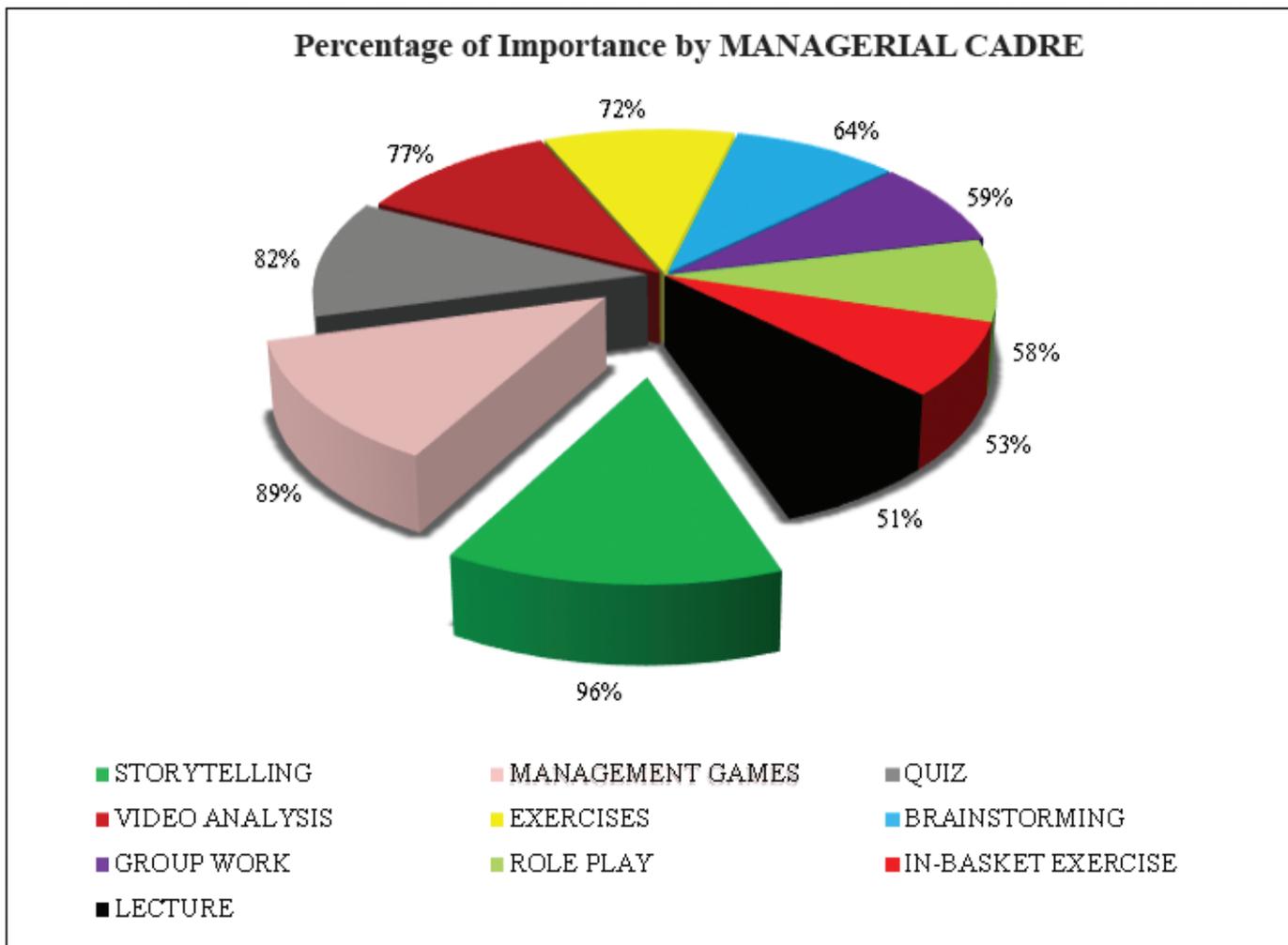
RANKS ASSIGNED BY MANAGERIAL CADRE

Percentage of Importance by MANAGERIAL CADRE

FACTOR	RANK	NO. OF PARTICIPANTS RESPONSIBLE FOR ASSIGNING RANK (OUT OF 170)	PERCENTAGE OF FEEDBACK RECEIVED FROM PARTICIPANTS W.R.T. IMPORTANCE IN TERMS OF RANK
STORYTELLING	1	167	98%
QUIZ	2	145	85%
ROLE PLAY	3	130	76%
GROUP WORK	4	121	71%
EXERCISES	5	119	70%
BRAINSTORMING	6	111	65%
MANAGEMENT GAMES	7	99	58%
VIDEO ANALYSIS	8	96	56%
IN-BASKET EXERCISE	9	93	55%
LECTURE	10	86	51%

RANKS ASSIGNED BY SUB-ORDINATES

Percentage of Importance by SUB-ORDINATES
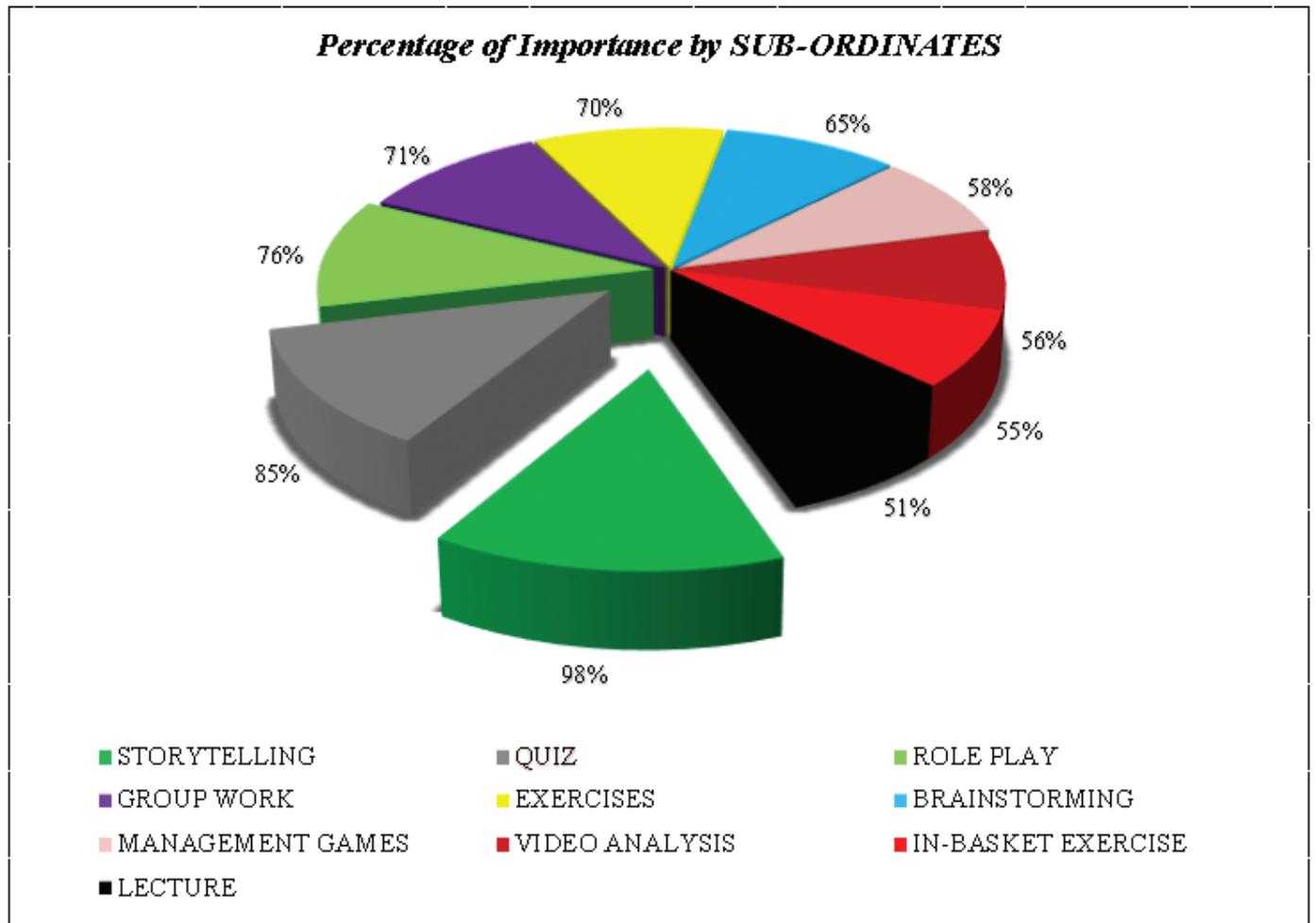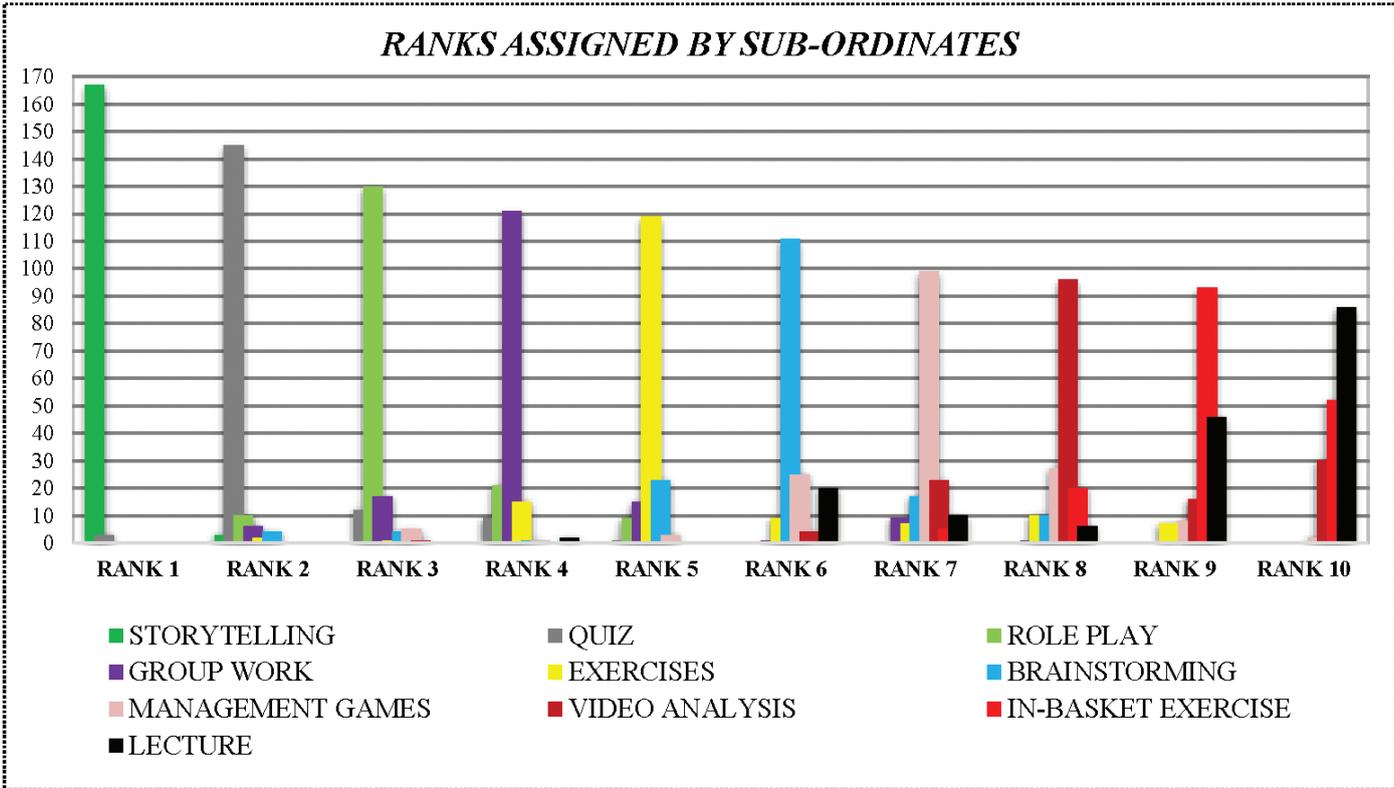
As displayed above, in various training programmes, trainees were asked through a designed questionnaire, to rate the 10 methods used in those training programmes in the order of merit, based on their importance in generating learning, and to give a reason for their rating . The training methods were lecture, role-play, management games, storytelling, video analysis, group work, in-basket exercise, quiz, brainstorming and exercises. Out of the 340 respondents 170 were of managerial cadre and the other 170 were subordinate staff. The findings are presented through tables and graphs below:

Both groups rated storytelling as the preferred method that helped them in understanding training contents and kept lecture method as the least effective. They also agreed in rating exercises as the fifth most important method, brainstorming as the sixth most and in-basket exercise as the ninth most important method, though percentage of respondent varied. For example, storytelling is rated number one method by both the sub-ordinate and managerial staff but when 98 % of the subordinate staff rated it as number one method in teaching, 96% of the managerial staff rated it number one. In 'exercises' which are rated by both groups at fifth position, 72 % of the managerial staff agrees to this rating, while 70 % of the subordinate staff placed this method at this state. Brainstorming is kept at sixth position by both the groups. But when 65% of the subordinate staff rated it at this position, 64% of the managerial staff put them at that level. Ninth position is given to In-basket exercise by both the groups, but when 55% of the subordinate group agree to it, 53% of the managerial staff opined to this position. Interestingly 51% of both groups rate lecture method as the least important, and keep it at the 10th position.

To the question, why storytelling was liked by them, the responses were:

• Makes me like the session and induces me to learn – Participants while elaborating their ratings explained that while a resource person explains a concept through a story, they love to listen it because they like that story, connect it to the concept and understand better. That generate a learning appetite in them and they feel encouraged to be attentive in the class.

• Increases my attention span–Participates' explanation confirmed that while in other training sessions where other training methods were used, their attention span was average 20 minutes or so. But while the trainer tells a story such attention span increases substantially and no other thought than that story enters in their minds.

• Makes me understand difficult concepts easily – It was a common opinion of the participants that many a times they were able to understand difficult concepts when it is made understood through a story.

• Able to understand and retain information easily – Trainees agreed that storytelling not only generates interest in them for concentrating in a training session, but also helps in retaining the content of learning.

• Generates learning appetite – The most important part of storytelling as a method of training is that, the trainees loved to be in the training session, being fully involved in the training process as their learning appetite gets increased manifold while taught through storytelling.

• My thought remains inside the classroom for a longer period – Respondents admitted that while learning through other methods used by resource persons, it was difficult for them to manage their thoughts. Though in the training sessions before the resource person time and again they were thinking of many other things than subjects taught in the training. But while listening a story the thought was always focused on the matter.

• Had no anxiety while learning – Some trainees explained that while undergoing a training if any subject is difficult to learn they experience an anxiety in the training session. At times in a brainstorming session, doing some exercises such a feeling is generated. But in a session where storytelling as a method is used such anxiety is never experienced.

• Had my past wrong belief replaced with new truth – faculties who share stories which actually took place gives a new direction in learning and strengthens believe system. Jinxes are removed

and we believe in certain things which were perceived by us as impossible. Pessimism fades and optimism takes centre stage. With renewed vigour, some participants narrated.

• Generates enthusiasm – Storytelling is such a smooth method that, we feel like continuing in training sessions for longer periods than the stipulated time in a session. We expect more such sessions to be incorporated in a training programme and get tremendous enthusiasm to learn, participants said.

• Gives solution to our problems – Most respondents found story telling methodology helping them in solving personal and professional problems after they listen to the story which is related to him or her problem.

• Keeps me engaged in learning – In a session relevant stories are shared by the faculty we never felt bored, out attention never got distracted and full focus was on the training sessions, participants participants said.

• Time flies, never under learning stress – Learning is stressful. It is not always enjoyable while various training methods are used by resource persons, trainees said. But when storytelling as a method is used by the faculty the stress level is at its ebb, was the opinion of most learners.

• It creates suspense and I want to know what would be the end of the story – Stories move in sequences and generates suspense. The trainees eagerly await the consequences that remains as suspense while the story being narrated by the faculty. What is going to be the consequence is the most enthusiastic part of the session and everyone focuses on that point leading to full focus on the training session, the trainees elaborated.

LIMITATION OF STUDY

This study is limited to training methodology, which is only one component of training delivery. For making a training successful a host of various components are instrumental like – training need analysis, training programme design, the trainer or resource person, audio-visual aids, training environment, etc., are responsible. But here a study is made only on training methodology. The sample size is limited to 340 respondents, which seems to be a smaller size. Study is made on only ten learning methods leaving many other training methods used today in various training programmes. The study is limited to employees of various organisations who are adult learners.

CONCLUSION

This research paper explores the utility of ten training methods used by corporate trainer's in classroom learning, and which method/s liked by the trainees in a classroom training session and why. The researchers, through a designed questionnaire asked 340 trainees in different organisations to rate ten training methods used in those training programmes by the resource persons. Out of 340 respondents, 170 were subordinate level staff and the rest 170 were managerial level employees. They were requested to rate the ten methods – Lecture, role play, management games, storytelling, video analysis, group work, in-basket exercise, brainstorming, and exercises – in order of their importance to them, in conveying information and generating learning. Opinion of both managerial and sub-ordinate level staff was collected to find if they differ in rating the benefit of various methods. Though they differed, both groups agreed that storytelling is the most accepted method in training sessions to generate learning. When 98% of the subordinate staff rated storytelling as the most liked method 96% of the managerial staff rated it number one method. They also gave reason for liking storytelling as the most accepted training method. The findings of the study indicate that out of the ten methods used by trainers in various corporate training programmes storytelling is proved to the most effective training method in learning, retaining and retrieving information by the learners.

This research will help trainers to learn about the acceptance of various methods by the trainees and enlightened them to use appropriate methods while conducting a training session. Storytelling is taking centre stage as very successful training methods for adults also. This will encourage other trainers to extend the scope of research further.

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Job Focused Training in Male Dominated Areas Using Combination of Teaching Strategies

Chandrima Chatterjee*
Lubna Maelzer **

ABSTRACT

We investigate the influence of job oriented focused training using a combination of lecture, presentations and hands on experience, on female trainees nearing the Indian poverty line. The motivation for the research is to develop training strategies to help women gain skills and jobs in male dominated jobs such as plumbing. We demonstrate high improvements in the mean and standard deviation of achievement scores post training. Re-test scores demonstrate retentively in some cognitive domains while scores in other domains suggest the need for refresher courses. Trainees got instant jobs or job interviews immediately after the training. A comparison with conventional training techniques showed that job focused combination techniques produce more positive effects in most cognitive domains. Overall, the approach to job-based training, addresses the prejudice that hands on job such as plumbing is only meant for men. Instead women can also enter the workforce for these kind of jobs with suitable training. Some women highlighted social barriers related to women working in male dominated jobs.

KEYWORDS

Female trainees, Poverty, Combination teaching, Strategies, Male dominated jobs

INTRODUCTION

In today's world, there exists a huge skills gap between men and women leading to shortage of staff in areas that require hands on expertise. This lack of trained personnel acts as a hindrance to socio-economic development (Tacsir, et al., 2014). We live in a biased society who seems to think that scientifically inclined technical jobs, that involve handling tools is mainly a man's job. This bias exists in all strata of society; from the poorest to the affluent. This general prejudice has resulted in women not pursuing or dropping out of STEM (Science Technology Engineering Mathematics) fields (Charlesworth, et al., 2019 & Bloodhart, et al., 2020). The unused potential of technically trained women represents a lost resource for society as a whole (Tacsir, et al., 2014; O Jiang, 2020 & Underwood, 2013). There has been progress no doubt in the last couple of decades, but we still have a lot of ground to cover when it comes to empowering women to exercise their rights. This empowerment would be possible through providing hands on training and creating job opportunities for women who are socio-economically behind. Only then can we pave the way for a world where every girl and women enjoy their legal, economic and social rights.

In order to place the stepping stone for this audacious dream, the members of Girl Power Empowerment (GPE) Foundation organised for the first time in Asia, an event called 'Women in Plumbing' in association

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*   Independent researcher, ORCID: 0000-0001-5244-9465. E-mail:chandrima.gpe@gmail.com
**   Founder and Director of GPE (Girl Power Empowerment) Foundation, India. E-mail:girlpowerempowerment@gmail.com

with the Water Management and Plumbing Skill Council (WMPSC), India. The overall goal of GPE Foundation is to create equal opportunities for underprivileged women and train them to enter the workforce. WMPSC is an organisation that acts as an accreditation and a certifying body, working towards minimising the gap between the skilled and unskilled plumbing workforce in India. The two organisations came together with an interactive and engaging session for girls and women to understand the benefits of joining the plumbing industry and the pride and respect that can come with being a part of this critical sector of the workforce. Basic knowledge of the trade was shared along with available opportunities associated with this sector. The event was free of cost and a stepping stone to realise the need to create a new paradigm where women plumbers are as ubiquitous as women teachers, nurses, doctors or lawyers. The success of this event would pave the way to break the stereotype that plumbing is a man's job.

A comparison was made between training techniques for focusses job finding, used on the socio-economically backward Indian female to conventional training techniques on the educated middle class. For the later, GPE Foundation organised a workshop to provide guidance and resources to women to work from home. This was a platform for different businesses to share job opportunities and hire women directly in a work from home setting. This was a relevant training in today's world where COVID opened up a plethora of jobs that could be dome from home. This event was also free of cost for the trainees.

This paper is aimed at studying the outcomes of a job focusses crash training involving a combination teaching strategies. These strategies included lecture, PowerPoint presentations and provided hands on experience to female trainees nearing the Indian poverty line. The paper is divided into the following sections. The first section will discuss the study sample and methodology, the second section will discuss the study instrument, the third section includes the results and discussion, the fourth section draws an in-depth comparison between job focused combination training and conventional training using presentations only. The results will be compared with the works of other researchers in related fields. Finally, the conclusions will be discussed.

SAMPLE STUDY AND RESEARCH METHOD

The population for this study consisted of students who were all educated at least up to the Indian eighth standard. Socio-economically, these students mainly belonged near the poverty line. The minimum age of this group was eighteen years. A total of 25 students attended the training session. The instructor used lecture, PowerPoint presentation and hands on demonstrations as the instructional strategies. The importance of plumbing was introduced using lecture. The use of plumbing tools, types of pipes and their applications were introduced using PowerPoint presentations. The instructor used hands on demos to explain the functionality and application of fittings. He also used hands on demos to explain how plumbing fixtures work and their applications. The trainees were all given the opportunity to work with the tools and demos to gain a first-hand experience as a trainee plumber. The instructor finally outlined the related health and safety measures using lecture and PowerPoint presentation. Overall, the course was designed such that the trainees would gain the basic training to find a job immediately as assistant to a plumber. The outcomes of achievement of the study were measures pre and post training.

Study instrument

In order to ensure that the objectives of the study were met, an achievement test was used. The test consisted of 10 multiple choice type questions which were designed using Bloom's taxonomy. The same questionnaire was used thrice: pre-training to test if the trainees had any prior training on plumbing, post-training to measure the effectiveness of the training session; the same questionnaire was used to re-test the trainees after 3 weeks to measure how much information they retained. In order to ensure validity of the test, the authors presented the test

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to the trainers from WMPSC, a few days before the training session. The trainers found that the test was pertinent to the subject matter and aligned with the objectives of the course.

RESULTS AND DISCUSSION

Table 1 shows the comparison of mean scores for percentage of trainees who had positive responses during pre-training, post-training and re-testing. Overall, it can be observed that the pre-training numbers are the lowest. Post training, the positive achievement for knowledge increased by about 3 times, comprehension increased by about 9 times, application increased by about 2 times, analysis increased by 5 times, synthesis increased by 30 times and evaluation increased by about 3 times. Thus, it can be concluded that a focused training that involves lecture, PowerPoint presentation and hands on demonstrations as instructional strategies, significantly increases mean positive achievement in all cognitive domains with maximum impact on synthesis. During retesting, it was found that 100% of the trainees retained the information in the knowledge and comprehension domains whereas only 25% retained the information in the analysis and synthesis domains. Thus, it is concluded that the maximum positive impact related to analysis and synthesis, using combination teaching strategies, is observed immediately after the training. Hence a refresher or practice follow-up session would help to retain the information.

Table 2 shows the comparison for the standard deviation (SD) of scores for positive achievement. The maximum increase of SD post training was 20 times pre-training and was observed in the synthesis domain. This is in agreement with the data for the mean scores. The least increase in SD was observed in the application domain and was about 2 times pre training. This is also in agreement with the mean scores. The re-tested data shows a minimum SD in the analysis and synthesis domains which is in agreement with the mean scores, suggesting the need for a follow up practice session.

Table 1: Comparison of mean scores for the cognitive domains of Bloom's taxonomy during pre-training, post training and re-testing.

Cognitive level based on Bloom's taxonomy	Mean scores for percentage of trainees with positive achievement during		
	Pre-training	Post-training	Re-test
Knowledge	22	70	100
Comprehension	8	74	100
Application	28	64	87.5
Analysis	12	60	25
Synthesis	2	60	25
Evaluation	20	64	75

Table 2. Comparison of standard deviation of scores for the cognitive domains of Bloom's taxonomy during pre-training, post training and re-testing.

Cognitive level based on Bloom's taxonomy	Standard deviation of scores of trainees with positive achievement during		
	Pre-training	Post-training	Re-test
Knowledge	1.00	3.36	1.50
Comprehension	0.38	3.55	1.50
Application	1.36	3.07	1.34
Analysis	0.58	2.88	0.38
Synthesis	0.14	2.88	0.63
Evaluation	0.96	3.07	1.13

A one-to-one session was also organised with the candidates after the re-test to have an in-person discussion. A combination of the one-to-one session in addition, with a course satisfaction questionnaire revealed the following results. 72 per cent of candidates revealed that they would recommend the course to their friends who are in a similar socio-economic background which is near or below the poverty line in India. 60 per cent of candidates reported that they would be interested in undergoing a more detailed course. 68 per cent of candidates felt that they could land a job with this course, one trainee landed a job almost immediately after the course with a salary of about 10,000 INR. The others have interviews lined up.

The trainees revealed that COVID related lockdowns have resulted in loss of jobs and financial instabilities for them. Job focused courses with hands on training opens up various opportunities for them. They disclosed that they found it inspiring that women could be trained as plumbers and find jobs in the

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predominantly male dominated area. However, some of them also brought up social hurdles that were to be crossed. They revealed that their families showed disapproval of the idea of girl plumbers. They mentioned about the pressures of poor social backgrounds that forced them to limit their skills to household chores.

Comparison of results with conventional training methods

The motivation of this part of the research is to compare job focused training using combination strategies to conventional training methods. This study would help us to draw conclusions on the effectiveness of the novel method and identify gaps if any. For this comparison, the authors collected data on another event organised by GPE Foundation. The event provided training to women who aimed to work from home. Since COVID lockdown, a plethora of job opportunities have opened up that could be done from home. However, women need training and direction to find, apply and perform these jobs. A total of 37 female participants showed up for the training session. The minimum qualification that was specified for this training was at least higher secondary pass out. However, all candidates that appeared for the training were graduates, *i.e.,* they had a bachelor's degree. All of them belonged to the middle class of society.

The instructors used conventional PowerPoint presentations for the training. They introduced the subject matter by describing situations that can force women to work from home. They discussed skill sets that are required for women to work from home. Some of these skills would involve prioritising tasks, such as household chores versus office tasks, and the attendees were given information on how to handle them. The attendees were given directions on how to change a home (or part of a home) into an office. Information was shared with them that would enable them to fulfil all demands of their employer while working from home. The instructors shared resources with the attendees about remote work opportunities in leading sectors including money transfer applications, food delivery services, student accommodation providing services, etc. This information was also shared in the form of a PowerPoint presentation. The event also saw entrepreneurs reaching out to the attendees to explore opportunities in businesses such as essential oils. The health benefits of these oils were shared along with employment opportunities in businesses that deal with essential oils.

An achievement test was used to score the effectiveness post training. The test consisted of six multiple choice questions. Each question correlated to a particular domain of Bloom's taxonomy. This correlation would help us in performing a one-to-one comparison with job-focused training using combination strategies. In order to ensure validity of the test, the author presented the test to the trainer from GPE, a few days before the training session. The trainer found that the test covered subject matter that would be presented and aligned with the objectives of the training.

Table 3. shows the mean scores for percentage of trainees with positive achievement post training. It can be seen that the numbers are mostly above centre. The synthesis domain has the highest mean. This means that the trainees developed the ability to synthesise different concepts to create new ideas. The idea of collaboration was explored in the synthesis domain. 5 per cent of attendees expressed interest in encouragement through donation (please note no money was actually collected. This question was only provided to foster the study). 22 per cent answered that they would like to collaborate by gaining membership of the relevant organisation. 41 per cent expressed interest in volunteering with relevant organisations. 5 per cent answered that they would like to collaborate in other ways (1 candidate specified that they would like to help organise training workshops). 27 per cent of candidates expressed no interest in collaboration. The synthesis domain had the lowest mean and standard deviation post job focused training involving combination strategies (Refer tables 1 and 2). This difference possibly arises due to the difference in educational and socio-economic background of the two study samples. The job-focused training was provided to females nearing the Indian poverty line while the conventional training

was provided to middle class female graduates. The evaluation domain had the next highest mean and standard deviation for the conventional training (refer tables 3 and 4), while it had the third highest numbers in the job-focused training (refer tables 1 and 2). The knowledge, comprehension and analysis domains all had the same scores after the conventional training (refer tables 3 and 4). The application domain had the lowest score post conventional training (refer tables 3 and 4). This is possibly because the whole training was conducted as a PowerPoint presentation with no scope of hands-on exploration. This is certainly a limitation of conventional trainings. What is really surprising is that all domains (with the exception of synthesis) for the conventional training method have lower means and standard deviations (tables 3 and 4) than combinational teaching strategies for job focused training (tables 2 and 3). This is a key finding of this paper, that although the target audience was below the poverty line, job-focused combinations training strategies have a higher positive impact on their cognitive domains than conventional methods on the educated middle class. This finding can be implemented to help the socio-economically backward Indian female to gain economic empowerment. Table 5 shows the percentage difference in mean positive achievement between the two methods of training. The evaluation domain has the smallest percentage difference while the comprehension domain has the largest.

Table 3: Calculated mean scores for the cognitive domains of Bloom's taxonomy during post conventional training.

Cognitive level based on Bloom's taxonomy	Post training mean scores for percentage of trainees with positive achievement
Knowledge	54
Comprehension	54
Application	48
Analysis	54
Synthesis	73
Evaluation	59

Table 4: Calculated standard deviation of scores for the cognitive domains of Bloom's taxonomy during post conventional training.

Cognitive level based on Bloom's taxonomy	Post training standard deviation of scores of trainees with positive achievement
Knowledge	3.20
Comprehension	3.20
Application	2.88
Analysis	3.20
Synthesis	4.42
Evaluation	3.52

Table 5: Percentage difference in mean positive achievement between combination job focused training and conventional training. The synthesis domain indicated by a negative sign is the only domain where conventional training had a higher mean positive achievement than combination training. For all others, combination training had a higher mean score.

Cognitive level based on Bloom's taxonomy	Percentage difference in mean positive achievement between combination job focussed training and conventional training
Knowledge	29.6%
Comprehension	37.0%
Application	33.3%
Analysis	11.1%
Synthesis	(-)17.8%
Evaluation	8.5%

The trainees expressed their views on the pros and cons of working from home. Issues such as loss of work as a result of COVID related lockdown were brought up. Jobs that allow women to work from home enable financial stability along with taking care of children and elderly. Regular office jobs often demand erratic timings which becomes a hurdle for women with family and children. Working from home helps to overcome such obstacles. Regular office jobs often require commute which increases the risk of COVID exposure, working from home minimises the exposure. Besides, the commute time could be repurposed to get more official work done. The disadvantages involved with working from home included financial constraints of setting up a home office with a computer and printer. Women with homes in cities often live in apartments with families,

and finding space to set up an office is difficult. Some brought up issues where small children run and crash into their office setup.

The final outcome of the training had encouraging results. 15 candidates immediately got placed into customer service roles. These jobs allowed working from home through online chat service provided by the relevant company. The starting salary was 18,000 INR. This positive outcome was possible because the audience comprised of graduates with average to good communication and computer skills. These qualities were missing in the trainees who underwent the job-focused training with combination strategies, mainly because the group consisted of women nearing the Indian poverty line some of whom had received education only up to the eighth standard. Thus, it would be a good idea to include communication and some basic computer skills into future training sessions.

Comparison of results with findings of other researchers in related fields

Training women in job-focused areas such as plumbing, that involves using tools increases the chances of finding jobs in the urban areas related to real restate. Additionally, if the incoming trainees already have good communication skills and basic computer knowledge, the training sessions involving hands on experience, lecture and digital media provides a boost to their existing skills. This could increase their chances in getting employed in communication sectors, finance and insurance related jobs, and others. It has been found in reference that non-farm based modern jobs such as real estate, finance and insurance, communication, health and education can reduce poverty (Pattaya, et al., 2022). A substantial part of the Indian population is poor and creating training opportunities and jobs is one way to attack poverty and solve the problem of unemployment. It is studied that micro-finance is an effective tool for upliftment of the poor by providing increased self-employment opportunities and making them worthy of receiving credit from banks (Shastri, 2009). Training programs discussed in this paper helps serve the

purpose and could make women eligible for receiving micro-financial aid.

The involved organisations that conducted the training provided a platform for women to gather information on the prospects of gaining new skills and possibilities of hiring. A majority of women in the developing world do not have access to information and communication technologies due to infrastructural, social, cultural and linguistic barriers (Suresh, 2011). Hence it is absolutely necessary that the progressive part of the society helps in the dissemination of information for the purpose of women empowerment. This stresses on the importance of conducting more job focused training workshops to provide women with necessary resources.

The impact of employment opportunities, on women empowerment in India. India ranks at the bottom 20 in a list of 131 countries in female labour force participation (Raj, 2014). Senior level female employees in India are only 5 per cent compared to the global average of 20 per cent. The empowerment of women has become one of the most important concerns of the 21st century at national and international levels (Waghamode, 2014). Government policies and promotion strategies in India are providing new opportunities to women, over time the share of employed women has risen. The Work Participation Rate of women increased from 19.67 per cent in 1981 to 22.27 per cent in 1991 (Raj, 2014). Women are more inclined in gaining economic independence as there are limited opportunities in the male dominated society. Job-focused trainings such as the one discussed in this article serves the purpose of women empowerment by including more females in male dominated areas of work.

CONCLUSION

The effect of job-oriented-focused training using a combination of lecture, presentations and hands on experience was investigated on female trainees nearing the Indian poverty line. The aim was to help women gain skills and jobs in male dominated jobs such as plumbing. The mean scores of achievements test post-training showed an increase by a maximum

of 30 times in the synthesis cognitive domain of Bloom's Taxonomy, and a minimum of 2 times in the application domain. Re-testing showed maximum retention in the knowledge and comprehension domains and minimum retention in the analysis and synthesis domains. This implies the need for follow up training sessions that would refresh the information. The standard deviation of scores in the achievement test showed similar trends as the mean scores. One trainee out of the 25 attendees immediately found a job after the course with a salary of about 10,000 INR. The other candidates have interviews lined up. Most candidates revealed that these kinds of focused trainings would be beneficial to other people from similar socio-economic backgrounds. Some candidates brought up social hurdles such as objection from their families related to women working in male dominated areas such as plumbing.

A comparison was made with conventional training using PowerPoint presentations. The target audience were all graduates belonging to the middle class of society. It was found that while the synthesis domain scored higher mean and standard deviation for the middle-class group, all others scored lower. Thus, it can be inferred that the combination training strategy is best suited for the socio-economically backward Indian female to quickly find a job. A calculation of the percentage difference in the outcomes of the two kinds of training reveals that the evaluation domain has the smallest percentage difference while the comprehension domain has the largest. 15 candidates who underwent the conventional training immediately got placed into customer service roles with a starting salary of INR 18,000. This was possible because the audience comprised of graduates with communication and basic computer skills, which are missing in the socio-economically backward female who took the job-focused-combination training. This highlights the need to include communication and basic computer skills in further trainings that would eventually facilitate economic empowerment of the Indian woman nearing the poverty line.

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Reform-Oriented Academic and Research Culture (ROARC) in Higher Education Institutions – Bedrock for Effective Implementation of NEP 2020

B. L. Gupta*

ABSTRACT

The Reform-Oriented Academic and Research Culture (ROARC) in higher education institutions (HEIs) needs to be created to implement the provisions of the National Education Policy (NEP) 2020 that stipulate the total overhaul of the education system to achieve the quality vision. The provisions of NEP are new to HEIs as it focuses on multidisciplinary education and research, autonomy of the HEIs, outcome-based education, multiple entry and exit, formative and criterion-based assessment, use of information communication technology, development of relevant graduate for the industry and society and the like. The HEIs need to create ROARC to revamp, reform, reengineer, reenergise, and change themselves. The characteristics of ROARC and practices fostered by ROARC are discussed. An exploratory method of research is adopted in which respondents were asked to record their responses on the structured and semi-structured research instrument designed by the researcher. 339 respondents expressed their views. The respondents suggested 22 observable characteristics of ROARC and 13 practices to be encouraged by ROARC. The HEIs need to create ROARC to effectively implement the provisions of the NEP 2020 and achieve the vision of quality education.

KEYWORDS

Reform-oriented education and research, National Education Policy, Higher Education

INTRODUCTION

The National Education Policy (NEP) 2020 focuses on multidisciplinary education and research right from the undergraduate level in higher education institutions (HEIs) to achieve the vision of quality colleges and universities in the country by 2035. There are many paradigm shifts envisaged in the NEP 2020 related to education, research and services such as flexible curriculum, engaging pedagogy, formative assessment and support services to the students. The research, entrepreneurship development, incubation, use of information communication technology, project work in the world of work and internship will be an integral part of education. The HEIs will have a professional governing body to set strategic direction for the institute and the institution will be responsible to the stakeholders through mandatory disclosure.

The ROARC is a pure form of oxygen in which academic reforms and innovations will flourish in HEIs. The ROARC will foster academic and research reforms and innovations. The achievement of academic and research goals will further enrich ROARC for

* Professor, Department of Management Education, National Institute of Technical Teachers' Training and Research, Bhopal India. E-mail: blgupta@nitttrbpl.ac.in

a higher level of reforms and innovations. It will bring a positive spiral effect on the achievement of academic and research goals. In contrast to earlier definitions of culture informal rules (Deal & Kennedy, 1982). ROARC will be formally charted aligned with the vision, and pattern of basic assumptions (Schein, 1985). ROARC will be transformed in reality, the way we do things around here (Furnham & Gunter, 1993) ROARC will focus on the way the reforms should be implemented in the institute.

The importance of innovative, reform, and quality-related culture is evidenced in literature in different contexts. Travis et al. (2022) defined a culture of excellence being possessed by organisations that value continuous improvement, waste reduction, and problem-solving in managerial decisions related to people. Established the relationship between cultures of excellence and performance as high performing that is strong customer orientation, a strong employee orientation, clear performance standards, a commitment to change and strong process orientation. Gupta & Gupta (2021) developed a model of cultural evolution and framework for culture building. Gupta & Gupta (2021) described the role of the academic leader as creating innovative academic and research culture in the institute and listed three competencies to perform the role. Dayang et al. (2020) concluded that the innovation culture is a prerequisite in an organisation to excel in organisational innovation. Naureen (2020) discussed the dimensions of quality culture in the context of accreditation of programmes.

The themes are motivation and engagement, research and innovation, transparency, effective leadership and student focus. Aysun & Chang (2020) concluded that organisational culture is significantly different in universities. The views of the students about innovations are positive and cultural dimensions have a significant effect on the implementation of innovations. Shayah & Zehou (2019) concluded that organisational culture is one of the factors that stimulate innovative behaviour, organisational creativity, and innovation. Davies & Buisine (2018) defined innovation culture in the form of natural innovative thinking within the organisation

and encourages innovation. Julia (2018) developed a model of culture for innovation. Gochhayat et al. (2017) concluded that organisations with strong and deep-rooted culture perform more effectively and the effect of organisational culture passes to institutional effectiveness through organisational communication. Siti et al. (2016) discussed a framework for innovative culture comprising of the external environment, internal environment, innovative culture (stories, rituals and supporting language) and innovative behaviour (curiosity, creativity, flexibility, pro-activeness, autonomy, empowerment, risk-taking, mistake/conflict handling and novelty seeking).

Norashikin et al. (2016) stated that the relationship among learning organisation culture, organisational performance and innovativeness are significantly positively associated. Kanokorn (2015) studied the relationship between adaptable, result-based, clan and bureaucratic culture with learning behaviour related to creativity, inquiry habit, enthusiasm, persistent to increase effective learning and application of knowledge and concluded that the correlation is positive. Mihai (2014) stated that the culture has a bearing on performance. Méndez & Cruz. (2014) discussed the organisational theory and organisational culture and different perspectives of seeing the culture in the organisation. The research culture and its indicators are defined in the academic context. Hinde (2014) stated that school culture is not a static entity and it is shaped through interactions. Chang (2014) concluded that an innovative, open and supportive organisational culture with clear goals, collaborative spirit and shared vision is important for the implementation of instructional innovations. Goal orientation and collegial relationship seems to be the most important influential factor.

Katarzyna (2014) concluded that organisations focus on resources, processes and systems while implementing the innovations and devote less attention to people-oriented determinants of the culture of innovation. These determinants have the greatest power to shape the innovation-oriented culture and create a sustainable competitive advantage.

Daniel et al. (2012) developed a configuration model of organisational culture considering the internal and external internal environment. The configuration establishes an iterative process among organisational culture, strategy, structure, structure and operations. Ismael et al. (2010) discussed the definition and measurement of organisational performance and organisational culture. Ehlers, (2009) stated the elements of culture such as incorporations, norms, heroes, rituals, practices, symbols, languages, stories, patterns, myths, artefacts and values. Enrique Claver (1998) proposed points on innovative culture such as experimentation, long term approach, flexibility, informal atmosphere, constant learning, decentralised structure, risk-taking, teamwork, creativity, shared responsibility, quality of the idea, ethical, autonomy, and acceptance of the change. Cris et al. discussed the six-stage framework for building a culture of innovation. The steps are Kick off with why, assemble a team, agree on the future, engage in conversion, create a roadmap and make it happen.

The NEP 2020 is the recent educational policy announced so related research studies in a similar context is not available in the literature. Some of the aspects of the reforms, innovations, and quality of education are studied from a cultural point of view which is not completely aligned with the provisions of NEP 2020. The current study was conducted to fill up the research gap in the area of ROARC in the context of NEP 2020.

METHOD

The research study is conducted to achieve following research objectives:

1. To ascertain the practices to be encouraged by reform-oriented academic and research culture (ROARC) in higher education institutions (HEIs).

2. To state the presence of observable characteristics of ROARC in HEIs.

Research methodology

Research type: It is an exploratory study based on the visualisation of the respondents on reform-oriented academic culture in HEIs in the context of NEP 2020.

Population: All HEIs of India constitute the population for the study.

Sample: A convenience sample is used for gathering the information.

Research questionnaire: The researcher designed a structured and semi-structured questionnaire that was validated for content and construct validity by 6 experts working in the field of education management in HEIs.

Method of data collection: A Google form was created and a request letter was mailed to potential respondents requesting them to fill out the Google form.

Respondents: The respondents are from engineering, polytechnic, and HEIs.

Duration of the study: The study was conducted from Sept 2021 to June 2022.

Data analysis: The percentage of responses and the weighted mean were used to analyse the data and a t-test was used to test the hypothesis.

RESULTS

Objective-wise results are noted in subsequent sections: Institutional practices to be encouraged by ROARC in HEIs.

Table 1. Practices to be encouraged by ROARC in HEIs

Sl. No.	Practices	Weighted mean
1.	Flexibility in the functioning of the institute at all levels	3.938
2.	Quality assurance through scientifically designed systems and processes	3.722
3.	Effective communication within and outside the institute	3.622
4.	Transparency through mandatory disclosure and documents	3.585
5.	Innovativeness in offering the educational programmes and functioning of the institute	3.581
6.	Experimentation to continuously improve the performance	3.539
7.	Accepting challenges continuously individually and collectively	3.522
8.	Proactiveness to predict the changes taking place in the external environment	3.457
9.	Capacity building through training, mentoring, coaching, guidance, and counselling	3.448
10.	Openness in communication and collaboration	3.418
11.	Challenging traditional practices to implement innovative practices	3.297

Sl. No.		Weighted mean
12.	Autonomy to make decisions at every level in the institute	3.209
13.	Risk-taking to offer new educational programmes and conduct research in multidisciplinary areas	3.123

Observable characteristics of ROARC: The extent to which the following Observable characteristics of ROARC are present in the HEIs.

Table 2. Observable characteristics of ROARC

Sl. No.	Observable characteristics of ROARC	Weighted mean
1.	Innovativeness through individual and group creativity	3.624
2.	Responsive to external needs and expectations	3.613
3.	Positive attitude towards change, quality, technology	3.601
4.	Accountable to self and others for reform	3.548
5.	Cooperative to students, internal and external stakeholders	3.548
6.	Constructive in communication, behaviour and approach	3.545
7.	Commitment oriented toward goals, missions, and vision	3.542
8.	Dynamic to assume a variety of roles in the institute	3.533
9.	Facilitative for reforms leading to the achievement of quality	3.530
10.	Supportive in behaviour to students and other stakeholders	3.530
11.	Aligned performance to achieve the vision	3.513
12.	Collaborative to combine strengths and cover up weaknesses	3.495
13.	Adaptive in behaviour to cope with changing practices	3.489
14.	Integrated to produce a synergetic effect on performance	3.466
15.	Evolving to embrace change and innovation	3.436
16.	Holistic approach in demonstration of behaviour	3.398
17.	Powerful to push and pull the innovations, performance, and change	3.395
18.	Flexible in behaviour and approach to deal with the transformation process	3.371
19.	Favourable to change agents and champions	3.238
20.	Autonomous environment for learning, development, and performance on innovative projects	3.218
21.	Non-linear – shifting from one set to other	2.970

Hypothesis testing

A two-tail test at a 0.05 significance level was applied in the excel sheet and it is found that the calculated value of t (0.82) is lesser than the critical value of t (2.17) so the null hypothesis is accepted which means there is no significant difference in views of male and female faculty members on practices to be encouraged by ROARC in HEIs.

A two-tail test at a 0.05 significance level was applied in the excel sheet and it is found that the calculated value of t (0.838) is lesser than the critical value of t (2.17) so the null hypothesis is accepted which means there is no significant difference in views of respondents from accredited and non-accredited programmes on practices to be encouraged by ROARC in HEIs.

A two-tail test at a 0.05 significance level was applied in the excel sheet and it is found that the calculated value of t (0.054) is lesser than the critical value of t (2.08) so the null hypothesis is accepted which means there is no significant difference in views of male and female faculty members on observable characteristics of ROARC in HEIs.

A two-tail test at a 0.05 significance level was applied in the excel sheet and it is found that the calculated value of t (0.440) is lesser than the critical value of t (2.08) so the null hypothesis is accepted which means there is no significant difference in views of respondents from accredited and non-accredited programmes on observable characteristics of ROARC in HEIs.

DISCUSSION

There are challenges, new environments, uncertainty, and continuous changes in the external environment of HEIs. In this external and internal environment, HEIs craft their vision which requires a set of practices that thrives on ROARC which happens based on transforming the assumptions into reality.

The practices of the HEIs will lead to the achievement of challenging goals. The ROARC acts as a bedrock for the practices. These practices exist in a particular type of culture of the HEIs. On effective implementation of these practices individually and collectively the ROARC get further enriched and vice versa is equally true. In the recent literature on education management visioning, quality, excellence, accreditation, academic audit and professional governance is given a lot of importance Gupta (2006), MHRD (2020). The practices are derived from the philosophy of professional governance and management of the HEIs and changes taking place in the external environment. These practices will lead to the accomplishment of the vision and mission of the HEIs even in unfavourable situations.

The 21 characteristics are rated more than 74% by respondents indicating that all 21 characteristics should be present in the ROARC of the institute to implement the practices and strategies to achieve the vision of the HEIs. The findings of this study confirm the 7 dimensions of innovative culture are risk-taking, resources, knowledge, goals, rewards, tools, and relationships Katarzyna (2014) cited Maher.

The faculty and staff members individually and collectively adhere to these characteristics. These characteristics may be prioritised in the context of the vision of the institute. These characteristics should be displayed on the website of the institute and in prominent places in the institute, and communicated in meetings and orientation programmes. At the institute level, social pressure should be created to promote these characteristics.

CONCLUSION

1. 13 practices were rated more than 75% in weightage. Therefore, it is recommended that 13 practices need to be encouraged in HEIs at different degrees of operation to achieve the optimum benefit of ROARC. There is no difference of views between males and females, and participants from accredited and non-accredited programmes which means all the 13 practices are equally valid for institutions having accreditation or no accreditation.

2. 21 characteristics of ROARC were rated more than 74% in weightage and intensity. Therefore, it is recommended that all 21 characteristics should be considered for creating and measuring the presence of ROARC. There is no difference of views between males and females, and participants from accredited and non-accredited programmes which means all the 21 characteristics are equally valid for institutions having accreditation or no accreditation.

IMPLICATIONS OF THE STUDY FOR HIGHER EDUCATION

The paper introduced the contextual concept of ROARC for HEIs, observable characteristics of ROARC and practices to be encouraged by ROARC. The research work is based on the views of limited respondents at a very early stage of the implementation of NEP 2020. The findings may be implemented and further enriched through research study.

LIMITATIONS OF THE STUDY

The study is based on the views of the limited willing participants. All stakeholders responsible for the creation of ROARC have not responded to the study. The study is conducted during the early phase of innovations in higher education. The actual culture is not observed in the institutions.

FURTHER RESEARCH

The scope of the study may be expanded at different phases of innovations and on wider population. A comparative longitudinal study would result in measuring the real impact of ROARC.

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Impact of Online Induction Training on Performance of Graduate Employees in ONGC during Covid-19

Purnima Anand*

ABSTRACT

Induction is the process for welcoming newly recruited employees and supporting them to adjust to their new roles and working environments. This research work evaluates the impact of online induction training in the performance of graduate trainees of ONGC in year 2020- 21. Graduate trainees of ONGC are recruited through competitive exams, campus placement and were used to be physically trained for 25 weeks about oil industry and practices being followed in ONGC. When the pandemic was declared in 2022, the induction training in online mode was initiated by ONGC Academy in June 2020.Till date, more than 900 graduate trainees have been trained through online mode. Through this study an assessment was made of how far ONGC Academy was successful in helping these graduate employees in improving their performance after attending online induction training, to evaluate whether the impact of online induction training programme conducted by ONGC Academy during year 2020-21 was significant or not. Moreover, to assess the take away of a newly inducted graduate employee from induction training during pandemic times. Research problem was designed then data was collected from graduate trainees through Google forms in the form of primary data. Secondary data was collected through various web pages and ONGC website, previous study done by the researchers on the topic, newsletters, and company manuals. To conduct this study, the investigator collected responses of graduate employees for a questionnaire which was floated through Google forms for new graduated employees posted at different locations who have received online induction training of ONGC academy during year 2020-21. The data so collected was analysed and interpreted through various tools and techniques such as graphs, pie charts, statistical analysis through Microsoft excel and IBM SPSS. The research work has revealed that the induction training can be split in two modes both online and offline for better results and smooth running.

KEYWORDS

Induction, Research, Pandemic, Trainees, Online Training

INTRODUCTION

ONGC was the first Maharatna to initiate training programme through online mode and in facilitating the virtual training programmes on various video conferencing applications. For meeting training requirements of ONGC a training institute has been dedicated to the nation at Dehradun as ONGC Academy. The academy is committed to fostering excellence through enhancement of knowledge, skills and attitudes. An ISO-9001-2015 certified institute with a global presence, the academy emphasises

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* Chief Engineer (Production), ONGC Academy, Dehradun, India

inculcation of technical, managerial and soft skills through quality training, accreditation courses all conducted through world renowned faculties & institutes – both from in-house as well as outside. On the Industry-Academia front emphasis is being given towards industry-academia interface. A large number of training programmes are conducted through centres of excellence by ONGC.

The growth of an ONGCian to an EXPONENT of energy business is facilitated by the ONGC Academy; Skill Development Centres (SDCs) and other ONGC Institutes, and also their tie-ups with globally recognised trainers. After the outbreak of Covid-19 outbreak in March 2020 the class room training sessions at ONGC Academy were replaced by online training sessions and the academy took a lead in facilitating the virtual training programmes on CISCO WebEx videoconferencing application, etc. For the first time an on-board training initiative was organised for the newly joined graduate employees.

The purpose of the study is to examine online induction training, to evaluate how far the online induction training was successful in improving performance of graduate trainees, in improving productivity of the trainees, in helping understanding the oil industry requirements of ONGC from the trainees, in establishing employee commitment.

REVIEW OF LITERATURE

It is a recognised fact that induction training plays a key part in establishing a cohesive bond between employer's mission and vision to the employee's growth expectations. Hence this study will help in assessing the 25 weeks online induction programme of ONGC overall. Training and development function in an organisation has gradually become a major activity since the continued effectiveness and efficiency of an organisation depends on the ability of its employees to produce at high levels of efficiency, and keep abreast with their changing job-role demands. The objective of training is to develop specific and useful knowledge, skills and techniques. It is intended to prepare people to carry out predetermined tasks in well-defined job contexts. Training is basically a task-oriented activity aimed at improving performance in current or future jobs.

Author has come across some articles and literature in the area of training and its importance which are mentioned hereby.

According to Sikula (1984), the need for the purpose of training is to ensure increase in productivity; and it is believed that "increased human performance (through instructions), often directly leads to increased operational productivity and increased company profit". Secondly, the purpose of training is improvement of quality since better informed workers are less likely to make operational mistakes.

According to Harris (1991), training of any kind should have as its objective the redirection or improvement of behaviour so that the performance of the trainee becomes more useful and productive for himself and for the organisation of which he is a part. Training normally concentrates on the improvement of either "operative skills", "interpersonal skills", "decision-making skills" or a combination of these".

As per the definition by Hamblin (1978), evaluation of training is any attempt to obtain information (feedback) on the effects of a training program and to assess the value of the training in the light of that information". Evaluation of the training process is a difficult task, and different circumstances require different method for evaluation according to the objectives aimed at.

According to McGhee & Thayer (1961), three level analysis gave several reasons for the necessity of evaluating a training programme: 1. it enables the effectiveness of an investment in training to be appraised. 2. Reassures management about the effectiveness of a particular method of instruction, the relations between training costs and improved productivity, and the general efficiency and effectiveness of a course. 3. Lead to "considerable future savings in time and costs". Evaluation helps management to answer the following questions: 1.What changes if any should be made in existing programmes to realign them to the organisation's needs? 2. Is the choice of areas of training correct in the context of its contribution to the organisation's effectiveness? 3. Should the money continue to be spent on training programmes? 4. What are the strengths and weaknesses of the training programme? The outcomes of the evaluation can

be used as a base for the improvement of programs. An evaluation of a training method must also take into account the suitability of objectives.

As pointed out by Jucius (1980), the values of training are: (1) Training serves to improve employee skill which in turn increases the quantity and quality of output; (2) The relative amount of equipment and material required to produce a unit of output is decreased; (3) Executive effort will tend to shift from the disagreeable need of correcting mistakes to the more pleasant tasks of planning work and of encouraging expert employees; and (4) The various increases in productivity should find reflection in increased returns to both employer and employees." The importance of training can be studied under the following heads: Benefits to the Business: 1. Trained workers are more efficient. 2. In case of industry, training improves safety, as it imparts knowledge on the proper use of machines and equipment with due regard to safety and possible hazards. 3. Trained workers show superior performance. 4. Training makes employees more loyal and they will be less inclined to leave the unit where there are growth opportunities.

HYPOTHESES OF THE RESEARCH WORK AND RESEARCH METHOD

Hypotheses formulated to empirically validate the objectives were as follows:

(a) Null Hypothesis (Ho): There will be no significant difference between offline and online trainings.

(b) Alternative hypothesis (H1): Online induction training has led to better understanding of work environment and improve employee engagement in organisational works.

The research in this study is descriptive in nature. Research problem was designed then data was collected from graduate trainees through Google forms in the form of primary data. Secondary data was collected through various web pages and ONGC website, previous study done by the researchers on the topic, newsletters, and company manuals. Research problem was designed then data was collected from graduate trainees through Google forms in the form of primary data. Secondary data

was collected through various web pages and ONGC website, previous study done by the researchers on the topic, newsletters, and company manuals. All 958 graduate employees of ONGC who have received online induction training in year 2020-21 were constituted the population of the study for the investigation. To conduct this study, the investigator collected responses of graduate employees for a questionnaire comprising of 15 questions which was floated through Google forms for newly graduated employees posted at different locations who have received online induction training of ONGC academy during year 2020-21. The data so collected was analysed and interpreted through various tools and techniques such as graphs, pie charts, statistical analysis through Microsoft excel and IBM SPSS.

ANALYSIS

General profile of respondents

The profile of graduate trainees discipline-wise who gave response to the questionnaire is as follows:-

Table 1. Discipline-wise profile of respondents

SI No.	Discipline-wise	Percentage of respondents (%)
1.	Chemistry	5.3
2.	Civil	1.1
3.	Electrical	10.5
4.	Drilling	11.6
5.	Finance	4.2
6.	Fire services	2.1
7.	Geology	13.7
8.	Geo-physics	11.6
9.	Human resource	5.3
10.	Instrumentation	2.1
11.	Legal	2.1
12.	Material management	2.1
13.	Mechanical	4.2
14.	Production	15.8
15.	Programming officer	1.1
16.	Reservoir	7.4

Interpretation: Table 1 shows that out of all respondents 66% graduate trainees belonged to exploration and production discipline. Remaining respondents belonged to support services.

Likert scale responses on online training

A Likert scale is composed of a series of four or more Likert-type items that represent similar questions combined into a single composite score/variable. Likert scale data can be analysed as interval data, *i.e.*, the mean is the best measure of central tendency.

Likert items are used to measure respondents' attitudes to a particular question or statement. To analyse the data it is usually coded as follows.

• 1 = Strongly disagree • 2 = Disagree • 3 = Neutral
• 4 = Agree • 5 = Strongly agree

The questionnaire of 15 questions was floated and the responses were captured through Google forms from the graduate trainees and output was retrieved as Microsoft excel sheet. A t-test in Microsoft excel was carried out to see the probability of null hypothesis to be true between "Agree" and "Disagree" responses. For calculation of mean, standard deviation and test of significance IBM SPSS software was used. For using SPSS software the output of Google forms in excel format was fetched in data view of SPSS software and hence the further processing of data was carried out.

Table 2: t-test results in Microsoft excel

	Questionnaire floated for online survey	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	All Disagree	All Agree	Total responses
		(1)	(2)	(3)	(4)	(5)			
1.	Were you satisfied with the duration of the course?	11	11	25	90	17	22	107	154
2.	Were the aims and objectives of this course made clear to you in the beginning?	4	9	18	106	17	13	123	154
3.	Were you satisfied with the duration of soft skills classes?	11	31	35	66	11	42	77	154
4.	Is there accurate balance online classroom session timings devoted to various exploration related topics?	6	16	40	84	8	22	92	154
5.	Were the lectures covered topics through case studies and live examples of ONGC?	9	10	22	95	18	19	113	154
6.	Are you satisfied with the online training given by the company during pandemic times?	36	37	33	41	7	73	48	154
7.	Has the Induction training program helped in developing a psychological ownership towards the company?	15	28	37	64	10	43	74	154
8.	How much has the induction training program helped you to develop your employee commitment towards the organisation?	7	19	43	73	12	26	85	154
9.	Do you believe that the training being provided is relevant to the current oil industry requirements?	8	15	34	78	19	23	97	154
10.	Do you feel that this online induction training has helped you in increasing your productivity and ONGC's productivity?	18	26	33	66	11	44	77	154
11.	Do you believe that in this pandemic time this online induction training programme has helped you to get more help in understanding the expectations the company has from you?	14	30	38	60	12	44	72	154
12.	Do you believe that online training has helped you to grow in positive direction as an ONGCian 10 to 15 years down the line?	12	28	48	53	13	40	66	154
13.	Do you believe that this online induction training programme has helped you to have better understanding of the work culture of the company?	17	21	36	69	11	38	80	154
14.	Were you satisfied by the knowledge sharing and help provided by the seniors both working and retired in understanding the oil industry of the nation?	5	6	22	97	24	11	121	154
15.	Do you feel that the online induction training has helped you in improving your performance at workplace?	17	26	47	56	8	43	64	154

Statistical analysis of responses in Microsoft Excel

Here the t-test has been conducted between all agree and all disagree responses. In this test neither agree or nor disagree responses of the trainees have not been included. For calculating all agree responses both "Agree" and "Strongly agree" responses have been combined and for the calculation of all disagree responses both "Disagree" and "Strongly disagree" responses have been combined.

All agree = "Agree" + "Strongly agree"

All disagree = "Disagree" + "Strongly disagree"

t-test conducted for "All agree" and "All disagree" responses and here are the values as given:

	All disagree	All agree
MEAN	33.53333	86.4
STANDARD DEVIATION	16.177	22.01558
VARIANCE	261.6952	484.6857
N	15	15
P value	0.00004	

The p (probability) value in t-test is 0.00004 which is much below 0.05, *i.e.*, (p value required for null hypothesis to be true). This makes the null hypothesis a false assumption and hence the alternative hypothesis stands true in this case.

Alternative hypothesis (H1) stands true: Online induction training has led to better understanding of work environment and improve employee engagement in organisational works.

Question wise analysis and interpretation

Data analysis of Questionnaire and their responses are as follows:-

Question 1: Were you satisfied with the duration of the course?

Figure 1: Histogram on responses for question 1

Interpretation: As we can see with the histogram that majority of graduate trainees were satisfied with the duration of the course. This shows a positive inclination towards the satisfaction of duration of course.

Question 2: Were the aims and objectives of this course made clear to you in the beginning?
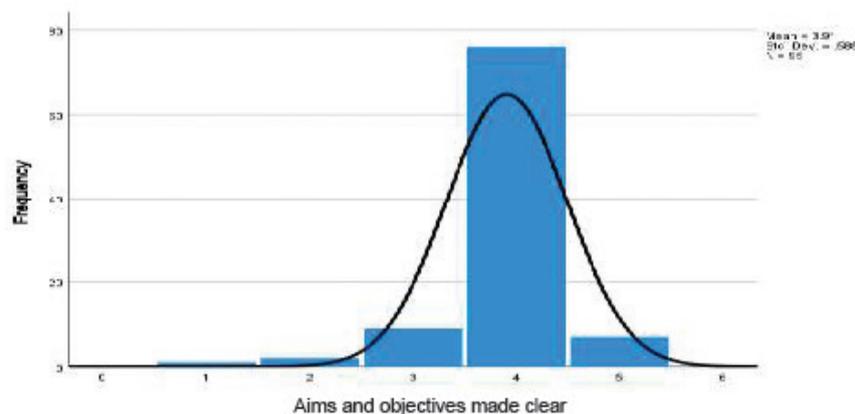
Figure 2: Histogram for responses on question 2

Interpretation: The histogram above is also indicating that maximum responses by trainees are number 4 *i.e.,* "Agree" for aims and objectives of the course were made clear. Histogram indicates that more than 70% graduate trainees have agreed to the point that the aims and objectives of the training were made clear to them 3 in the beginning of the course.

Question 3: Were you satisfied with the duration of soft skills classes?
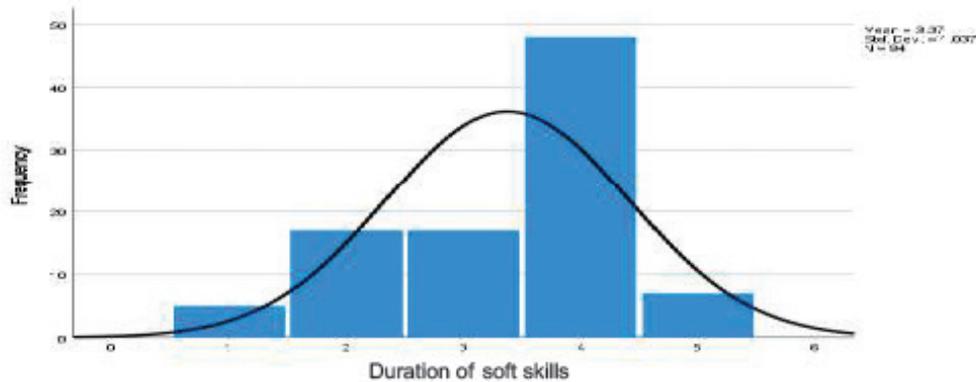
Figure 3: Histogram on responses for question 3

Interpretation: The histogram above is also indicating that maximum responses by trainees are number 4, *i.e.,* "Agree" for satisfaction with the duration of the course. 50% of graduate trainees were not satisfied with the duration of Soft skills. This indicates trainees want more classes of soft skills. But some of the trainees are neither agreeing nor disagreeing with the duration. Hence, we can work on increasing number of classes in soft skills.

Question 4: Is there accurate balance between online classroom session timings devoted to various exploration related topics?
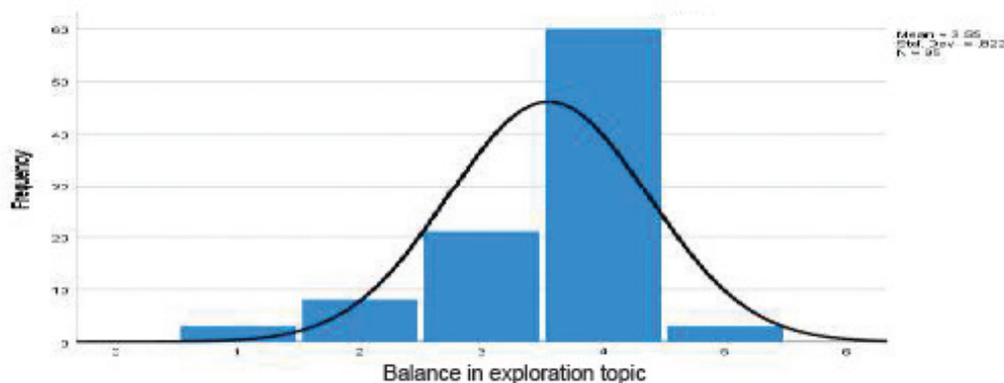
Figure 4: Histogram on responses for question 4

Interpretation: The histogram above is also indicating that maximum responses by trainees are number 4, *i.e.,* "Agree" for good balance in distribution of exploration topics which indicates planning part was good in terms of lectures. Here 57% graduate trainees are agreeing to the fact that there was good dedication of time to exploration related topics.

Question 5: Were the topics covered through case studies and live examples of ONGC?
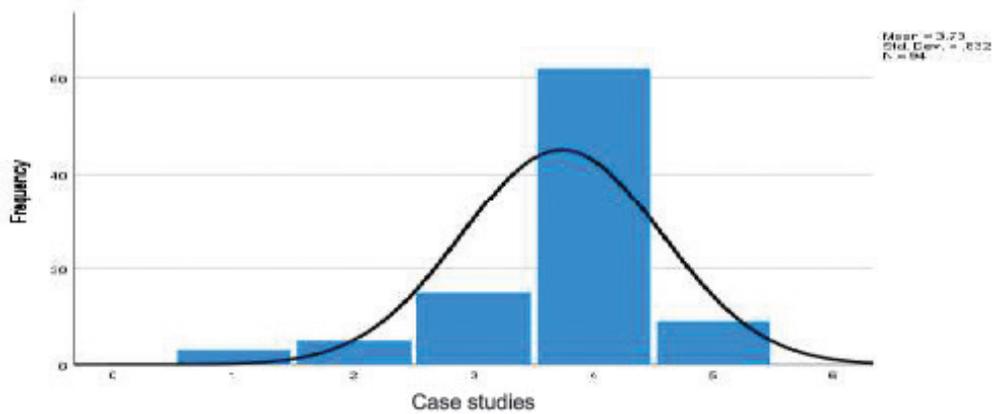
Figure 5: Histogram on responses for question 5

Interpretation: The histogram above is also indicating that maximum responses by trainees are number 4, *i.e.,* "Agree" that the lectures covered with live examples and case studies. More than 70% graduate trainees were of opinion that in online induction training live examples and case studies were covered in the lectures. This figure is indicating that the pool of faculty which has been constituted for imparting online induction training is doing a good job in communicating and passing the legacy of being an ONGCian from superiors to the newly inducted trainee.

Question 6: Are you satisfied with the online training given by the company during pandemic times?

Figure 6: Histogram on responses for question 6

Interpretation: This histogram on satisfaction with online training during pandemic times gives an indication of a mixed response where percentage of trainees responding with number 1 and number 2 which is "strongly disagree" and "disagree" has also risen in this graph. 46% graduate trainees were not satisfied with the online induction training. This reflects that mode of conducting training was not much appealing and satisfaction to the trainees as it lacked batch building physical activities.

Question 7: Has the Induction training program helped in developing a psychological ownership towards the company?
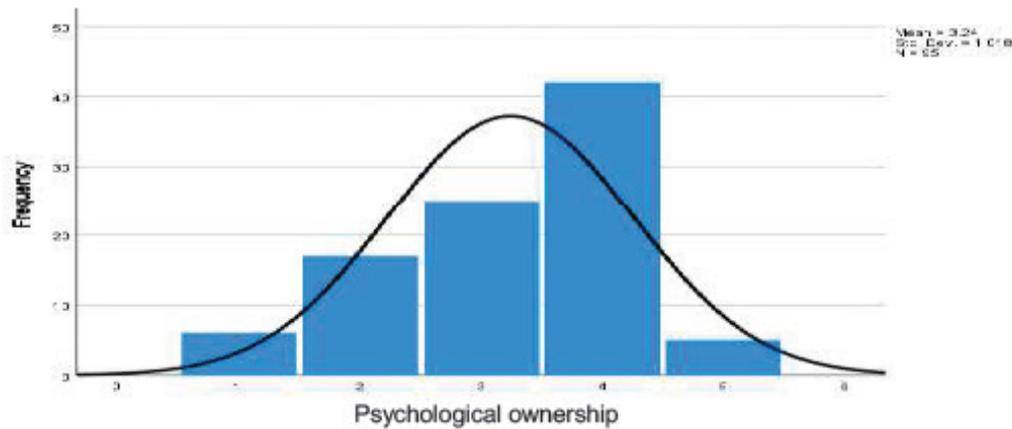
Figure 7: Histogram on responses for question 7

Interpretation: The histogram indicates that a good percentage of trainees have indicated that they are benefitted by the training as it has created a psychological ownership towards the company. 47% graduate trainees have agreed to the point that this induction training program has developed a psychological ownership towards the national oil company. 23% graduate trainees are still not sure of how far the induction training was successful in sparking the feeling of igniting ownership towards company.

Question 8: How much has the induction training program helped you to develop your employee commitment towards the organisation?
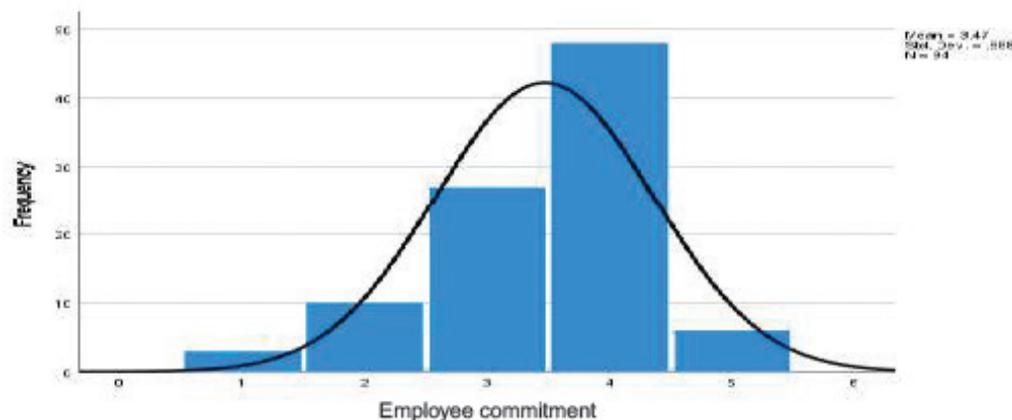
Figure 8: Histogram on responses for question 8

Interpretation: The histogram indicates that a good percentage of trainees have indicated that they are benefitted by the training as it has germinated a sense of employee commitment towards the organisation. More than 50% trainees have agreed to the point that the induction training was successful in developing employee commitment towards ONGC; this feedback indicated positive inclination towards the induction training success.

Question 9: Do you believe that the training being provided is relevant to the current oil industry requirements?
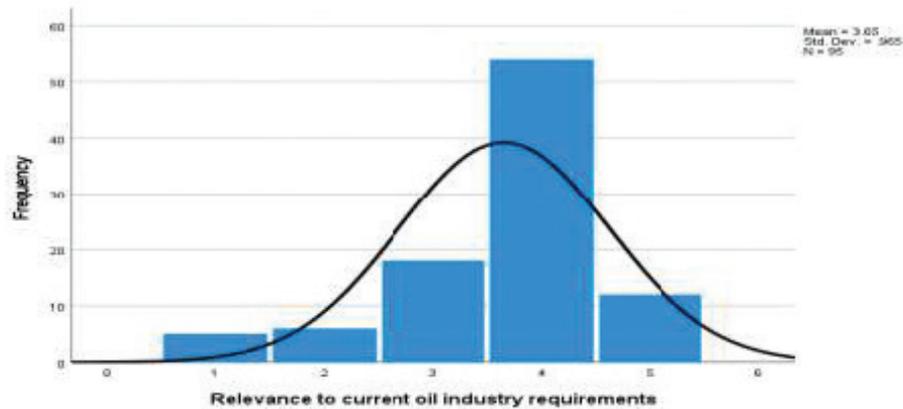
Figure 9: Histogram on responses for question 9

Interpretation: The histogram above indicates that response number 4, *i.e.,* "Agree" is the maximum opted response by the trainees. This indicates that maximum participants agree to the point that this online training was relevant to the current oil industry. Half of the graduate trainees believe that the training is very much relevant to current oil industry requirements. But one fourth of the trainees have not developed any opinion regarding current oil industry requirement's relevance.

Question 10: Do you feel that this online induction training has helped you in increasing your productivity and ONGC's productivity?
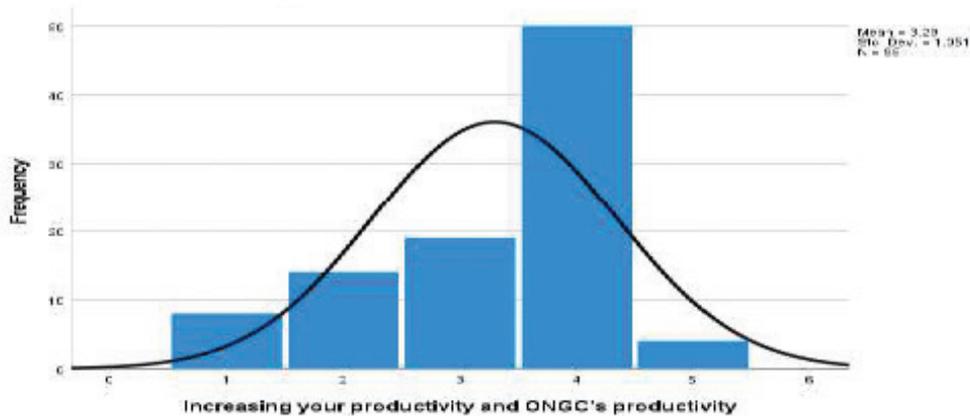
Figure 10: Histogram on responses for question 10

Interpretation: The histogram above indicates that response number 4, *i.e.,* "Agree" is the maximum opted response by the trainees. This indicates that maximum participants agree to the point that this online training was helpful in increasing productivity and on broader sense productivity of ONGC. Half of the graduate trainees have made an opinion that this online induction training programme has helped them to increase their productivity and ONGC's productivity.

Question 11: Do you believe that in this pandemic time this online induction training programme has helped you to get more help in understanding the expectations the company has from you?

Figure 11: Histogram on responses for question 11

Interpretation: Above histogram indicates that the training there was mixed response of the trainees for this question, *i.e.,* some are agreeing, one third was not able to form any solid opinion about the understanding of expectations ONGC has from each graduate employee. 49% graduate trainees believe that induction training has helped to get more help in understanding the expectations company has from them which is a good indicator that the motto of induction training has been met.

Question 12: Do you believe that online training has helped you to grow in positive direction as an ONGCian 10 to 15 years down the line?

Figure 12: Histogram on responses for question 12

In the diagram below the question asked to trainees was that has the online training helped you to grow in positive direction as an ONGCians 10 to 15 years down the line, as the responses below are mixed more than 40% trainees have agreed about the growth aspect of this training, one third of the trainees do not have any opinion regarding this growth factor and, one fourth of the trainees disagree with the fact that this training has helped them grow in positive direction.

Question 13: Do you believe that this online induction training programme has helped you to have better understanding of the work culture of the company?
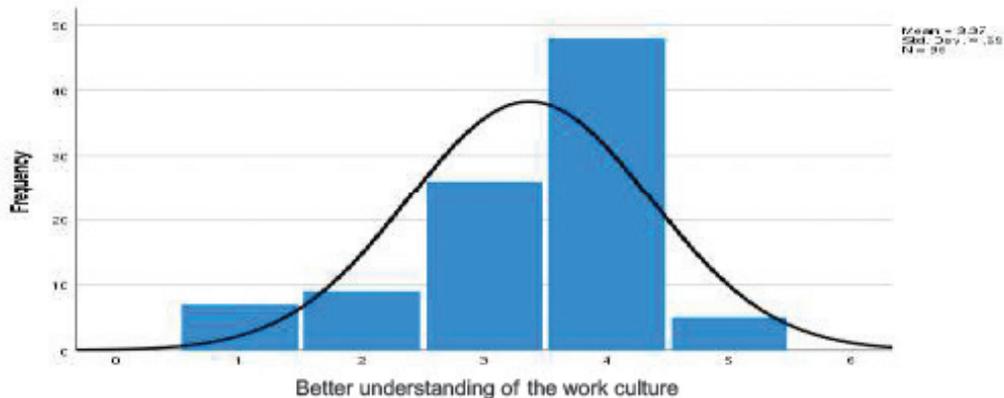
Figure 13: Histogram on responses for question 13

Interpretation: Above histogram indicates that the training there was mixed response of the trainees for this question, *i.e.,* some are agreeing, one third was not able to form any solid opinion about the help training has provided in better understanding of the work culture. More than half of the graduate trainees have agreed to the point that this online induction training programme has helped them to have better understanding of the work culture of ONGC.

Question 14: Were you satisfied by the knowledge sharing and help provided by the seniors both working and retired in understanding the oil industry of the nation?
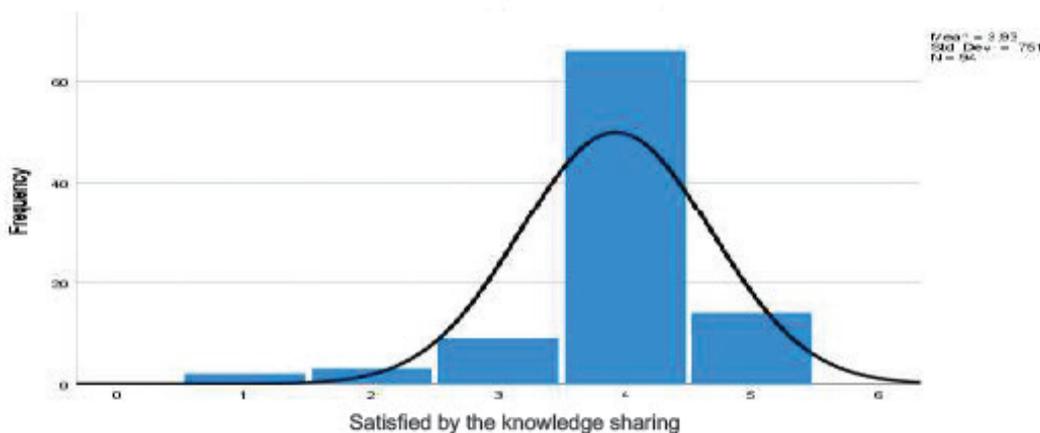
Figure 14: Histogram on responses for question 14

Interpretation: This histogram shows an overwhelming response in favour of the question, *i.e.,* trainees were highly satisfied by the knowledge sharing part taken by faculty members. More than 75% graduate trainees have agreed that there was good knowledge transfer and help provided by the working and retired faculty in understanding the oil industry of nation. The graduate trainees highly appreciated the quality, competency which reflects qualitative induction.

Question 15: Do you feel that the online induction training has helped you in improving your performance at workplace?

Figure 15: Histogram on responses for question 15

Interpretation: Above histogram indicates that the training there was mixed response of the trainees for this question, *i.e.,* some are agreeing, one third was not able to form any solid opinion about the help training has provided in improving the performance of the trainees. In the histogram it can be seen that more than 40% graduate trainees have agreed to the point that their performance has been improved after attending the online induction training.

TEST OF SIGNIFICANCE

IBM SPSS Software has been used to derive mean, standard deviation and test of significance of responses received through Google forms. First the data from Google forms is fetched as table into SPSS software in data view then analysis was done of one sample statistics. Following are the values derived of mean, standard deviation for every question floated for online induction training:

Table 3: One sample statistics mean, standard deviation result in SPSS software

	One-Sample Statistics				
Sl no.	**Question labels**	**N***	**Mean**	**Std. Deviation**	**Std. Error Mean**
1.	Satisfaction with course	91	3.75	.811	.085
2.	Aims and objectives made clear	91	3.88	.574	.060
3.	Duration of soft skills	91	3.37	1.050	.110
4.	Balance in exploration topics	91	3.53	.835	.087
5.	Case studies coverage	91	3.71	.820	.086
6.	Satisfied with online training	91	2.71	1.167	.122
7.	Psychological ownership	91	3.24	1.026	.108
8.	Employee commitment	91	3.46	.898	.094
9.	Relevance to current oil industry requirements?	91	3.64	.972	.102
10.	Increasing your productivity and ONGC's productivity	91	3.30	1.070	.112
11.	Understanding the expectations	91	3.35	1.058	.111
12.	Growth in positive direction	91	3.21	1.028	.108
13.	Better understanding of the work culture	91	3.35	1.004	.105
14.	Satisfied by the knowledge sharing	91	3.92	.763	.080
15.	Improving your performance	91	3.21	.983	.103

*Here N is the number of respondents taken for software processing in SPSS.

INTERPRETATION OF TABLE 3: This one sample statistics output from SPSS is derived by data view, here are some of the observations from SPSS output:-

• For serial no. question 6 we can clearly see that mean value is below average mean value of 3. The standard deviation of serial number 6 is 1.167 which is the highest that clearly indicates the dissatisfaction amongst the trainees for online mode of training.

- Similarly is we see serial number 3,7,10,11,12,13 the standard deviation is more than 1 that indicates lesser satisfaction expressed by trainees for duration of soft skills, poor development of psychological ownership towards the organisation, lesser help by training in increasing productivity.

- Standard Deviation for serial number 11 indicates that the training was online training was of lesser help in establishing understanding amongst the trainees of the expectations ONGC as an organisation has from them.

- Standard deviation for serial number 12 is indicating that training was of lesser help in diverting trainees towards a positive growth as an ONGCian 10 to 15 years down the line.

- Standard deviation for serial number 13 is indicating that online training was not of much help in better understanding of the work culture of the organisation.

For carrying out test of significance, the test value taken is 3, *i.e.,* "Neither Agree nor Disagree" and one sample t test is carried out in SPSS software.

Table 4: One sample Test of significance result in SPSS software

Sl. No.	Question labels	t	df			Significance	Mean Difference	95% Confidence Interval of the Difference	
				One-sided p	Two-Sided p			Lower	Upper
1.	Satisfaction with course	8.790	90	<.001	<.001		.747	.58	.92
2.	Aims and objectives made clear	14.606	90	<.001	<.001		.879	.76	1.00
3.	Duration of soft skills	3.393	90	<.001	.001		.374	.15	.59
4.	Balance in exploration topics	6.029	90	<.001	<.001		.527	.35	.70
5.	Case studies coverage	8.306	90	<.001	<.001		.714	.54	.89
6.	satisfied with online training	-2.335	90	.011	.022		-.286	-.53	-.04
7.	Psychological ownership	2.248	90	.013	.027		.242	.03	.46
8.	Employee commitment	4.902	90	<.001	<.001		.462	.27	.65
9.	Relevance to current oil industry requirements?	6.255	90	<.001	<.001		.637	.43	.84
10.	Increasing your productivity and ONGC's productivity	2.646	90	.005	.010		.297	.07	.52
11.	Understanding the expectations	3.171	90	.001	.002		.352	.13	.57
12.	Growth in positive direction	1.938	90	.028	.056		.209	-.01	.42
13.	Better understanding of the work culture	3.341	90	<.001	.001		.352	.14	.56
14.	Satisfied by the knowledge sharing	11.533	90	<.001	<.001		.923	.76	1.08
15.	Improving your performance	2.025	90	.023	.046		.209	.00	.41

Here is the analysis part of test of significance:

- For question with serial number 6, 7,10,12,15 the probability of getting null hypothesis true is more than 0.5%.

- For rest question the probability of getting null hypothesis true was less than 1%, hence the question number 1,2,3,4,5,8,9,11,13,14 support the alternate hypothesis.

OBSERVATIONS

- The histograms above reflect positive inclination of the graduate trainees towards the online induction training programme. For majority trainees this training has helped in bridging the professional gap by increasing employee commitment, understanding work culture of ONGC has helped in growth, training has led to increase in productivity, performance of the trainee and ONGC overall.

- Most trainees have agreed to the fact the training was conducted with live examples and trainees were satisfied by the knowledge sharing help provided by the seniors to them.

- Trainees have also expressed that the training was relevant to current oil industry requirements.

- With the response of trainees, it can be observed that the number of soft skills classes can be increased.

- As per the response of distribution of exploration topics in training it can be inferred that planning part of online training was also satisfactory.

- As per the t -test we can observe in t-test also that alternative hypothesis stands true as per p value. Alternative hypothesis states that online induction training will lead to better understanding of work environment and improve employee engagement in organisational works.

- As per the t-test results we can clearly see that Online training has economic benefits due to lesser travel cost for both the trainee and faculty. But the batch building spirit and familiarisation is lacking in online.

- During the training hours there used to be bandwidth issues for both the trainee and trainer due to which video couldn't be turned on for the whole training duration hence the online training lacks the connect part between faculty and trainee.

DISCUSSION

In this study I have following suggestions to be made for online induction training programme of ONGC:

(a) The survey indicates that induction training as a whole has helped the trainees to get better connect with the organisation but it lacks the essence of physical activities. My suggestion is to break the induction training module into two parts offline and online. The traditional face-to-face approach to render induction and on-boarding programs is normally the approach most organisations opt for. This is of high impact, and the human touch goes a long way in helping new employees learn the organisation culture, its value proposition, and how they can contribute very effectively.

(b) Out of 8 weeks some technical training part can be conducted in online mode but where the matter of team building activities are concerned we have to go for offline mode as work in ONGC is always a multi-disciplinary task where people from different disciplines come together to work as a team.

(c) ONGC is an exploration company where assets worth millions of rupees are mobile, in such multi-competency level tasks, batch building and team spirit is very much in need which can be somewhat met during the induction training period itself. Through online training organisational objectives have been achieved and same has been done in an economical manner. This study is the foundation stone for carrying out further research in the field of analysing the online training among the employees of ONGC.

CONCLUSION

Concluding Findings and Suggestions

Questions/Findings– showing dissatisfaction	Suggestions
Satisfaction with online training	The 25 weeks conduct of induction module can be split into two parts online and offline mode. In online mode part we can club some HR, MM, Exploration and production related topics for which we can take help of our retired and working employees which will involve less travel and tour both by trainer and trainee, hence the online mode will involve less cost. Through online mode we can connect with any faculty across the globe which saves both on money and time.
	In offline mode part specialisation training at designated institutes, field familiarisation, batch building exercises like soft skills, visits to various state-of-art institutes of ONGC, outbound training, sports and cultural trainings can be taken up. This will help in formation of bond amongst the new employees and will develop a feeling of connect amongst new graduate trainees.
Psychological ownership	In order to develop psychological ownership towards the company, the new employee has to be made comfortable at work by meeting work-life balance, for this every trainee can be allotted a mentee apart from the usual work environment, so that the new inductee can be made more comfortable in a new environment.
Help by online training in growth in positive direction as an ONGCians 10 to 15 years down the line	The connect of a new employee with the company lacks more in online training. In national oil company like ONGC where the carrier span of an individual is of more than 2 to 3 decades the batch building exercises are must to break the ice. Hence, we cannot completely go for online mode of conduct, planning in both modes online and offline is essential.
Improving your performance	For improving the performance of graduate trainees, encouragement, zeal to work has to be developed in a new employee this can be met with a good planned orientation with a lot of encouragement from peers.

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Investigative Study on Measuring Scientific Temper and Academic Achievements among Management Students in Indian Context

Dr. C. Sengottuvelu*
Dr. R. K. Prema Rajan**
Dr. Shivaprasad G***

ABSTRACT

Human ability or attitude to think logically and rationally can be defined as Scientific. This will induce the individual to act scientifically. It allows them to sink and check for relevance in their thinking process which aims for greater innovation. A scientific tempered individual takes the lead in their growth path and directly influence society development. Youth hold the success of Future India; therefore the researcher finds it significantly important to study the scientific temper and academic achievements of management students. Nadeem & Wani has developed the scientific temper scale, a well rated template used by the researcher to collect the primary data. 416 students covering four locations in Karnataka were given structured questionnaire for data collection. The four locations include Bengaluru, Mysuru, Mangalore and Tumkur. The sample comprises of 191 males and 225 female students. Demographic profile of the respondents includes gender, location of the students, education undergone earlier and their academic achievements were analysed.

Comparative analysis was conducted to measure the scientific temper attributes consists of curiosity (the inquisitiveness or desire), open-mindedness (how receptive to listen new ideas), objectivity (understanding truth but not subjective), rationality (act by logic) and aversion to superstitions (not believing luck). The researchers have also tested the relationship between academic achievements and gender (male & female students). The result shows that there is a relationship between scientific temper and academic achievements among male and female students. The authors have also tested the relationship between academic achievement and scientific temper among students studied in government schools and private schools.

The authors have used R programming to find out the outliers in the data set. For all the constructs it is observed that the data follows normal distribution. Further, WELCH t-test was carried out to check the significance between scientific temper constructs among male and female. It was found that there is no significant difference between gender and their curiosity level, open-mindness, objectivity, rationality, and aversion to superstition of scientific temper traits of the respondents. The results explains that irrespective of the gender their scientific temper towards all the constructs are the same. The authors have also suggested the ways to improve the scientific temper in the earlier stage of their school education in line with New Education Policy -2020 (NEP-2020). The focus of NEP is more on strengthening critical thinking ability, articulate design thinking and provide an interdisciplinary curriculum to elevate the standard of learning.

KEY WORDS

Business schools, Discovery of India, Students, Gender, Scientific Temper Scale, NEP 2020

* Professor and Head-Research. E-mail: sengottuvelu138@gmail.com

** Associate Professor. E-mail: dr.rkprema@abbs.edu.in Acharya Bangalore B-School, Bangalore University, Bengaluru, India.

*** Associate Professor, CMS Business School, Jain (deemed–to-be) University, Bengaluru, India. Email: dr.shivaprasad@cms.ac.in

INTRODUCTION

In 1946, Pandit Jawaharlal Nehru articulate the concept of Scientific Temper in his book titled as "The Discovery of India". It was referred by him as an Individual social thinking process to understand the reality, persistence questioning, discovery, hypothesising, testing, analysing and concluding. More than a skill it is the attitudinal ability of an individual who is involved, logic, questioning and curious about happenings. It contributes for the new invention in the society, leverage the success. The ability of an individual to employ scientific decision-making in his thoughts and actions are inclined to scientific temper in their life. It endows an individual with logical thinking and less reluctant towards bias and preconceived notions.

Article 51(A) of Indian Constitution promulgates Fundamental Duties of every citizen. Referring to this Article 51(A) (h) in the constitution of India 1949 "to develop scientific temper, humanism and the spirit of inquiry and reform. Every year February 28th is celebrated as National Science Day as an honour to Sir C. V. Raman, the theme of 28th February 2014 National Science Day is "Fostering Scientific Temper".

Our honourable Prime Minister (Modi, 2020) mentions that inculcating scientific temper in a country leads to development path. In the techno social environment, the attitude of scientific consciousness makes us to be aware of what is happening in our surroundings. Religious belief and scientific temper are two parallel streams, and no one can test or challenge the religious belief through experiments. Developing country, India is facing a critical issue of reducing the scientific temper as because of the social and religious issues. Shrinking of scientific temperament is not a good sign to our country growth and socio-economic development.

A country can be more specific on encouraging their scientist in order to focus on scientific temper. Countries struggling will be more of occupied with theoretic ideals and lagging behind technological advancements. In a country where we have diverse culture religions cannot be united. "The science of today is the technology of tomorrow" (C.V. Raman, 1936). The sustaining principle of Sir C. V. Raman life is scientific temper.

In the 21st century, data rules the world and every one of us are more inclined towards technological related services. The dependency of all sectors towards technology is more and the pandemic also tightens the space. Advancement in technology will elevate the standards. Through scientific temper we can be more competitive through innovation and invention. To what extent these characteristics traits are in the blood of citizens in particularly the student's community. Realising the importance of scientific temper amongst student's community, the research interest is to measure the scientific temper of management students in Bengaluru city, Karnataka.

India has a very historical and diverse cultural background and we have to respect the cultural values of society. Scientists of our country are not against it. They encourage meaningful ways to identify how these long-held strong beliefs are indulging in Indian culture and heritage, and also identify the ways to validate it (Kalam, 2012).

BACKGROUND OF SCIENTIFIC TEMPER

Scientific temper refers to an open-minded approach, question seeking mind, inquisitiveness and the ability to introspect, analysis, assume, check and justify the reality. Therefore, it is the process of thinking in acting in a scientific way. One who is curious to know why and how is it happening can think logically and scientifically.

Human ability or attitude to think logically and rationally can be defined as scientific. This will induce the individual to act scientifically. It allows them to sink and check for relevance in their thinking process which aims for greater innovation. A scientific tempered individual takes the lead in their growth path and directly influence society development.

Innovations in science and technology provide various opportunities and bring different avenues for a country growth. It promotes sustainable development which is the need of the hour. Scientific temper is identified as a problem-solving tool. It does not represent the marks scored by students rather than the individual ability to think and act scientifically. In order to measure the scientific temperament, the researcher adopted an existing

inventory proposed by Rashid and Nadeem's. It includes five criteria such as how interested an individual is Curiosity, and to what extent are they open to think Open-mindedness, how are the confirming the clues Objectivity, to what extent are they Agreeing Rationality, and are they believe luck aversion to superstitions. A structured questionnaire was prepared including all the five constructs with ten items under each and every construct and measured on a five - point Likert scale. These items under the constructs can measure the scientific temper of an individual and the score represent their ability to be scientific oriented. Hence, the researcher took the interest in understanding and measuring the association of academic achievements with their scientific temper.

UNDERSTANDING ACADEMIC ACHIEVEMENT

Academic achievement measures the performance of students in their exams and calculated based on the average marks scored by them in Pre -University College (PUC) / 12th Standard and Under Graduate (UG) Programme. Very good academic achievement means students who have score above 70 per cent marks in both PUC and UG levels, good academic achievements means between 60 and 69 per cent marks and below 60 per cent marks means poor academic achievement.

Respondents' Location

The sample gathered for the study is grouped under two locations - Urban (Urban represents the respondent who are from municipal corporations and district headquarters), and Rural (Rural represents the respondents who are from villages, Gramin panchayats, talukas, etc).

Scientific Temper Framework

Figure 1 shows the scientific temper and the academic association with demographic factors. The model proposed by the researcher has been drawn in line with the Rashid and Nadeem's scientific temper scale constructs.
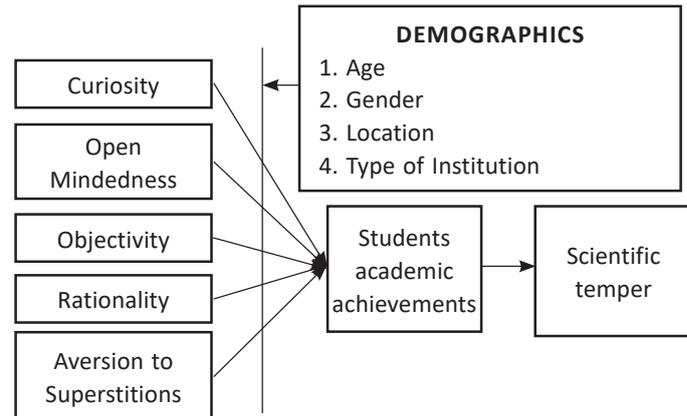
Figure 1: Scientific temper dimensions and its impact on academic achievements (Source: Authors)

REVIEW OF LITERATURE

The literature review was conducted from 2008 to till now (for 15 years) by referring research papers published in UGC CARE listed, Scopus indexed and ABDC listed journals.

Yadav & Agarwal (2023) have studied and found that what is importance of scientific theme in students and the understanding cannot be conveyed, but it must be developed by the intellectual activation of learning underpins, coeval prospective on scientific learning.

Kamale & Kadam (2023) have studied the contributing factors for achieving academic excellence in higher education institutions in Mumbai region. The study found that there is a strong impact of academic excellence on students' performance. Kasinathan and & Mariappan (2023) have studied the role of TV media (Kalvi TV Programme in Tamil Nadu). It is reported that TV programme provide the student with theory and a flexible way of learning and they also make students more creative and achieve giving them benefits in learning.

Shivaprasad, Sengottuvelu & Prema Rajan (2022) have found that curiosity and rationality dimensions are the significant contributors to academic achievement of research scholars. Other criteria such as open-mindedness, objectivity, rationality, and superstition have significant association among rural and urban students.

Srimany (2018) observed that social media such as Facebook, Twitter, Instagram and YouTube act as a very effective tool in ratifying the scientific temper.

Mehraj (2018) has identified that there exist a positive relationship between rural and urban school student on the various scientific temper constructs.

Andrabi & Jabeen (2017) took the initiative in understanding the scientific temper among tribal group students. From the study it was found that the non-tribal group students (male and female) had a positive significant relationship between their academic achievements and scientific temper.

St. Kour (2015) has studied and reported that new innovations will happen if we start questioning about why and how is it happening. This leads to the spirit of scientific temper.

Rajendran (2015) has found that though it is a notable fact the ideology is shrinking slowly in our country. This attitude needs to be treated as most important.

Bhat & Netragaonkar (2014) have found out that the attitude of first generation learners scientific temper is appreciable than comparatively with non-first-generation learners in Kashmir.

Maqbool (2014) identified that scientific temper has relevance with social science significantly. The most important identified constructs are curiosity and objectivity. The rest of the construct proposed in the scale does not have significance.

Saxena (2014) has emphasised on students needs to be encouraged by teachers, mentors and elderly people. This really helps them to mobilise their thinking process. The author also throws light on the relevance between social relevance in inducing scientific temper.

Dhar (2009) mentioned that scientific temperament consists of traits including humility, suspending judgement without evidence, universalism, Scepticism and positive approach to failure.

Nadeem & Wani (2008) have observed that the most widely adopted scale to measure scientific temper based on five constructs. It is mentioned as STS and through this scale the researcher interested in measuring the academic performance and its

influence on scientific temper among U.G and P.G students, in high school, higher secondary and post graduate levels.

OBJECTIVES OF THE STUDY

The researcher proposed the following objectives to carry out the study further.

(i) To understand the socio-demographic profile of the management students sampled for the study.

(ii) To study and understand relationship between the scientific temper and academic achievements of the respondents.

(iii) To investigate the association between demographic factors such as (location, graduation, gender and scientific temper among the respondents.

(iv) To examine a comparative analysis of rural and urban students with the each dimension of scientific temper.

(v) To carry out R programming to check the data normality for each constructs of the scientific temper.

RESEARCH METHOD

The researchers visited four cities in Karnataka viz. Bengaluru, Mysuru, Mangalore and Tumkur to collect the primary data. The researchers have collected the primary data with the help of questionnaire through survey. A total of 416 B-School students from the four cities were chosen for data collection. Out of 450 respondents surveyed only 416 responses were found usable and 34 questionnaires were rejected because of missed response, the response rate is 92%. The researcher adopted the scientific temper scale (STS) developed by Rashid and Nadeem, 2008. The five constructs used for the study is curiosity, open-mindedness, objectivity, rationality, and aversion to superstition. The questionnaire has two parts, the first one measures the socio-demographic characteristics and the second one measures the scientific temper. The academic achievements of the B-Schools students are captured through the marks secured by their Pre-University College (PUC and under graduation (UG) programs. With the help of

MS Excel, SPSS and R Programming the collected data was fed and analysed to justify the problem studied. Cronbach's alpha measures the internal consistency among the variables studies and found acceptable. Descriptive statistics such as mean, standard deviation were explored for the demographic variables such as gender & location Cross tabulation (Bi-variate analysis), PUC and UG education the students have undergone previously. Regression test measures the significance relationship between scientific temper and academic achievement among urban & rural students. Finally Comparative analysis helps to measure the significance of scientific temper five dimensions. The researcher proposed a model which is presented in the figure (Scientific temper dimensions and its impact on academic achievements).

RESULTS AND DISCUSSION

(i) *Respondents' demographic characteristics*

Demographic profile includes the factors including gender, location of the Institution, PUC / +2 Education undergone and academic achievements. Table 1 shows the demographic profile and academic achievements of the students.

Table 1: Demographic profile and academic achievements of the students

Gender	Frequency	Per cent
Male	191	45.90
Female	225	54.10
Total	**416**	**100.00**
Location of the Institution	**Frequency**	**Per cent**
Mysore	100	24.00
Tumkur	100	24.00
Mangalore	100	24.00
Bangalore	116	27.90
Total	**416**	**100.00**
PUC / +2 Education undergone	**Frequency**	**Per cent**
Government owned Institution	97	23.30
Private Institution	97	23.30
Govt. funded Institution	75	18.00
Private School/College	90	21.60
Boarding School	57	13.70
Total	**416**	**100.00**

Academic achievements	Frequency	Per cent
Poor achievement	81	19.50
Good achievement	139	33.40
Very good achievement	196	47.10
Total	**416**	**100.00**

It is seen from the table 1 that female students (225) are more than male students (191). All the respondents are from cities only. Government owned and funded institutions constitute 41.30 per cent, private institutions & colleges constitute 44.90 per cent and the remaining 13.70 students are from boarding schools. About 90.50 per cent students have scored above 60 per cent marks in their PUC/ +2 and under graduation (UG) education and the reaming 19.50 per cent students are poor performers, *i.e,* below 60 per cent marks scored in their PUC/ +2 and under graduation (UG) education.

(ii) **Mean and Standard deviation of academic achievements for different groups**

Table 2 shows the descriptive statistics of academic achievements of different groups.

Table 2: Academic achievements of different groups

Gender	N	Mean	Std. Deviation
Male	191	2.28	0.769
Female	225	2.28	0.770

Variable	Gender	N	Mean	Std. Deviation	Skewness	Kurtosis	t	Sig.
Scientific temper	Male	191	1.851	0.157	-0.196	0.685	0.644	0.52

It is seen from the table 2 that the academic achievements among male and female students are significant.

(iii) **Regression Test Results**

Regression test was conducted to check the significance of gender and academic achievements. Table 3 shows the regression test results.

Table 3: Regression Test Results

Gender		Mean	Std. Deviation
Male	Academic achievement	2.280	0.769
	Scientific temper	1.851	0.157
Female	Academic achievement	2.280	0.770
	Scientific temper	1.842	0.134

Model Summary

Gender	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
Male	0	0.000	-0.005	0.771	0.000	0.000	1	189	0.996
Female	0.096	0.009	0.005	0.768	0.009	2.092	1	223	0.150

Coefficients

Gender	Model	Unstandardised Coefficients B	Standardised Coefficients Std. Error	t Beta	Sig.	
Male	Constant	2.274	0.663		3.433	0.001
	Scientific temper	0.002	0.357	0.000	0.005	0.996
Female	Constant	1.256	0.707		1.777	0.077
	Scientific temper	0.554	0.383	0.096	1.446	0.150

It is found that no association between scientific temper and academic achievements among male and female students. It is also found that the scientific temper among male students significant than female students at 5 per cent significant level.

(iv) Comparative Analysis

Comparative analysis supports in identify the significance of all the five dimensions of scientific temper individually among urban and rural students. The results are as shown in table 4.

Table 4: Comparative Analysis

	Gender	N	Mean	Std. Deviation	t	Sig.
Curiosity	Male	191	1.764	0.327	0.068	0.946
	Female	225	1.762	0.301		

	Gender	N	Mean	Std. Deviation	t	Sig.
Open Mindedness	Male	191	1.927	0.320	1.557	0.120
	Female	225	1.881	0.280		

	Gender	N	Mean	Std. Deviation	t	Sig.
Objectivity	Male	191	1.706	0.299	-1.404	0.161
	Female	225	1.747	0.292		

	Gender	N	Mean	Std. Deviation	t	Sig.
Rationality	Male	191	1.952	0.316	0.069	0.945
	Female	225	1.950	0.309		

	Gender	N	Mean	Std. Deviation	t	Sig.
Aversion to Superstitions	Male	191	1.903	0.389	0.957	0.339
	Female	225	1.869	0.350		

(v) Uni-variate Analysis

The Uni-variate analysis was conducted to check the relationship between academic achievements and scientific temper among male and female students.

Null Hypothesis: There is no relationship of academic achievement and scientific temper among male and female.

Table 5 shows the uni-variate analysis test results.

Table 5: Tests of Uni-variate Analysis: Between-Subjects Effects

Dependent Variable:

Source	Type III Sum of Squares	d.f	Mean Square	F	Sig.
Corrected Model	1696.342	6	282.724	1.561	0.157
Intercept	10213.620	1	10213.620	56.389	0.000
Curiosity	527.788	1	527.788	2.914	0.089
Open mindedness	0.469	1	0.469	0.003	0.959
Objectivity	924.468	1	924.468	5.104	0.024
Rationality	50.781	1	50.781	0.280	0.597
Aversion to Superstitions	244.012	1	244.012	1.347	0.246
Gender	0.287	1	0.287	0.002	0.968
a. R Squared = .022 (Adjusted R Squared = .008)					

(vi) Gender and Academic achievement Cross tabulation

Cross tabulation was constructed to ascertain the academic achievement levels of male and female students. Table 6 shows the cross tabulation on gender and academic achievement levels.

Table 6: Gender and Aca demic achievement Cross tabulation

Gender	Academic Achievement			Total	Chi-Square	P-value
	Poor Achievement	Good Achievement	Very Good Achievement			
Male	37 (45.7%)	64 (46%)	90 (45.9%)	191 (45.9%)		
Female	44 (54.3%)	75 (54%)	106 (54.1%)	225 (54.1%)	0.003	0.999
Total	81 (100%)	139 (100%)	196 (100%)	416 (100%)		

Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	d.f	Sig.
Intercept Only	344.604			
Final	339.183	5.421	4	0.247

Pseudo R-Square

Cox and Snell	0.013
Nagelkerke	0.015
McFadden	0.006

It is seen that the academic achievements of female students are significant than male students.

(vii) Likelihood Ratio Tests

The Likelihood ratio tests were conducted to investigate the relationship between academic achievement and scientific temper among students studied in government schools and private schools. Table 7 shows the Likelihood Ratio Tests results.

Null hypothesis: There is no relationship between academic achievement and scientific temper among students studied in government schools and private schools.

Table 7: Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	d.f	Sig.
Intercept	339.183ᵃ	0.000	0	
Scientific Temper	344.601	5.418	2	0.067
Gender	339.193	0.010	2	.995

The above table presents the likelihood ratio for scientific temper and gender. The output of chi-square statistic represents the difference in -2 log-likelihoods between the final model and a reduced model. Assuming that null hypothesis for all the parameter effect is 0. By omitting an effect from the final model, we could form the reduced model. Whenever omitting the effect does not increase the degrees of freedom then, the reduced model is equivalent to the final model.

Parameter Estimates

Academic achievement		B	Std. Error	Wald	d.f	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Poor Achievement	Intercept	-0.150	1.722	0.008	1	0.931			
	Scientific Temper	-0.394	0.927	0.181	1	0.670	0.674	0.110	4.145
	Male	-0.005	0.265	0.000	1	0.986	0.995	0.592	1.674
	Female	0ᵇ			0				
Good Achievement	Intercept	2.910	1.441	4.079	1	0.043			
	Scientific Temper	-1.772	0.781	5.150	1	0.023	0.170	0.037	0.785
	Male	0.019	0.224	0.007	1	0.932	1.019	0.657	1.581
	Female	0ᵇ			0				

a. The reference category is: Very good achievement.

b. This parameter is set to zero because it is redundant.

It is found that there is a relationship between academic achievement and scientific temper among students studied in government schools and private schools.

R Programming Results

The data were analysed using R Studio 3.5.1 version. The results are shown below:

In the graphical method using R programming the researchers have checked the normality using Normal Q-Q plot. It also helps to find out the outliers in the data set. The following figure projects the distribution of data set. For all the constructs it is observed that the data follows normal distribution, as because the data point matches with the straight line and it departs only in the extreme. The normal Q-Q is plotted for Curiosity, Open mindedness, Rationality and Objectivity, and Aversion to superstition is presented in the figure 2.

Curiosity

Open mindedness

Rationality Objectivity,

Aversion to Superstition
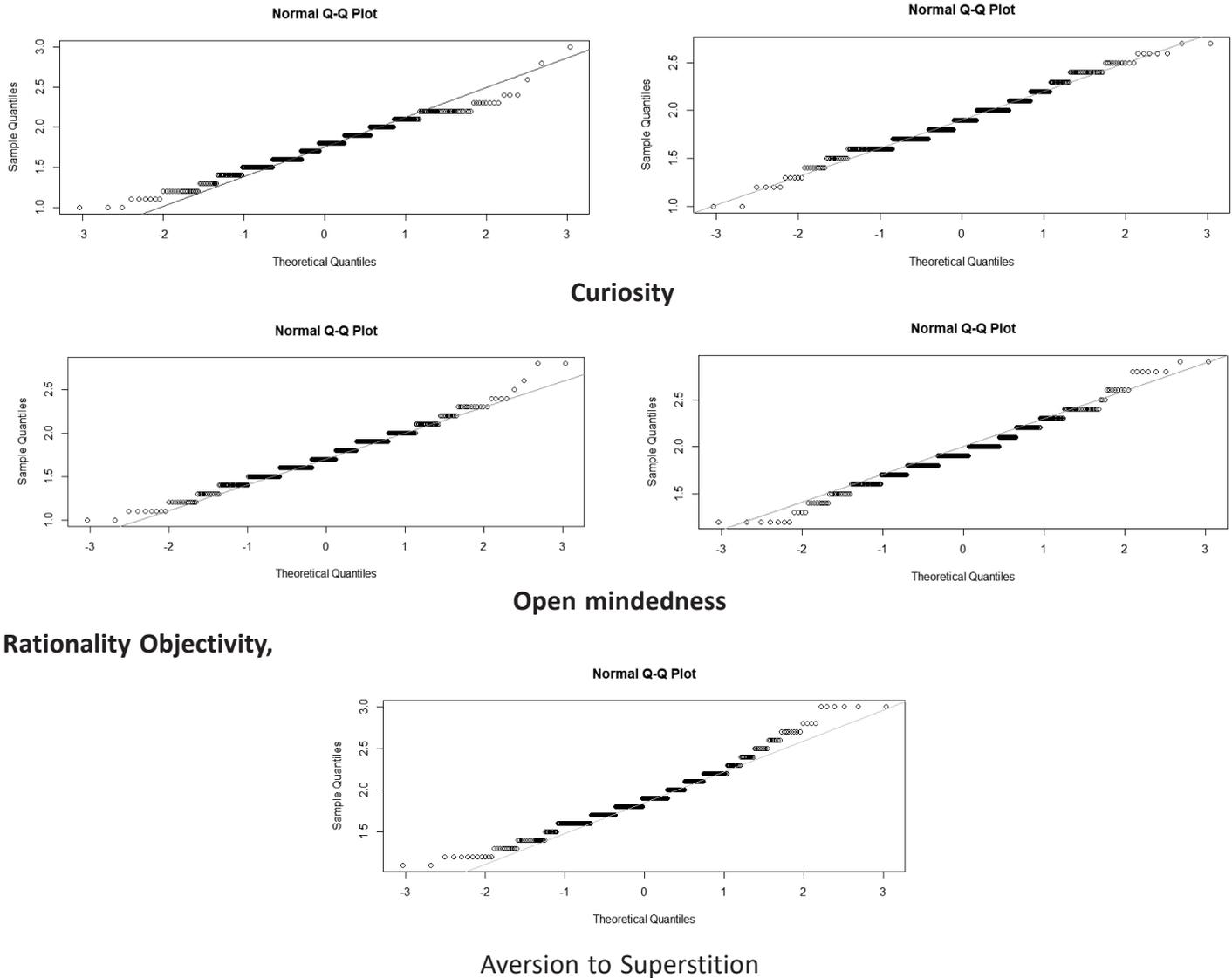
Figure 2: Normal Q-Q plot for scientific temper dimensions (Primary data)

(viii) WELCH t-test

WELCH t-test was carried out to examine the significance between gender and scientific temper. Table 8 shows the test results.

Table 8: Welch t-test output for the five constructs measuring scientific temper

Constructs	t-value	d.f	Sig. (2-tailed)	Mean Value	
Gender					
				G1	G2
Curiosity	0.067	390.47	0.94	1.763	1.76
Open Mindedness	1.53	380.3	0.12	1.92	1.88
Objectivity	1.4	399.8	0.16	1.7	1.74
Rationality	0.069	400.3	0.94	1.95	1.95
Aversion to Superstition	0.694	390.3	0.48	1.91	1.88

It is observed from the table that that the p value is greater than .05 for all constructs. Therefore, there is no significance difference between gender and their curiosity level, open-mindness, objectivity, rationality, and aversion to superstition of scientific temper traits of the respondents. The results explains that irrespective of the gender their scientific temper towards all the constructs are the same. Higher t values represent larger difference exist between the two sample data sets. The two sample (male and female) means are not significantly different.

LIMITATIONS AND SCOPE FOR FURTHER STUDY

This study also has certain limitations. Only four cities in Karnataka, India was selected, for primary data collection. Prior to post graduation, once done with higher education under graduation can be given prior importance to realise the scientific temper, therefore a comparative study among U.G and P.G students will give a solid input. As because of the inventory used, the scientific temper is measured with only five dimensions few more dimensions like innovation, design thinking, etc., helps in enhancing the study's visibility. The questionnaire adopted for the study has three-point scale. A five-point likert scale may add value in collecting the response so precisely. Further research can focus on understanding the digital interventions and its influence on scientific temper. Researchers can explore scientific temper and their family background and brought up from the family culture. Upcoming researchers may focus on developing a framework on scientific temper traits required considering the various dimensions.

CONCLUSION

The Scientific Temper Scale (STS) developed by Nadeem & Wani (2008) was used for assessing the scientific temper of B School students in Karnataka. STS consisting of five dimensions of scientific temper namely, curiosity, open mindedness, objectivity, rationality and aversion to superstitions. It is found that there is no association between scientific temper and academic achievements among students (based on gender). It is also found that the scientific temper among male students significant than female students at 5 per cent significant level. The study conducted by Andrabi & Jabeen (2017) revealed that male and female students of non-tribal group had significant relationship between scientific temper and academic achievements.

The study conducted by Mehraj (2018) showed that there is significant difference between rural and urban secondary school students on various dimensions of scientific temper. The study conducted by Maqbool (2014) revealed that the students with science and social groups differ significantly on curiosity and objectivity dimension of scientific temper. It further revealed that two groups do not differ on open mindedness, rationality and aversion to superstition dimension of scientific temper scale. Earlier research findings were mainly focused on gender (male & female), rural & urban, tribal & non-tribal and science & social science groups.

The study conducted by Bhat & Netragaonkar (2014) revealed that there is significant difference between first and non-first generation learners on scientific temper and academic achievement. It is also found that non-first generation learners have better scientific temper and academic achievement as compared to their counterparts (first generation learners).

The study conducted by Kasinathan & Mariappan (2023) revealed that Kalvi (Education) TV channel played a vital role in education. Further, it is reported that TV programme provide the student with theory and a flexible way of learning and they also make students more creative and achieve giving them benefits in learning. In this study also the respondents have opined that good science-based TV programmes can inculcate the scientific temper among students.

In this study, R Programming was carried out to check the outliers in the data set. For all the constructs it is observed that the data follows normal distribution. Welch t-test was carried out to check the association between gender and the scientific temper. The results explains that irrespective of the gender their scientific temper towards all the constructs are the same. The two sample (male and female) means are not significantly different.

Besides, the gender related factors (male & female), rural & urban, first generation & non-first generation learners, science & social science groups, there are other factors like emotional intelligence and education system are other contributing factors. New Education Policy 2020 (NEP-2020) also propagates the idea of inter-disciplinary methodology design thinking, innovative practices in teaching and learning.

Further research can focus on understanding the digital interventions and its influence on scientific temper. Researchers can explore scientific temper and their family background and brought up from the family culture

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Review and Synthesis of Metaverse, its Application in Education and Knowledge Transfer

Charvy Agarwal*
Shailaja Karve**
Kiran Gupta***

ABSTRACT

This research conducts a thorough examination of the literature on the metaverse and its use in education. The paper summarises the idea of the metaverse and explains several its applications. In-depth analysis of the metaverse in education is presented in this study, with an emphasis on the most recent developments, issues, possibilities, and prospects. The research's objective is to suggest metaverse-based education as a substitute for conventional online learning. The paper proposes a metaverse model with segmentation of metaverse into component stack which includes software and hardware, region which includes South America, Europe, Asia Pacific, North America, South & Central America, Middle East & Africa, application which includes gamification, practical application of theory, virtual campus experience, substitutes of labs and auditorium.

KEYWORDS

Metaverse, Training and Development, Education, Virtual reality, Augmented reality

INTRODUCTION

A Virtual Reality (VR) and Mixed Reality (MR) environment that can be accessed through a website or headset that allows for in-the-moment interactions and experiences with people who are physically apart is referred to as the "metaverse" (Lovich, 2022).

Because of the virtual or parallel reality where real individuals are replaced by avatars and digital representations using the metaverse, people can gather in the same place regardless of where they are (Ensaan Technologies, 2022).

Zuckerberg (2021) made an announcement that Facebook's name will be changed to Meta and that significant investments will be made in the company. For many, the term "Metaverse" seemed novel. However, the phrase "Metaverse" is not new. The term "Metaverse" originally debuted in 1992 in Neal Stephenson's science fiction piece called Snow Crash. The metaverse is described by Stephenson as a sizable virtual environment in this book and is said to be a shared virtual space that fuses virtual reality, augmented reality, and the internet. But over the past three decades, support for the concept has

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* Management Student, Email: charvy.a@somaiya.edu

** Professor, Email: shailaja@somaiya.edu

*** Research Associate, Email: kiran.gupta2@somaiya.edu

K.J. Somaiya Institute of Management, Somaiya Vidhyavihar University, Mumbai-400077

never been higher. As more companies move their activities online, as happened particularly during the COVID pandemic, these platforms have grown in popularity in recent years. In 2020, the corona virus made its destructive entrance into our world, depriving humanity of numerous opportunities in daily life. Humanity's mobility was restricted as a result of COVID-19's contagious nature and the efforts made to stop its spread. This illness, which impacts every industry from the manufacturing sector to the education sector, has boosted the significance of ideas like remote employment and distance learning. Facebook Connect, according to the company, will overtake smartphones and the mobile web as the next main computing platform. (Damar, 2021).

Sharma (2023) defined the term "metaverse" as a shift in how people interact with technology rather than a specific type of technology. According to Coker (2022), people from all over the world can congregate in the same location attributable to the virtual or other universe known as the metaverse, where real people are replaced by avatars and digital representations. Damar (2021) described a shared 3D virtual setting where all tasks can be carried out with the aid of augmented and virtual reality technologies. Purdy (2022) realised that the only equipment needed for metaverse solutions is a computer, mouse, and keyboard; however, a VR-capable headgear is often needed for the full 3-D surround experience. Purdy (2022) observed that the only hardware required for metaverse solutions is a computer, mouse, and keyboard; nevertheless, a VR-capable headgear is frequently required for the full 3-D surround experience.

REVIEW OF LITERATURE

Gartner predicted that 25% of individuals will engage in work, shopping, education, social networking, and/or leisure activities in the metaverse for at least an hour per day. The Internet, which originated as various message boards and websites, is considered to have evolved into the metaverse. These locations transformed over time into destinations in a communal virtual environment, much like the metaverse will (Ensaan technologies, 2022).

Bloomberg projects that the metaverse market will be valued $800 billion by 2024, up from a value of $478.7 billion in 2020. (Bloomberg intelligence, 2021). By 2024, 1.73 billion individuals are anticipated to use mobile augmented reality, according to Statista (Alsop, 2022). It was estimated that the metaverse market will grow by 13.1% annually (FE Digital Currency, 2022).

APPLICATION OF METAVERSE IN DIFFERENT SECTORS

Metaverse in Household: The experience we have at home could be greatly enhanced by the metaverse. The use of hybrid and virtual technologies can make several chores around the house that we find challenging easier. Helmet mounted VR displays, simulators, and cutting-edge computer hardware have begun to establish itself in our homes as part of the metaverse. They have become an indispensable part of life for the young gamers. The metaverse is predicted to reach most homes via fibre and Wi-Fi. This will provide a highly personalised environment to the people and they will be able to communicate online in a highly customised setting consequently.

Tourism: The pandemic in 2020 caused the tourism industry to suffer one of its biggest blows. The losses accumulated during the crisis' one-year span are still being fought for by governments all around the world. Travel was rendered challenging by the epidemic, which dealt a fatal blow to the global travel and tourism industry. In addition, environmental issues are a hindrance to tourism. In this case, Metaverse can save the dying tourism sector. Smart devices allow users to travel almost the entire planet. 360-degree movies and 3-D travel experiences have the potential to alter how people perceive tourism. Travelers who want to explore new things can balance their real-world and virtual adventures with the aid of the metaverse.

Online Gaming: The development of metaverse technology began in the world of video games. There are numerous gaming websites available right now that enable users play for money. They immerse themselves in a more lifelike and immersive game environment while using metaverse. By supporting proven gaming, blockchain technology

ensures financial security and lowers the risk of manipulation. Non-Fungible Tokens, which are used in these games' built-in economy, give token holders ownership rights. Digital collectibles are easily tradeable in NFT marketplaces and exchanges, allowing users to boost their earnings.

Industry: An important use case of metaverse technology is the industrial space. The workers can participate in immersive training programmes in the virtual environment where they can practise the tasks they will perform in the future. It will support businesses involved in logistics and supply chain to retain transparency in stock management and control. The transition to digital spaces will reduce operating expenses. According to Neeti (2022), as jobs are being managed digitally in a virtual environment on a blockchain network, the enterprises will require fewer personnel.

Education: Zuckerberg has chosen to centre his vision on the educational field. A massive $150 million will be spent by Facebook Reality Labs on a training and development programme for technology. It will primarily employ augmentation and virtual reality techniques to accomplish its objectives. Meta will collaborate with Coursera and EdX. Together, they will use augmented reality and virtual reality to spread the Spark AR Curriculum of Meta (Aleem, 2023). Investor interest in ed-tech business has risen due to the growing possibility of metaverse applications in the education system.

Five metaverse characteristics that can alter things are:

Data Science: The ability, despite the metaverse's foundation in distributed technologies like blockchain, to ensure that the data gathered in one region of the metaverse is reflected in the user's experience in another. This has led to a significant trend in metaverse education: study into the next generation of data engineering (Kumbhat, 2022).

Comprehensive Study: The ability to interact socially, speak with teachers and peers, and do so without giving in to worries or negative complexes is another requirement for students. The educational system has been blessed by metaverse with hands-on learning resources and a thorough method of delivery for a deeper comprehension of both scientific and non-scientific subjects included in academic curriculum. (Kumbhat, 2022).

Improve Social Interaction: Covid-19 put an end to the usual life for the students. While there were online programmes accessible, they did not foster a sense of social connection or provide a thorough understanding of the material, which made students miss their classroom instruction. Metaverse which provides a virtual reality experience will be useful in bridging the gap. It offers a healthy setting to alter conventional learning techniques with real holographic characters that come to life. Students get the self-assurance they need to build networks, practise social communication, and participate in virtual classroom experiences from the comfort of their homes. Students can communicate with anyone from the comfort of their homes (Kumbhat, 2022).

Playful Learning Process: Meta world connects the past to the present, bringing fantasy to life, and has been frequently exploited in the gaming industry to completely transform the experience. The educational programmes backed by AI may enable playful learning in the classroom. The virtual presentation of real-world instances can be used to teach cases like that of Apple falling on Newton's head leading to discovery of gravity (Kumbhat, 2022).

EDUCATIONAL ASPECTS OF METAVERSE

The use of distant learning and online teaching-learning methodologies in education can be revolutionised by the metaverse. A highly interactive learning environment that represents technology in its most fundamental form is created using hybrid technologies, artificial technology and Web3 resources. Instructors can design a learning environment for their students that is more personalised and supportive of their exploration of virtual worlds. They can provide 3D models to assist visualise a subject. It enhances a lesson's immersion, participation, and engagement for the students.

Through simple exploration of virtual places, teachers may provide students with a more student-centric learning environment. Virtual training sessions can be conducted easily through technology. For example, a medical student could practise treating patients in a mock setting. Before entering the real world, students will be able to advance their knowledge of how things work and enhance their talents and abilities. Language boundaries, which are relatively common in the actual world, do not exist for avatars in a virtual world. Regardless of their level of linguistic skill, this helps to bring together people from all over the world in a single digital and virtual environment.

Experts in education predict that the metaverse will have a significant impact on learning. An expert said that when students are taught about the human body, they can either be introduced to a textbook so that they learn all content sequentially or their avatars can be placed inside the human body. Whereas one student would want to see the brain, another student could prefer to visit the intestines. The majority of pupils find that the "choose your own adventure" learning method is incredibly empowering (Rudra, 2022).

APPLICATION SCENARIOS OF EDUCATION IN METAVERSE

School Education

The conventional classroom has evolved into an open and communal learning environment. According to the topic, the teacher can design flexible learning environments. For example, a physics teacher can create a lab for electromagnetic phenomena while a geography teacher can develop a space for examining geographical features. Students can learn more authentically and fully through experiential and situational teaching, which can help foster students' independence, autonomy, and creative spirit. The instructional sphere of schools is expanded at the same time by the metaverse. Through virtual libraries, museums, science and technology museums, and other institutions, schools and students can engage in extra-curricular activities and teach in ways that improve the learning process and promote students' holistic and healthy development.

Social Education

The combination of metaverse and virtual community has gained popularity since the pandemic. Identity, learning, interaction, social etiquette are important components of a full virtual learning community. Sloodle is a good example of a virtual community that is well known. It combines second life games with Moodle's learning management system to create metaverse and virtual learning community. To help present some objects that are difficult to display realistically and give visitors a more realistic visiting experience, metaverse technology has also started to be used in public spaces like museums, science and technology museums, libraries, etc. (Wu & Gao,2022).

Characteristics of Traditional Education

Each person engages in lifelong learning activities such as skill development, vocational education, and thought enhancement which comprises the education. Traditional schooling has been merged into Web 2.0 as a result of the internet's expansion over the last 10 years. Massive Open Online Courses (MOOCs), for instance, can enable the online exchange of educational materials. But since it continues to rely on textbooks, classrooms, and material distribution, it does not alter the fundamental approaches.

Characteristics of Virtual Education

Modern study suggests that the educational process is arranged in the virtual learning environment before it creates a new networked communication space. There is an entire management structure in place to facilitate the educational interaction between students and teachers. The two primary categories of the virtual educational environment, according to the study, are the personal teaching environment (PTE) and the personal learning environment (PLE). A PTE's core is its teachers (or knowledge sharers). Using the necessary network services and technology, they share discipline-specific knowledge on platforms (blogs, forums, and online communities).

The education sector can benefit from the metaverse in the following ways:

Learners will pick up information more quickly if they have an immersive interactive environment that offers realistic experiences (both observation and practise).

Visualisation: Students who have difficulty seeing objects with their naked eyes, such as biological cells or molecules, can benefit from using metaverse.

Unrestricted space and time: There is no restriction of space and time when metaverse is being used for learning Historical events, for instance, can be re-enacted and experienced using technology.

Promoting communication: Metaverse helps in establishing virtual meeting spaces where internal meetings can be hosted. Students can also choose their study spaces which they can use for collaboration, interaction, and study purposes.

Metaverse Education in Tech Companies

Many technology companies have recently gained interest in metaverse education. A software startup called Strivr that provides virtual reality training to organisations. Its products provide immersive virtual reality learning that immerses workers in "hands-on" learning experiences. The findings indicate that employees are more likely to retain their new knowledge. According to Strivr, managers can gather distinctive learning and assessment data to gauge the success of training programmes and assess worker competency.

Metaverse Education at University

As metaverse is gaining popularity, the advantages of using metaverse is being widely acknowledged. Experiments are being conducted with metaverse education by some colleges to verify these presumptions. They all seek to increase academic memory and increase educational effectiveness through immersive experiences. For instance, a professor at Stanford University created the first "Virtual Human" course, which is totally virtual reality-based. The "Virtual Human" course enables all students to transcend the limitations of physical location. Virtual reality headsets claim that any location in the world can serve as their "classroom." Virtual reality is used exclusively for instructional purposes. The "classroom" may be in a museum, a lab, underwater, or even in a "hazardous" crater. Students can encounter things through immersive experiences that they could previously only imagine (Lin, et al., 2022).

Training at Workplace using Metaverse

The metaverse technology supported by AI, machine learning and blockchain is expected to totally transform education and the learning process. A growing demand for metaverse training is indicated by PWC's prediction that AR and VR software will greatly affect 23 million jobs globally. This means that organisations hoping to become "future resilient" will increase their business training by leveraging the power of the metaverse. Metaverse mixed-reality learning environments are a disruptive innovation that can significantly enhance learning, growth. Businesses are increasingly embracing remote and hybrid workplace environments, which highlights the need for executives to not only identify but also embrace new approaches to employee development and training in order to maintain a competitive and agile workforce (Takyar,2022).

Manufacturing, energy, and Construction that operate in high-risk environments are already utilising the advantages of metaverse learning. To improve their training programmes, other sectors are expressing interest and exploring the area. The metaverse creates real immersions which have an emotional and cognitive effect on the learner, thus providing an expansive learning environment. Learners will be able to transcend their physical constraints and discover novel methods to learn by utilising the metaverse in conjunction with Learning and Development (L&D). The time required to learn new skills and improve existing ones will be drastically reduced with metaverse. Metaverse learning will lead to the development of avatar-based simulations that are oriented towards interactive working and collaborative learning. Some use cases for the metaverse training are Onboarding Training (employees can join in a virtual space and become acquainted with values and culture of the

company), Sales Training (Branching the scenarios and storytelling can equip employees with various situations and provide guidance), Safety Training (immersive training where employees can learn about danger and risks at the workplace), Skills Training (metaverse will help to save materials expenses and will help develop soft skills and technical abilities and speed up practical experiences). The metaverse can also be used to virtualise various training methods. It can be used to create a full training environment, including a classroom, stage, lectern, and seating desks for a realistic experience. Trainees can appear as avatars during training classes, making them as real or fictional as they like (Kumar, 2022).

COMPARISON BETWEEN TRADITIONAL EDUCATION AND METAVERSE EDUCATION

Location and Time of Class

In a conventional classroom, instructors and students usually get together in person at a particular time designated by the class schedule and the school calendar. When a meeting on a video conferencing platform is opened by the instructor, students are also allowed to join the session. Both classroom learning and remote learning via screens have time and geographic restrictions. In the metaverse, individuals are not limited by space and time because of high-speed networks and computing capabilities. On the one hand, the metaverse has the potential to be a nearly universal educational space that is, students and teachers can always access it using smart wearable technology and enter instructional settings. Metaverse lets the teacher experiment with synchronous and asynchronous learning. For instance, students can enter the metaverse using avatars and engage with the Non player character teachers in a pre-determined manner to study. So, both teachers and students can benefit from the flexible method of engagement in terms of comfort and flexibility.

Learning Identity

Learners show up for class using their true names, whether it is in a physical classroom or via video conferencing. In metaverse, learners can portray themselves quite differently in the metaverse. To attend lessons, they use customised, dynamic and realistic forms of digital identities. In the metaverse, avatars serve as digital representations of player characters from the real world.

The People Learners Interact with

It is well known that in the traditional classroom setting, students communicate with actual teachers. It can be difficult for students to get together and communicate with teachers in person over video conferencing platforms which can cause problems like disinterest, emotional deficiency, desocialisation. In the metaverse, there are two types of instructors that students can interact with: intelligent NPC (Non-Player Character) teachers and peers and avatar teacher and peers.

Learning Scene

The traditional classroom setting includes real learning scenarios, while video conferencing learning platforms use screen-based real learning scenarios. On the other hand, in the metaverse, various learning experiences can be entirely virtualised or realistically replicated using the real-world learning environment. Students can experience the learning process in virtual, realistic learning environments in metaverse as if they were actually there (Zhang et al., 2022).

Learning Discourse

Learner interactions in a traditional physical classroom mainly focus on visual and auditory communication and they communicate mostly face-to-face. While employing interactive technologies like sensors, BCI, VR, AR, or XR to interact with others in the metaverse, learners usually engage in embodied, multisensory interactions. This can greatly excite and drive a range of learners' senses, such as vision, audition and kinaesthesia.

Life Logging

Life logging, or the practise of recording, archiving, and sharing one's day-to-day interactions with one's environment and the things and people in it, is crucial in the metaverse. Metaverse allows learners historical information like assignments,

virtual creations to be recorded and preserved while their current status can be exhibited and shared using storage, databases. Reviewing or observing the learning process and engaging in some relevant activities (such studying behaviour or interacting patterns) can be beneficial for both students and instructors (Zhang et al., 2022).

Learning Analysis

The metaverse relies on computing, databases and AI technologies to provide and analyse enormous amounts of data. The learning analysis module uses a large amount of data to assess and present the learning performances and accomplishments of students by unit or overall. More importantly, it can simplify the task of evaluating students' performance and give teachers solid evidence to undertake individualised instruction for students.

Learning Authentication

The metaverse is a more communal, open, and decentralised digital world than existing virtual locations. It means that to prevent user privacy from being infringed in the metaverse, the storage of student data should be controlled and guarded using the same high security standards as other apps already hosted on the cloud. Additionally, users' virtual creations and digital works can be shared with others, but they must be tracked down and secured. (Zhang et.al., 2022).

The metaverse provides a fantastic opportunity to get past many difficulties that people face in real life which includes disabilities, social exclusion as a result of lack of exposure to people from diverse backgrounds, restriction on access to certain locations and provision of new sensory experiences for those with sensory or cognitive impairments. Accessibility is important to enable new experiences and social interactions for those who may, for whatever reason, have limited chances. It also ensures that all people have the chance to enjoy a barrier-free digital world (Seigneur, Choukou,2022).

Another potential use of the metaverse in education is to support students' participation in a range of educational activities, such as role-plays and dialogue practise, with other students using avatars or with air hostesses or airport staff members in a virtual airport environment. By inviting an avatar of a distant partner into the virtual environment, a remote student can practise dialogue in a previously established or rebuilt situation. The metaverse could place students in a realistic but artificial learning environment, where they could practise and improve their language skills alongside their teachers and peers. Another application of metaverse in education would be assistance in inclusive education. Given the unique features of the metaverse, it is easy to see how it could be used to create a welcoming environment where kids with special needs and general students can learn together. This is because their digital identities in the metaverse can be used to re-create their images, removing special identity labels, and eliminating discrimination and allowing them to more fully participate in classroom activities alongside other students. Using metaverse technologies the affordances of those learners' organs and senses can be expanded so they can interact and communicate with other learners in a normal way, getting sensory input and stimulating their cognitive growth in the process. By providing individuals with individualised instruction and assistance based on their physical and emotional characteristics through the use of computing, big data, learning pathways, and other important technologies, the metaverse can also help kids with special needs (Zhang et al., 2022).

PROPOSED ARCHITECTURE FOR METAVERSE MODEL
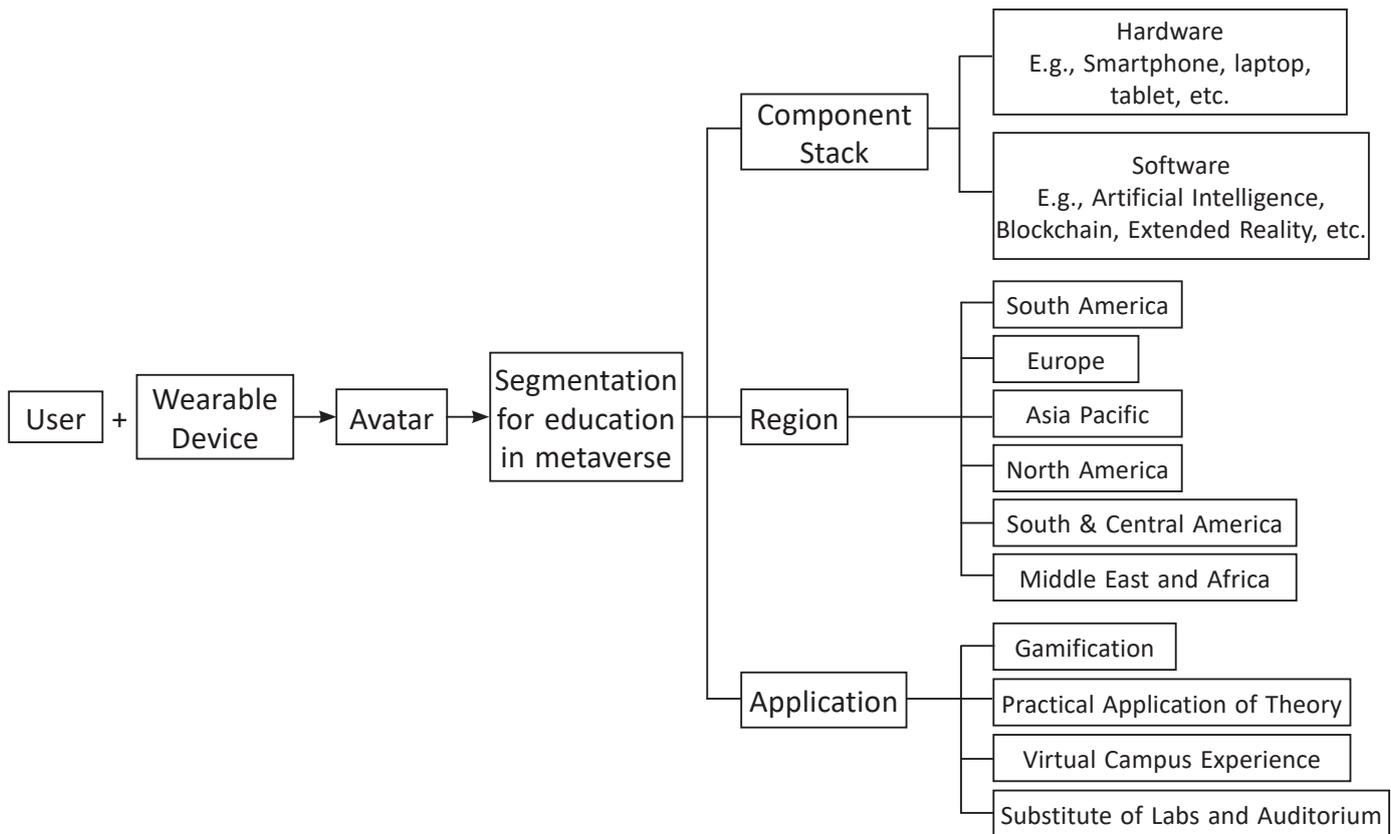
The application or the use cases of metaverse in education could be gamification, practical application of theory, virtual campus experience, substitutes of labs and auditorium.

Education is metaverse can be segmented by component stack, application, and region. In component stack the metaverse market can be categorised as software, hardware, and services. Hardware would include a smartphone, laptop, tablet that would be used to access the metaverse platform. Hardware could include a desktop computer having a good internet connection. The virtual reality (VR) headset is the current pinnacle of metaverse hardware because it allows users to completely immerse themselves in these systems. The hardware would also include wearables, headsets, 5G infrastructure, etc.

The software market would include blockchain, artificial intelligence, extended reality in the form of augmented reality, virtual reality and mixed reality

3-D modelling, reconstruction & spatial tech etc.

The next segmentation would be based on region. The metaverse in education market can be segmented in to South America, Europe, Asia Pacific, North America, South & Central America, Middle East & Africa. Metaverse in education should be implemented on the basis the education style and pattern of the specific country in that continent.

Another segmentation would be based on the application of metaverse. The application or the use cases of metaverse in education could be gamification, practical application of theory, virtual campus experience, substitutes of labs and auditorium. Gamification method could be used to teach certain concepts to students through different games. Metaverse could be used to provide a virtual campus tour to the students. Metaverse education could also provide a substitute to the traditional science labs and auditoriums where various experiments are conducted.

CHALLENGES

Challenges for education in the metaverse could be technological constraint as more development is required in this area to avoid potential risks from wearing the wearable devices such as cybersickness, blurred vision, dizziness, etc. Data security and privacy can pose a challenge as the students with limited social experience can be victimised by criminal events. The emergence of the virtual "I" raises new ethical concerns such as bullying, data theft, racial and religious conflicts, violence, etc., that cut across borders and communities of all stripes and orientations. Setting up a regulated and sustainable metaverse is, therefore, a pressing issue. Another challenge could be that if students spend too much time interacting with their avatars in a virtual world, they may develop emotional and social barriers that will make it difficult for them to form similar relationships in the real world. Users may become confused about the distinction between their "real-me identity" and their "virtual-me identity" as the line between the two worlds blurs (Zhang et al., 2022).

WAY FORWARD

There is a lot of potential in metaverse for further research in the field of education. Using metaverse as a setting for educational and instructional endeavours has many benefits. Students can practise tasks that are difficult to produce in real life, such as dangerous surgeries or fire scenes, or tasks that require a large investment of time and money, such as going to space or building a vehicle. Students can also practise tasks that are physically impossible, such as flying or travelling through time or space, etc. Students may benefit and learn immensely from these experiences. In addition, by participating in a realistic 3-D virtual world, students may develop problem solving skills, strategic and comprehensive thinking skills and other important skills useful in practical life. However, metaverse is still in its early stages of development and has a lot of room for growth and improvement. For future research, it would be useful to determine which subjects lend themselves best to the metaverse's learning-teaching approach, as well as how to maximise its potential for producing optimal results in education.

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Vividness of Future Self and Stress Tolerance as Predictors of Adaptability among Indian Working Professionals

Aakash Khindri*
Santosh Rangnekar**

ABSTRACT

Recently, the looming uncertainty over the personal, social and professional spheres of life has highlighted the importance of adaptability. Drawing on career construction theory, this study examines two individual psychological resources that could be strengthened to enhance the level of an individual's adaptability to situations. Data were collected from 200 working professionals in India. An analysis of relationships was conducted using hierarchical regression. Results revealed that vividness of future self and stress tolerance explains an incremental percentage of variance over and above that explained by demographic factors like gender, age, education and marital status. Findings indicate that both vividness of future self and stress tolerance are promising resources for promoting adaptability in individuals. Discussion section include implications for researchers and practitioners.

KEYWORDS

Tolerance, Changing Environment, Adaptability

INTRODUCTION

The last few years have been characterised by uncertainty with an increase in challenges and disruptions in the workplace and society (Di Fabio & Kenny, 2019; Taber & Blankemeyer, 2015). In such an environment, individuals, as well as organisations, are struggling for their well-being (Di Fabio & Kenny, 2016). Characterised by a massive technological changes and a pressing need to change, the today's workplace has become more challenging in recent few years (Müceldili et al., 2020). Organisations are seeking such resources that can be leveraged to enhance employee and organisational well-being (Di Fabio & Kenny, 2019). Such an attempt is also visible in theoretical advancements in the areas of counselling and positive psychology (Heuvel, Demerouti, Bakker & Schaufeli, 2010). In response to such changes in the environment, organisations are looking for individuals who are flexible and adaptive in their approach and can work according to fast-changing environment dynamics (Urbanaviciute, Udayar & Rossier, 2019). Nowadays, adaptability is considered as a necessary skill required for growth and development in career and general well-being (Johnston, 2018). Adaptability to situations, as a construct is explained as a person's ability to quickly and effectively adjust to the changing situations in life, represents one such psychological resource.

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  * Ph.D. Student, E-mail: aakash_k@bm.iitr.ac.in

 ** Professor, E-mail: santosh.rangnekar@ms.iitr.ac.in

Department of Management Studies, Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand, India

The characterisation of adaptability as accepting challenges, expecting changes, flexibility and a zeal to go beyond the difficulties make it exceptional in the light of commonly explored resources (Datu, Yuen & Chen, 2017).

In the niche context of the workplace, adaptability has been modified and conceptualised as career adaptability, a variable related to self-regulation, that assists an individual to adjust and cope with changing circumstances in career and facilitating smooth transitioning in work related situations (Taber & Blankemeyer, 2015). Various studies have also associated career adaptability with positive outcomes such as hope, life satisfaction and resilience (Cabras & Mondo, 2018; Ginevra, Di Maggio, Santilli, Sgaramella, Nota & Soresi, 2018). Moreover, studies have also reported career adaptability as a transversal personal strength that might promote adaptive behaviours in domains outside of career and across different areas of life (Urbanaviciute et al., 2019). Thus, it is indicated that adaptability exercises significant influence across multiple domains in an individual's life. According to theory of career construction (Savickas, 2013), career adaptability, is characterised as a self-regulating construct that is composed of four sub-dimensions, which are curiosity, confidence, control and concern. Concern involves planning for the future with a clarity (Johnston, 2018), while control signifies a sense of responsibility for shaping the future. Confidence is a perceived belief that an individual will achieve the desired goals overcoming obstacles and difficulties (Taber & Blankemeyer, 2015), and curiosity is the ability to explore and uncover possible selves and different roles.

Drawing upon career construction theory, we aim to add to the understanding of the adaptability construct by examining the psychological constructs of stress tolerance and vividness of future self as predictors of adaptability. In doing so, based on existing literature, some similarities have been drawn between the factors of career adaptability and the potential predictors. An investigation of predictors of adaptability could benefit the domain of theory and practice equally. Since the trait of adaptability is expected to be malleable (Koen, Klehe & Van vianen,

2012), the identifications of predictors could assist in designing interventions to promote its growth among individuals to ensure the well-being of both employees and organisation.

The rest of the article is organised as follows. Firstly, a review of the existing literature on adaptability, stress tolerance, and vividness of future self is conducted to formulate hypotheses before discussing the methodology part. Subsequently, results section is explained. Finally, in the discussion section, theoretical, practical and social implications are highlighted, followed by shortcomings, future directions and conclusion.

REVIEW OF LITERATURE AND FORMULATION OF HYPOTHESES

Adaptability to Situations

Adaptability can be explained as the ability of a person to adjust in the changing situations through cognitive, emotional and behavioural adjustments in behaviour (Martin et al., 2012). It has been often characterised as accepting obstacles and difficulties, with a constant pursuit of predetermined objectives in the face of all uncertainty with flexibility and determination (Datu et al., 2017). In the context of the work environment, the adaptability construct has been conceptualised more specifically as, career adaptability, with a focus to emphasise on the equilibrium that an individual aims to strike between the personal and professional environments (Goodman, 1994). Career adaptability has been described as an integral part of career construction theory and defined as, a psychosocial construct that represents a person's readiness and resources to coping with existing and forthcoming situations, tasks, career transitions, and personal traumas (Savickas, 2013, p. 51). Various studies have explored the construct of career adaptability and reported its association with several positive outcomes such as better coping, balanced response to adversity and less vulnerability to stress and anxiety (Johnston, 2018).

Vividness to Future Self

The vividness of the future self has been conceptualised as the ability to clearly imagine the

future self with a sense of reality (Hershfield, 2011). Since the individuals with the better vividness of future self could picturise their future self in greater detail, it is easier for them to establish a connection between their present and future. Often such a nexus is evident in the form of a more precise understanding between present behaviour and future outcomes. Studies have shown that people who could vividly imagine their future self-have shown higher levels of planfullness, self-regulated behaviour, and reduced participation in delinquent and reckless activities (Gelder et al., 2013; Hershfield et al., 2018). Also, it has been reported that individuals who have the higher vividness of future self tend to exhibit a self-regulated behaviour while spending money, and they save more keeping in view their future self after retirement (Hershfield, 2011).

Stress Tolerance

The perceived ability handle the stress and anxiety induced by unknown, ambiguous, and volatile situations or tasks can be referred to as an individual's stress tolerance. A person with higher mental resilience is always considered to be more likely to endure the hard times. Such a tendency to cope with challenges is often accompanied by a readiness to take risks, and it stems from a desire to accomplish one's goals (Birenbaum et al., 2019). Also, Stress tolerance has been reported to be positively associated with work engagement and innovation and inversely with burnout and exhaustion (Kashdan et al., 2020).

Stress Tolerance and Adaptability

Career construction theory proposes concern, confidence, curiosity, and control as four dimensions of career adaptability (Savickas, 2013). Of these dimensions, confidence has been described as the perceived ability to face the issues and overcome difficulties in pursuit of a goal. A confident person is likely to engage in exploration and problem-solving when faced with any hindrances (Koen et al., 2012; Savickas, 2013). This inclination towards exploration and staying with the problems till the solution appears might push the individual to modify the

existing approaches to solve the problem. Other behaviours exhibited by a person high in confidence include a belief in one's ability to handle issues and respond to stressful situations (Ginevra et al., 2018). Such behaviour also indicates an indomitable will to accomplish the goals while dealing with all the possible hindrances.

The construct of stress tolerance has been explained as the perceived potential of a person to cope with ambiguous, uncertain, and challenging tasks and situations (Kashdan, Goodmen, Disabato, McKnight, Kelso & Naughton, 2020). It also points towards a belief in oneself to embrace the doubts and uncertainty and to act positively under challenging conditions (Birenbaum, Alhija, Shilton, Kimron, Rosanski & Shahor, 2021). A person with high stress tolerance is more likely to endure any problematic situation for a more extended time while looking for the solutions. In a rapidly changing environment, the capacity to tolerate uncertain situations seems quite indispensable to survive and adapt. Also, the construct of career adaptability has been reported to be negatively associated with anxiety (Johnston, 2018). Moreover, the constructs of stress tolerance and adaptability share several correlates, including job satisfaction, dedication, and work engagement (Birenbaum, Nasser-Abu Alhija, Shilton, Kimron, Rosanski & Shahor, 2019; Johnston, 2018; Kashdan et al., 2020). Based on above arguments, we hypothesise:

H1: Stress Tolerance is Positively Associated with Adaptability to Situations.

Vividness of Future Self and Adaptability

Concern, is also one of the dimensions of career adaptability, as explained by career construction theory (Savickas, 2013). This dimension has been explained as the ability to have a clarity about the future and being able to plan for the same. It has been considered as the most crucial dimension of adaptability (Johnston, 2018; Taber & Blankemeyer, 2015). Savickas (2013) explains concern as one's ability to project oneself into the future and form a clear picture of their goals and aspirations. In a similar vein, the construct vividness of the future self-shares a very similar nature and conceptualisation. It has

been explained as the ability of the individuals to perceive their future in a realistic and vivid fashion (Hershfield, 2011). Also, a disposition towards future self has been associated with multiple benefits such as planfullness and delay of gratification that could set up an individual for greater goals in contrast to immediate short-term pleasures (Hershfield, 2011; Taber & Blankemeyer, 2015).

A clearer imagination of future-self also facilitates a self-regulated behaviour (Strauss, Mell, Anseel & Loermans, 2021) since the individual could establish a link between today's behaviour and its future outcomes. Such envisioning can promote competencies in planning which include identifying actions that connect present behaviour with desired future (Savickas, 2013). Also, in order to achieve the imagined future self, often some modifications are required to be made in the initial plan. In this way, a future disposition could propel an individual towards adaptive temporal choices to reach the desired future (Blouin-Hudon & Pychyl, 2015). In line with such theoretical pieces of evidence, cross-sectional studies have also demonstrated that a future oriented focus or future time perspective is positively associated with adaptability in a career (Zacher, 2014). Since adaptability denotes one's self-regulating ability to successfully deal with uncertain situations, an orientation towards the future could facilitate such coping by enabling the individual to take responsibility of the future and preparing for it. Therefore, we hypothesise that:

H2: Vividness of Future Self is Positively Related to Adaptability to Situations.

Fig. 1: The model for the study
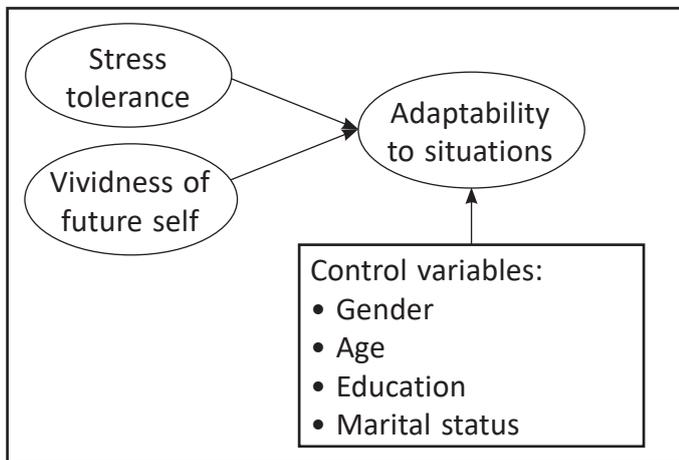
Source: Author

MATERIAL & METHODS

Participants

Full time employees at junior, middle and senior levels from both private and public organisations in the manufacturing and service sectors in India took part in this study. A survey form was formed and communicated to 500 participants through the mail with the assurance of anonymity and confidentiality of their identity and responses respectively. Two hundred and two participants reverted constituting 40.4% of rate of response. Also, to maintain normality in the data, a minimum of 200 participants is suggested (Hair, Celsi, Ortinau & Bush 2010), which has been achieved by the current dataset. Regarding gender, 34.65% of the participants were females, and 65.35% were males. 39.60% of participants were married, 57.92% were unmarried and 2.48% were either divorced or widow/widower. Most of the participants (77.23%) were between 26 and 35 years old, 16.34% were between 36 and 50 years old and 6.44% were 51 years and above. 47.52% of the participants have a graduate degree, 38.61% were postgraduates, 8.91% had doctoral degrees, and 4.95% were diploma holders.

Table 1: Socio Demographic Characteristics of Participants

Characteristics	N	%
Gender		
Men	132	65.35
Women	70	34.65
Age, range		
26-35 years	156	77.23
36-50 years	33	16.34
51 years and above	13	6.43
Marital Status		
Single	117	57.92
Married	80	39.60
Other	5	2.48
Education Level		
Diploma	10	4.95
Graduate	96	47.52
Post Graduate	78	38.61
PhD	18	8.92

Source: Author

Measures

1. **Adaptability to Situations:** To evaluate adaptability to situations, a subscale from the TMGS was used (Datu et al., 2017). This

scale was appropriate for the study since it is in alignment with the guidelines suggested by Johnston (2018), that scale should be selected with an intention to measure readiness, resources or responses. Also, this scale has been developed and validated in a collectivist context which makes it more suitable for the present study. The scale contains 4 items with a 7-point Likert scale response format with 1 = "Strongly Disagree" to 7 = "Strongly Agree". The items include "I am able to cope with challenging circumstances in life" and "Changes in life motivate me to work harder". The internal consistency for the scale was 0.81.

2. **Vividness of Future Self:** Vividness of future self-scale developed by Sokol & Serper (2020) was used to evaluate vividness of future self. The scale consists of 3-items on a 7- point Likert scale with 1 = "not at all" to 7 = "Perfectly". The items of the scale include, "How vividly can you imagine what you will be like in 10 years from now" and "How vividly can you imagine what your family relationships will be like in 10 years from now". The reliability coefficient for the scale was 0.84.

3. **Stress Tolerance:** Stress tolerance was evaluated using a subscale from the multidimensional workplace curiosity scale (Kashdan et al., 2020). The scale consists of 4- items on a 7-point Likert scale with 1= "Strongly Disagree" to 7 = "Strongly Agree". The consistency coefficient for the scale was 0.80. The items of the scale include, "The possibility of being distressed does not impact my motivation to work on new projects" and "I do not shy away from the unknown or unfamiliar, even if it seems scary".

4. **Control Variables:** Earlier studies have suggested that certain demographic factors might have an influence on the adaptability of an individual (Urbanaviciute et al., 2019; Zacher, 2014). Ocampo, Restubog, Liwag, Wang, & Petelczyc (2018) had also explored the association of spousal support with career adaptability. Therefore, respondents' age, sex, educational qualifications and marital status were modelled as control variables. All of these variables were modelled as categorical variables as gender (0 = "Female", 1 = "Male"), Age (0 = "21-35 years", 1 = "36-50 years", and 2 = "51 years and above") Education (0 = "Diploma", 1 = "Graduate", 2 = "Post Graduate", 3 = "PhD"), and Marital Status (0 = "Single", 1 = "Married", 2 = "Other").

DATA ANALYSIS AND RESULTS

Descriptive Statistics

Table 2 represents the descriptive statistics, including standard deviation, inter-item correlation, mean, square of correlation among variables, and average variance extracted. The results clearly indicate that, there is a significant correlation between Adaptability and vividness of future self (r = 0.535; p < 0.001), Adaptability and stress tolerance (r = 0.676; p < 0.001). The inter-factor correlation is relatively weaker between stress tolerance and vividness of future-self (r = 0.406; p < 0.001). All the study variables' standard and deviation ranged from 0.69 to 0.95.

CFA results

A series of Confirmatory Factor Analyses (CFA) were employed to check if the measures used in the study have successfully captured the intended constructs. The model with three factors (Adaptability to situations, Vividness of future self and stress tolerance) has fitted the data well. (χ2 [40] = 61.504, p = 0.016; RMSEA = 0.052; CFI = 0.974; IFI= 0.975; SRMR = 0.040). Further shreds of evidence of convergent and discriminant validity were obtained through the computation of composite reliability (CR) and average variance extracted (AVE). The mean score of the factors, standard deviation, composite reliability, Cronbach's alpha coefficients, and AVEs are presented in Table 2. The composite reliability for each variable is more than 0.7, indicating adequate convergent validity (Fornell & Larcker, 1981; Malhotra & Dash, 2011). Also, the square of inter-factor correlations between any two factors was not greater than its corresponding AVE, suggesting adequate discriminant validity (Fornell & Larcker, 1981). Findings from CFA tests and Table 2 provide evidence for convergent and discriminant validities of the constructs.

Common Method Biasness

Based on the recommendations of Podsakoff, MacKenzie, Lee & Podsakoff (2003), anonymity and confidentiality of the respondents' identities and responses were ensured to check the CMV to a minimum. To verify the extent of success of these measures, the measurement model was re-estimated after introducing a common latent factor related to all the items (Podsakoff et al., 2003). No significant difference was detected between the fit indices of the two models. In addition, the findings from the Harmon single factor test demonstrate that variables do not to converge on a common single factor, and the first factor could not explain more than half of the total variance in data. Therefore, it can be considered that the significant existence of common method biasness could not be detected in the data.

Table 2: Mean Standard Deviation, Correlations and Reliabilities

		α	CR	M	SD	1	2	3
1.	Adaptability to Situations	0.80	0.811	0.00	0.78	**0.519**	0.286	0.456
2.	Vividness of Future Self	0.80	0.839	0.00	0.95	0.535***	**0.636**	0.164
3.	Stress Tolerance	0.82	0.779	0.00	0.69	0.676***	0.406***	**0.470**

$* p < 0.05, ** p < 0.01, *** p < 0.001$. CR = Composite reliability, SD = Standard deviation, Values in bold diagonally = Average variance extracted, values below the diagonal = Inter-factor correlations, Value above the diagonal = Square of inter-factor correlations.
Source: Author

Hierarchical Regression

Table 3 shows the results for different steps of the hierarchical-regression model with adaptability to situations as the independent variable and demographic factors, stress tolerance, and vividness of future self as predictors in three different steps.

In step 1, the demographic factors such as gender, education level, age, and marital status were taken as predictors of adaptability to situations. However, all these factors together accounted for only 2.9% of the variance in adaptability, and none of the factors had a significant influence over the dependent variable. At the step 2, the stress tolerance added 43.3% ($β = 0.671$, $p < 0.001$) to the incremental variance, accounting for 46.2% of the total variance in the dependent variable. Therefore, hypothesis 1,

that stress tolerance is positively associated with adaptability to situations, is supported. In step 3, the vividness of future self was added apart from demographic factors and stress tolerance. Vividness of future self-explained 7.7% ($β = 0.309$, $p < 0.001$) of variance in the dependent variable in the presence of stress tolerance, thus supporting the second hypothesis that vividness of future-self is positively associated with adaptability to situations. The total variance explained by these predictors was 53.9%.

Table 3: Hierarchical Regression. The contributions of demographic factors (Step 1), Stress Tolerance (Step 2), and Vividness of Future Self (Step 3) to Adaptability to situations.

	β	t	p
Step 1			
Gender	0.057	.791	n.s.
Age	-0.080	-0.984	n.s.
Education	-0.100	-1.388	n.s.
Marital Status	0.147	1.799	n.s.
Step 2			
Gender	0.030	0.545	n.s.
Age	-0.076	-1.246	n.s.
Education	-0.027	-0.491	n.s.
Marital Status	0.036	0.585	n.s.
Stress Tolerance	0.671	12.573	< .001
Step 3			
Gender	-0.002	-0.032	n.s.
Age	-0.049	-0.871	n.s.
Education	-0.006	-0.125	n.s.
Marital Status	0.038	0.666	n.s.
Stress Tolerance	0.547	10.130	< .001
Vividness of Future Self	0.309	5.729	<.001
R^2 Step 1	0.029		
$ΔR^2$ Step 2	0.433***		
$ΔR^2$ Step 3	0.077***		
Total R^2	0.539***		

$*** p < 0.001$
Source: Authors' Own

DISCUSSION

Implications for Theory and Practice

The present study has several implications for the domains of both practice and theory. The study extends the argument for the potential value of stress tolerance and vividness of future self to promote adaptability to situations if fostered carefully. To the best of authors' knowledge, no study till now has explored the psychological construct of adaptability for working professionals in a collectivist culture. Given the importance of adaptability for an individual as well as organisations

(Cabras & Mondo, 2018; Koen et al., 2012), the contributions of stress tolerance and vividness of future self, above and beyond demographic factors, is promising. The findings also add to the literature of career construction theory and could be further developed and extended into several different domains such as recruitment, training and development and succession planning. The training modules constructed with an aim to develop these traits are more likely to deliver better results in terms of workforce resiliency and flexibility. These behaviours may promote not only adaptability but also perceived competency, a sense of autonomy, and belongingness among employees (Gino, 2018).

While looking for work opportunities in a world characterised by uncertainty and changes, the ability to adapt becomes indispensable quality for employment (Koen et al., 2012). Organisations require such leaders who acknowledge the importance of these psychological behaviours for the well-being of their employees and organisation and are willing to put in the effort to develop the same. Employers aiming towards organisational well-being may seek such individuals who are adept in behavioural and psychological skills apart from the required technical skills. While planning for the succession, organisations may try to inculcate these behaviours in potential candidates to provide and develop an adaptive culture. Moreover, the prospect of a healthy corporate environment is reinforced if such positive behaviours are developed in the potential candidates prior to their joining, preferably at the university or school level (Di Fabio & Kenny, 2019).

Implications for Society

The study has some considerable implications for society as well. In the current times of pandemic induced uncertainty, adaptability to situations is squarely essential for every facet of society and its beings. The identification of critical factors that might promote adaptability may have direct implications for preserving and developing the social fabric. The capacity to tolerate stress in the face of the unknown and the tendency to have a vivid clarity about one's future self are themselves connected

with reduced anxiety, improved levels of gratification and life satisfaction, and greater curiosity (Birenbaum et al., 2021; Cabras & Mondo, 2018) which could be some additional benefits apart from adaptability. Enhanced adaptability is not only beneficial in the work environment, but an individual with higher levels of adaptability tends to have improved chances of engagement, self-regulated behaviour, and performance(Elphinstone et al., 2019; Thongpapanl et al., 2012). Such positive outcomes could be beneficial in any endeavour of an individual. Moreover, given the significant value of these resources, the educational system may bring some changes in the curriculum to develop these psychological resources among students to achieve a holistic development. If worked upon from an early age, the adaptability skills could be effectively honed by the time one would join any professional workplace.

STUDY'S LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Yet the results of study corroborate the inferences from the theory and literature, and it has numerous implications for both theory and practice, the study has some shortcomings that can be accounted for in future studies. All the responses were collected through self-reported measures and thus it is reasonably possible that method biasness has inflated the relationship among variables. Although investigation for the same has been done, its possibility cannot be ruled out completely. Future studies can grapple with such issues by collecting the adaptability data from different sources such as seniors or peers and complement it with self-reported data. The design of the present research is cross sectional; therefore, any inferences to establish causality are limited. Research in future may employ a longitudinal research design to confirm the existence of the associations.

Apart from stress tolerance and vividness of the future self, there are several other factors that may have a significant bearing on adaptability. Such factors may include organisational structure, policies, nature of the job, personality traits, and work culture. Clearly, these factors present themselves as possible avenues for future research. Also, a weaker yet significant

correlation was detected between stress tolerance and vividness of future-self. Further exploration based on this finding could include investigating the mediating role of either stress tolerance or vividness of future-self while predicting adaptability. Apart from that, future studies may replicate the present study in different contexts and samples to confirm such a relationship for better generalisations.

CONCLUSION

The present study examines the role of the vividness-of-the-future-self, *i.e.*, the clarity about the future self and stress tolerance, *i.e.*, the capacity to endure stressful and challenging situations, as the predictors of Adaptability to situations, *i.e.*, one's ability to adjust into changing environment. The predictors are found to have a significant association with adaptability even after controlling for several demographic factors, including age, sex, education, and marital status. Both procedural and statistical measures to account for common source biasness have been employed and no significant bias was detected. Drawing on career construction theory, the role of the vividness of future-self and stress tolerance as a predictor of adaptability has been explored and tested. This research enhances our understanding and knowledge of how an ability to clearly imagine one's future-self and possessing the confidence that one can face the challenges that may arise in the pursuit of a goal can promote the quality of adaptability. Furthermore, if an individual work upon these predictor variables, the dependent variable will improve, which is in turn associated with several positive outcomes.

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LMS, A Journey Towards a Learning Organisation – A Team Initiative

Malang Suryavanshi*
Dr. Shailaja Karve**
Kiran Gupta***

ABSTRACT

Organisations all around the world have recently realised how critical it is to implement cutting-edge technological solutions to improve employee learning and development. One such initiative that seeks to increase overall organisational performance while streamlining training procedures is the installation of Learning Management Software (LMS). However, there are several obstacles to the implementation of LMS, such as aversion to change, apprehension about technology, and the requirement to abandon conventional teaching techniques. In this case study, the successful adoption of learning management software inside a company is examined, emphasising the critical importance of change management techniques and strong teamwork. The study focuses on the obstacles that the organisation encountered during the implementation process, the methods used to get over them, and the advantages that resulted for the organisation and its employees. This case study is an invaluable resource for businesses looking to deploy learning management software. It emphasises the importance of fostering a supportive organisational culture, aligning stakeholder interests, and utilising effective change management strategies to successfully deploy LMS and achieve organisational goals.

KEYWORDS

Learning Management Software, Change Management, Teamwork, Implementation, Challenges, Strategies, Benefits.

OVERVIEW

A major infrastructure company in the western suburb of Mumbai operated in 1929 in all facets of the electricity value chain, including generation, transmission, distribution, planning, procurement, construction, and trade. It was a significant player in India's infrastructure market. They controlled major construction projects like the trading, Mumbai Metro, airports Engineering, Procurement and Construction (EPC), and roads that encompassed the entire nation. It generated revenues of 40,173 crore, accumulated gross fixed assets of 79,899 crore, and had a net value of 27,676 crore (Annual Report, 2016).

As the business grew, it expanded overtime. The employees had to get a lot of training because of how much this restructuring changed operations. At the time, the ERP system that was being used could not keep up with the data training needs, so a new ERP system was needed. As a result, they introduced Learning Management System (LMS) that any business could use. The training also

  * Manager – Training & Development. Email: malang.suryavanshi@adani.com
  ** Professor & Area Chairperson, Organizational Behaviour/Human Resource. Email ID: shailajakarve25@gmail.com
 *** PhD Scholar. Email ID: kiran.rks.gupta@gmail.com
K J Somaiya Institute of Management, Somaiya Vidyavihar University, Vidyanagar, Vidyavihar East, Mumbai-400077, Maharashtra, India.

helped the group reach its strategic goals. An ERP system runs a business, while an LMS gives out e-training courses and keeps track of how well people are learning. E-learning needs a lot of help to grow, including from top management, IT, and the heads of different departments. LMS offers flexible training, customised modules, and ways to measure how well the training is working. It also works with enterprise apps and material from third parties.
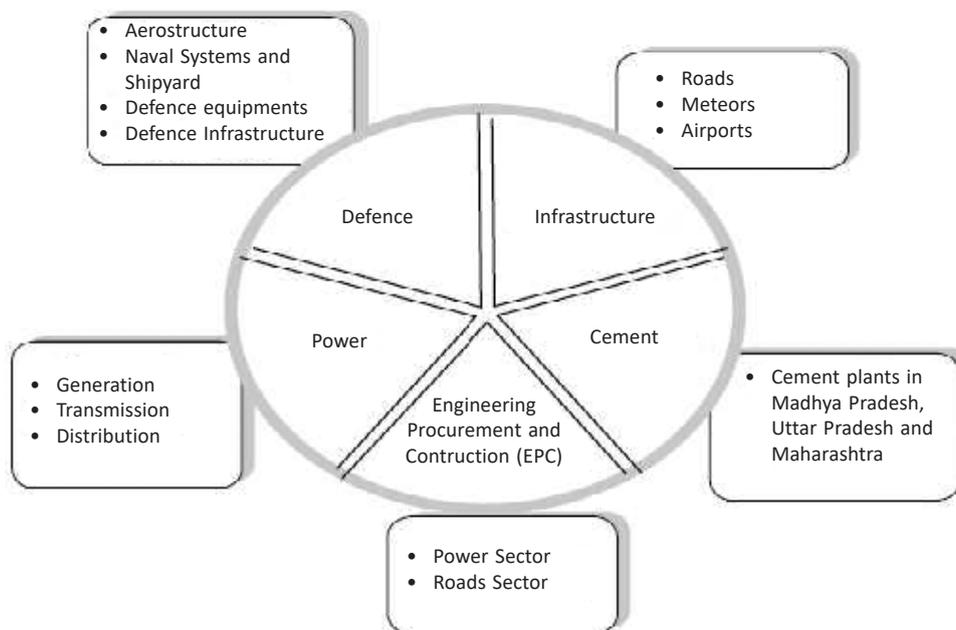
Figure 1: Organisation's Business (Company's Annual Report, 2015-2016)

ORGANISATION'S BELIEF

They believed that learning is not just about books, classes, or internet meetings; it's also about experiences. Organisational learning is a long-term process that gives a business a competitive edge over time. It needs constant management attention. The Learning Organisation works with people on their individual journeys to build a diverse learning environment, which is important in today's business world, and develops employee skills to meet business needs.

This organisation was transforming into a Learning Organisation, moving away from traditional classroom training to personalised, comprehensive learning. The goal was to develop leaders with managerial and technical skills. Their learning center had Quality Council of India (QCI) accreditation, modern facilities, and a partnership with the United States Agency for International Development (USAID) to run need-based training programs in the power industry. It was developing a world-class technical training institute. In 2010, Arjun Sawhney envisioned the Learning Organisation to address individual training needs across different businesses, leading to the need for an Enterprise Resource Planning system and Learning Management System (LMS). The LMS should provide end-to-end learning and development attributes, including training needs identification, program design, delivery, assessment, feedback, evaluation, and improvisation. The LMS should also manage classroom, faculty, and learning resources, with a focus on standardisation, customisation, and ongoing improvisation.

LMS ROAD MAP

The organisation adopted e-learning and LMS procedures to manage its various installations and growing business plans. The purpose of LMS was to help the organisation to become a "Learning Organisation" by delivering and managing instructional content, assessing individual and organisational learning, conducting training needs

analysis, setting goals, tracking progress, and collecting data for further assessment and skill gap analysis. These goals were based on improving systems and processes, meeting customer needs, creating technically sound learning tools, keeping employees motivated and trained, and connecting different parts of the world. E-learning through LMS was built to fit in with organisation's technology changes and help achieve these goals. Table 1: provides the objectives, strategy, and indicators of the LMS.

Table 1: LMS Road Map

Sr. No.	Objective	Strategy	Indicator
1.	To create technically sound learning resources to provide superior learning resources to the employee base of the organisation	Developing e-learning modules Develop Webcasts of important instructor led training programs	No. of Modules No. of Webcasts
2.	Transforming ourselves into a Learning Organisation	Deploying e-learning modules on Learning Management System and integrating the same into the ongoing instructor led training programs	Implementation of Learning Management System
3.	To bridge the geographical gap between instructor and learning	Development of Webcasts, Virtual classrooms, and Discussion Forums	No. of Webcasts or Virtual Classrooms and Discussion Forums
4.	Standardise Learning Organisation processes	Standard mails going to participants, easy in nomination for training and accessing e-content	No of hits to learning content and site usage. No. of nomination received via LMS.
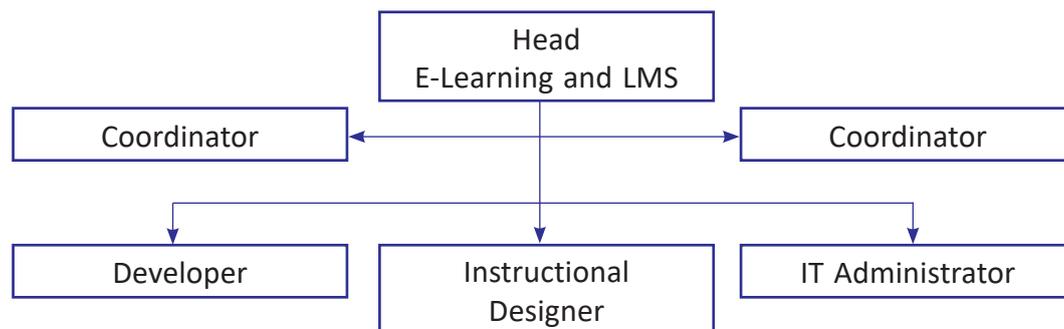
Figure 2: The structure, roles, and functional requirements to work on the initiative

LMS Team

The LMS team is composed of several roles and responsibilities (see figure 2). The head of e-Learning and LMS leads the team of professionals responsible for designing, developing, and deploying elearning modules, webcasts, and discussion forums on LMS. The coordinators act as the liaisons between subject matter experts (SMEs) and instructional designers, coordinating voice/video recording and providing office support. The instructional designer designs and structures course content in line

with instructional system design (ISD) principles, while the developer converts static content into dynamic and interactive learning content. The IT administrator designs, develops, and implements the LMS Platform, maintaining the server and providing help desk support for e-learning.

Problem-Solving Technique

They utilised the Seven-Step Technological Method of Problem Solving (refer Figure 3) to address their training needs across multiple locations while minimising costs. The process involved describing the problem and desired results, gathering information, brainstorming solutions with the LO team, choosing the best solution based on constraints and criteria, implementing the solution with detailed plans and resources, and testing and evaluating the solution to identify areas for improvement.
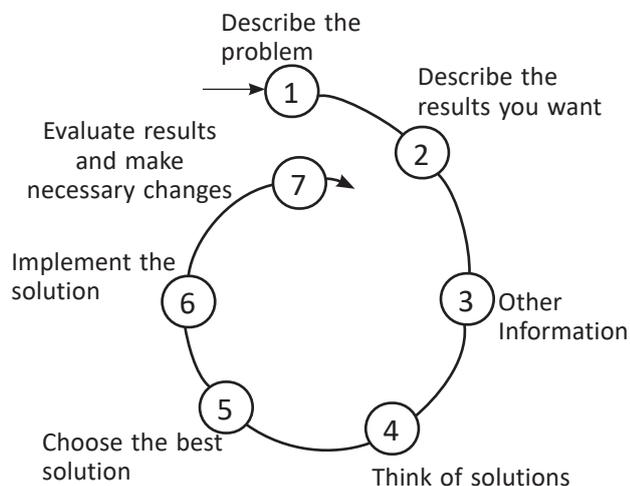
Figure 3: 7-step technological method of problem solving (Adapted from Hacker & Barden, 1993).

The LMS team faced the challenge of finding an LMS that could support training activities across their diverse businesses. They engaged program managers and employees to understand the challenges they faced while handling training programs, including training nomination, course content repository, training mails, approvals, timely information about training programs, and more. Refining the required LMS features, the team evaluated LMS providers on over 120 features, rated as Vital, Essential, and Desirable for the user and administration side of the LMS.

Demonstrations from LMS vendors catering to the vital features were scheduled and evaluated, including SAP, WizdomWeb, Oracle iLearning, and SUM Total. After careful evaluation, the team chose G-cube LMS as the best option for the organisation. Although the evaluation process was challenging, the team was able to select an LMS that would support their diverse businesses and overcome the daily challenges of handling training programs. The team tackled the task head-on, and the result was worth it.

LMS IMPLEMENTATION

Team leaders were challenged to deliver greater value to the organisation while building a stronger company culture. Mr. Sawhney and Sunil needed to possess strong leadership skills to bring change to the workplace and set a new training culture. Effective communication, transparency, problem-solving, and technological changes adoption were essential for success.

Sawhney gave Sunil the job of putting the LMS into place, and Sunil put together his team. He gave his LMS team the freedom to make choices based on facts, worked closely with them, persuaded stakeholders to get work done, encouraged innovation, communicated openly, embraced problem solving, was flexible, showed empathy, and kept learning throughout the project. So, Sunil showed the traits of a great leader, which are Empowerment, Engagement, Influence, Innovation, Communication, Problem-Solving, Transparency, Adaptability, Empathy, and Continuous Learning. The LMS team set out to revolutionise the way employees were trained. They began by meeting with stakeholders and determining the best content for their budget, devising a custom lesson plan with sections, chapters, assessments, and searchable documents. To ensure maximum share-ability and reusability, they designed the e-learning and LMS materials in small, manageable chunks. The team then underwent extensive training on operating the LMS, uploading content and assessments, and rolling out assessments. With their new expertise in instructional design, they generated reports to evaluate the system's feasibility, usage, and decision-making improvements, which were accessible to managers. To introduce the new LMS system to all

employees, the team leader created a buzz and explained its benefits, while addressing any concerns through FAQs, email, and chat bots. The team also engaged with end-users for 3 to 6 months, offering support until they were comfortable with the system. To ensure all employees received the same training, the LMS team created a culture module that everyone had to complete, tracking progress and coaxing people into using it. With their efforts, the LMS team successfully implemented the system, allaying fears and improving the training experience for employees.

IT resources that were needed for LMS implementation included authoring and delivery environments. The authoring environment required hardware and software for creating e-learning courses while the delivery environment required equipment and software for taking courses. The Technical/Functional Advisory Committee decided on courses to develop, identified subject matter experts, and approved content. SMEs developed content and acted as instructors/guides. HR support was needed to reward the learning community and motivate learners.

Collaboration with the IT team

The LMS team worked with the IT department to establish standards and address issues such as software installation, server space, customisation, maintenance, and ongoing support. Service level requirements were outlined to avoid user complaints, and the e-Learning Help Desk was equipped and trained to handle various hardware and software issues. The collaborative effort resulted in increased system reliability, more course completions, and effective knowledge management.

Road Blocks in LMS Implementation

LMS implementation faced roadblocks from within the SAP-HR team who were resistant to external options. Arjun Sawhney used negotiation to get a buy-in. The LMS team addressed concerns about privacy and security and successfully migrated employee data. IT and finance departments were also onboarded. Mr. Sunil encountered denial, emotional response, exploration, and acceptance stages to implement LMS (Refer figure 4). Eventually, SAP team saw the

benefits and provided full support for successful implementation. It is important to identify key people to actively support and advocate change.

Sawhney played a crucial role in negotiating with the head of the SAP-HR team, Mr. Ramesh Kumar, to get his buy-in for the LMS implementation. Sawhney used his charm, position, negotiation skills, and power to convince Kumar to accept the fact that the user department could reject the existing ERP offering and evaluate external LMS options. This was necessary to overcome the primary roadblock in the LMS implementation that had arisen from within the existing SAP-HR team. Sawhney also ensured that the IT team was involved in the selection process and that the infrastructure supported the new LMS system.

Sunil ensured that the SAP-HR team, who were reluctant to accept the implementation of LMS, understood the benefits of the new system. He addressed their concerns about data security and explain how LMS would help the organisation. Sunil also ensured that the IT team was an integral part of the selection process for LMS and that the infrastructure supported the new system.
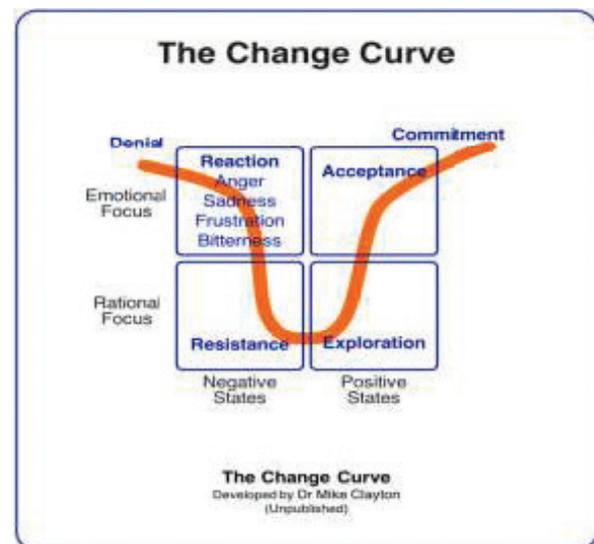
Figure 4: The Change Curve (Developed by Clayton, 2020)

MAKING VIRTUAL LEARNING A SUCCESS- CHANGE MANAGEMENT

Arjun Sawhney convinced top management about the benefits of virtual learning through tall talk and supporting data. Despite resistance from IT

and traditional trainers, the LMS team became technosavvy and patient to overcome technical issues and anxiety.

The LMS team followed the following process:

Sell the idea within the company: The first step was to persuade the line management that moving to technology-supported learning was important. This was crucial for the plan to work.

Involve existing internal trainers: Instead of venturing out to external vendors, the LMS team build confidence of their own trainers. They would be the first to be affected by a change in favour of new technologies. Their insecurities were handled positively by encouraging them to acquire new skill sets and taking over new roles.

Create Processes: The LMS team paid attention to creating well-defined processes for development and delivery training technology. This facilitated smooth functioning of the new system. They shard document processes internally and generated wider, common understanding of ground rules.

Rethink, rethink, and rethink: A lot of changes were on the way. New skills sets and roles was introduced – instructional technologies, web masters, applications programmers, network engineers and graphic artists. Infrastructure and equipment like digital media, high-end desktop computers, network and web servers, software, etc., were required.

Prepare for Change: As the trainers' jobs changed, they used more electronics in the classroom. Chalkboards and flip charts were replaced by laptop computers with presentation software that can be linked to LCD screens. On a website, thick training guides were printed on paper. Trainers had to change how they thought and learn new skills to deal with new tools and ways to learn.

CONCLUSION

The LMS team introduced the LMS process and set up the system. This changed the way employees felt about taking on new projects, which made the organisation ready for continuous change and a Learning Organisation. The organisation used Figure 5 model to move towards becoming a Learning Organisation. They knew it was important to accept change as a constant process in order to stay ahead of the game. This made them a lively, forward-thinking organisation that was ready for whatever the future might bring.
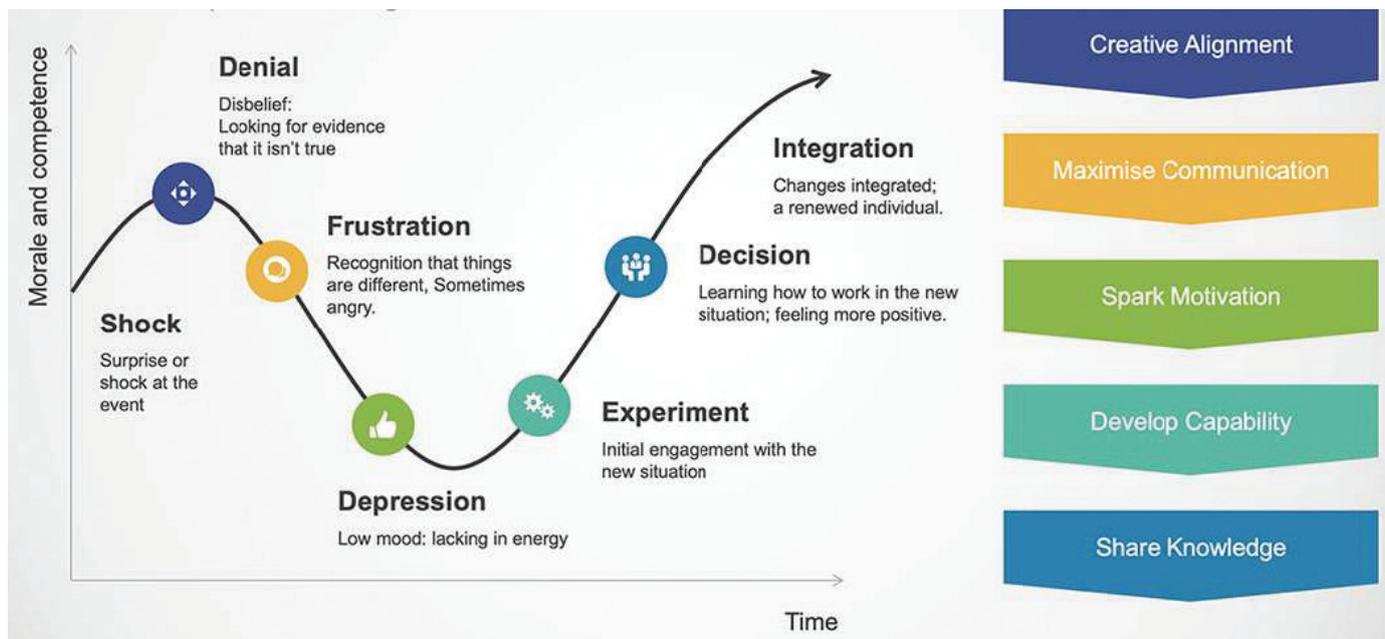
Figure 5: The Kubler-Ross Change Curve (Wiggins, 2008).

Journey So Far

Classroom Training Management

Exhibit 1: Training Program Launched through LMS

Training Topics	2012	2013	2014	2015	2016	2017	2018	Grand Total
Behavioural	26	64	69	61	85	72	27	404
Functional	26	38	71	101	50	58	27	371
Generic	20	39	27	22	32	13	17	170
Grand Total	72	141	168	184	167	143	71	946

Exhibit 2: E- Learning Content courses utilisation data

Training Content	2012	2013	2014	2015	2016	2017	2018	Grand Total
Assessment	320	730	827	201	9	16429	194	18710
E-Learning Content	36	114	593	57	77	255	175	1307
Training Material	117	205	234	57	1280	656	17	2566
Grand Total	473	1049	1654	315	1366	17340	211	22408

Exhibit 3: Virtual Classroom Training Launch Data

Training Content	2012	2013	2014	2015	2016	2017	2018	Grand Total
Virtual Classroom Training	100	120	50	70	12	32	10	394

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DISCUSSION QUESTIONS

1. How does a Learning Organisation contribute to the success of businesses in the 21st Century?

2. What competencies should team members possess when initiating a change related to Learning Organisations?

Introduction to Sustainable Development

Editor: Martin J. Ossewaarde

New Delhi, SAGE, Year of Publication: 2018,
ISBN 978-93-528-0646-1) Pages: 265, Price: Rs.350

Reviewed by Santosh Dhar* and Upinder Dhar**

Sustainable development at its core is an approach to development that looks to balance different, and often competing, needs against an awareness of the environmental, social and economic limitations that the society faces. All too often, development is driven by one particular need, without fully considering the wider or future impacts. The focus of sustainable development is far broader ensuring a strong, healthy and just society. This means meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.

The book under review has Three Parts and 12 Chapters.

Part I on –The Case for Sustainable Development – has three chapters: A Matter of Urgency, Roots of Unsustainable Development, and Sustainability – A New Direction for Development. According to author, the consequences of unsustainable development are serious and roots to unsustainability need to be investigated so that mistakes are not repeated, though world viewers differ in opinions about the deeper causes. Globalisation is viewed as playing a subtle role in environmental degradation as it limits States' ability to act but it also spreads environmental technologies and management systems. Awareness and sustainable development literacy are essential for obtaining meaningful outcomes.

Part II on –Stakeholders and Tools - has five chapters: Enabling and Motivating People to Take Action, *Changing Behaviour, Institutions and Technology, The Public Sector Tasks – Co-ordination and Implementation, The Private Sector – Business and Civil Society and From Global Concern to Local Action.* The author opined that all types of education and training and all sectors of society should participate in order to involve every individual, organisation and community in the transition. A sustainability initiative achieves little as long as individuals in isolation do it. Co-operation may increase scope through new or reformed institutions. New and adapted appropriate technology adds more effectiveness.

The more institutions work together for sustainability, the faster that future will arrive. Even in the absence of a proactive government, businesses and communities can work towards that long-term goal. Civil society steps in where business and government remain inactive in the face of social or environmental injustice. With strong roots in society and some outside support, NGOs can provide high quality output and become valuable partners for business and government in pursuit of shared goals. Solutions to climate change and poverty require changes in behaviour, institutions and access to technology. Sustainability measures in energy, transport food and water have positive impacts in poverty reduction.

Part III on –Key Areas for the Transition - has Four chapters: Energy for Sustainable Development, Making Cities More Sustainable, Sustainable Food and Agriculture, and Green Economy in the Context of

*   Rector & Dean, Faculty of Doctoral Studies & Research and Dean, Faculty of Management. Email: santosh_dhar@hotmail.com
** Vice Chancellor. Email: vc@svvv.edu.in, upinderdhan@gmail.com
 Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore.

Sustainable Development. These chapters highlight that energy is a master resource so making energy supply and use more inclusive and sustainable provides a major contribution to the future we want. The greening of cities is among the most important contributions to the sustainability transition. Cities need to take care of land-use and forest cover in nearby watersheds, otherwise, they may suffer regular flooding and high costs for purifying drinking water.

Sustainable Development perspective emphasises that supplying the world with healthy, nutritious food is more than a matter of increasing production as it affects economic, social and environmental sustainability of the agriculture sector. Social and environmental issues continue to grow bigger. It is believed that Green Economy is the kind of coherent strategy that could start the transformation of the economy and society. In the green economy context sustainable development is the final stage, because its explicit purpose is to improve human and ecosystem well-being in tandem. Even if an inclusive green economy will be the end stage of the transition process, ongoing development of a sustainable nature will and should occur.

The book provides insights into sustainable interventions for sustainability transitions and the major challenges to sustainable development. The book explains in a simple way how a large purpose generates its logical processes and resources. The approach followed is logical, and contextually relevant, aiming at presenting a big picture of the challenges for the future. The challenge of sustainable development is to chart a path for humanity through the safe and just space between the social minimum and the environmental maximum boundaries.

Examples from developing and industrialised countries are used to show that sustainable solutions are good for the world we live in. The readers get motivated towards truly inclusive and environmentally sustainable choices. It inspires them to become change makers for the sustainable development in their families, companies and communities. It helps them to see that sustainable types of development are necessity, not luxury. The book is a welcome addition to the treasure of knowledge. Policy makers, researchers, academicians and institutions have a lot to draw from the book.

HR Disrupted: It's Time for Something Different

by Lucy Adams

Kogan Page, Year of Publication: 2017,

ISBN-10: 0749473913, ISBN-13: 978-0749473914

Reviewed by Dipam Raval*

Lucy Adams' "HR Disrupted: It's Time for Something Different" is an engaging and thought-provoking book that challenges traditional human resources practices and offers a fresh perspective on how HR can adapt to the changing world of work. With her extensive experience in HR leadership roles, Adams provides valuable insights and practical strategies for HR professionals to navigate the complex challenges of the modern workplace.

Chapter 1: Rethinking HR's Role in the Modern Workplace

In the opening chapter, Lucy Adams sets the stage by highlighting the need for HR to adapt to the changing dynamics of the modern workplace. She argues that traditional HR practices are outdated and no longer effective in meeting the needs of organisations and their employees. Adams challenges HR professionals to redefine their role and become strategic partners in driving business success.

Chapter 2: Talent Management in the New Era

Adams investigates into the empire of talent management, emphasising the importance of attracting, developing, and retaining top talent. She provides practical strategies for HR professionals to move beyond traditional recruitment and performance management approaches. The chapter offers insights on creating a talent-focused culture and nurturing the potential of employees through effective development programs.

Chapter 3: Enhancing Employee Experience

In this chapter, Adams explores the concept of employee experience and its impact on organisational performance. She discusses the need for HR to go beyond mere employee satisfaction and focus on creating a meaningful and engaging workplace environment. Adams presents case studies of organisations that have successfully designed and implemented employee experience initiatives, providing actionable advice for HR professionals.

Chapter 4: Leadership Development for the Future

Adams turns her attention to leadership development and argues that HR needs to play a pivotal role in shaping future leaders. She challenges conventional leadership development practices and advocates for more personalised and experiential approaches. The chapter offers practical frameworks and tools for HR professionals to identify and nurture leadership potential within their organisations.

Chapter 5: Performance Management Reimagined

Performance management is a topic of significant concern for many organisations, and Adams tackles it head-on in this chapter. She criticises traditional performance appraisal systems and proposes

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* Assistant Professor, Darshan Institute of Management, Darshan University
   Email: dipam.raval20@gmail.com.

alternative approaches that focus on ongoing feedback, coaching, and development. Adams shares real-life examples of organisations that have successfully transformed their performance management practices, providing valuable insights for HR professionals.

Chapter 6: The Role of Technology in HR Transformation

Technology is a disruptive force in all areas of business, including HR. Adams explores the potential of emerging technologies, such as artificial intelligence and automation, to revolutionise HR practices. However, she emphasises the need for a human touch and cautions against overreliance on technology. The chapter offers guidance on leveraging technology as an enabler rather than a replacement for human interaction.

Chapter 7: Collaboration and Partnerships

Adams highlights the importance of collaboration between HR and other functions within an organisation. She explores how HR can effectively partner with other departments to drive organisational success. The chapter provides insights on building strong relationships, aligning goals, and overcoming barriers to collaboration. Adams emphasises the need for HR professionals to step outside their traditional silos and work towards a shared vision.

Chapter 8: HR Disrupted: The Journey Ahead

In the final chapter, Adams summarises the key takeaways from the book and provides guidance for HR professionals embarking on their disruptive journey. She encourages HR professionals to take risks, challenge assumptions, and experiment with new ideas. Adams emphasises the need for continuous learning and adaptation to stay ahead in an ever-changing business landscape.

"HR Disrupted: It's Time for Something Different" is a comprehensive and thought-provoking book that challenges HR professionals to rethink their practices. Lucy Adams' practical insights and real-world examples make the book highly relevant and actionable. By addressing various HR domains, Adams offers a holistic approach to HR transformation. This book is an invaluable resource for HR professionals seeking to make a meaningful impact and drive positive change within their organisations.

Indian Journal of Training and Development

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Indian Journal of Training and Development (IJTD) is a quarterly journal of Indian Society for Training and Development. It caters to the needs of academics, corporate professionals and practitioners in the field of learning and development. It invites original contributions for its forthcoming issues.

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(3) **Cases or case study of an organisation** (between 2500-3000 words) with approval of the organisation.

(4) **Book Reviews:** The review of a recently published book relating to learning and development/human resource management.

The diagrams, images or pictures should be in high resolution and with image source. Graphs and tables should be in MS word format (on a separate sheet) and marked for insertion at the appropriate place in the text. All the submissions should be sent to *chiefeditor@istd.in* and *ijtd@istd.in*.

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TRAINING CALENDAR FOR THE YEAR 2023-24

S. No.	Program Name	Duration	Dates
1	POSH Certified Trainer's Program	Three Days	01st - 03rd Feb 2023
2	Certified Train the Trainer Program	Four Days	21st - 24th Feb 2023
3	International Conference on Human Capital Development for Energy Transition (ISTD Knowledge Partner)	Two Days	27th-28th Feb 2023
4	International Conference on "Gender Equal Nation Building"	Two Days	10th - 11th Mar 2023
5	ISTD Foundation Day	One Day	10th April 2023
6	NLP Practioners' Workshop (Classroom)	Four Days	26th - 29th April 2023
7	ISTD Youth Festival 2023	Two Days	25th - 26th May 2023
8	POSH Certified Trainer's Program	Three Days	31st May - 2nd June 23
9	Certified Train the Trainer	Four Days	26th - 29th July 2023
10	32nd Innovative Training Practices Award 2021-22	One Day	3rd August 2023
11	International Youth Day	One Day	12th Aug 2023
12	Gender Equal National Building - SOUTH	One Day	Oct / Nov 2023
13	Mental Health Day	One Day	10th October 2023
14	POSH Certified Trainer's Program	Three Days	25th - 27th Oct 2023
15	Leadership Development Program	Three Days	November 2023
16	33rd Innovative Training Practices Award Program 2022-23	One Day	December 2023
17	National Convention 2023	One Day	15th - 16th Dec 2023
18	Gender Equal National Building – NORTH	One Day	January 2024
19	Certified "Train the Trainer" Program	Four Days	January 2024
20	HR Analytics for Enhanced Performance	Four Days	February 2024
21	Gender Equal National Building – EAST	One Day	March 2024
22	Internationally Certified Trainer Program	Five Days	March 2024