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To Train or Not To: Validating training effectiveness

Summary:

This study aims to create and validate an integrated scale to measure and to optimize training effectiveness of entry level executive trainees referred as “learners”. It is essential to gauge trainee’s satisfaction and the role played by various learners’ factors in both setups, owing to its criticality in the current uncertainty. The initial items of the scale were developed by reviewing existing literature related to trainees' satisfaction in both virtual and conventional learning setups. This followed with modified scale development backed with two Focused Group Discussion (n=5), Expert Validation, Pilot Survey (n=15), Exploratory Factor Analysis (n=131), and a Confirmatory Factor Analysis along with construct validity (n=201). The paper concludes with establishing relationships of various factors from a learner’s perspective that influence learning outcome and learning satisfaction. The paper also recommends how the training effectiveness can be assessed using the Integrated Training Effectiveness Scale to know the effectiveness of trainees.

Keywords: Training and Development, Learning and Growth, Scale Development, Learning Satisfaction

Track: Human Resource Management

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Introduction

Training and development activities impact individuals, teams, organizations, and society by enhancing national economic performance (Aguinis & Kraiger, 2009). Recent research studies on training have also examined the beneficial impact of training and development on job-related outcomes (Bell et al., 2017; Chaudhry et al., 2017). For instance, training and development activities are known to impact the effect of job commitment on job satisfaction (Aruldoss et al., 2022). Therefore, it is essential to measure the effectiveness of training and development programs to produce more effective results. Extant literature on the effectiveness of training programs focuses majorly on training methodology, content, etc., in order to gauge the positive outcomes experienced by the attendees/ learners in the training program (Kirkpatrick, 2015). However, studies have yet to examine the role of learners, which is also essential in making a training program effective as it significantly impacts the learning process (Baldwin & Ford, 1998). Our paper aims to examine the effectiveness of training and development programs through the lens of learners by developing a scale to address the gaps in extant literature. This study has implications for managers who can use this scale to study which training program may benefit which kind of learner and nominate employees for the program.

Aim and Objective:

- To assess the importance of training and related development programs in a post-pandemic context
- To develop and validate Integrated Training Effectiveness Scale (ITES) to gauge the level of training satisfaction of entry level executives
- Assess the impact of behavioural characteristics, learning motivation and peer collaborative nature of learner on learning outcome and learning satisfaction to gauge training effectiveness.

1. Literature Review

1.1. Behavioral Characteristics of Learners

Behavioral characteristics can be defined as characteristics specific to an individual which are known to impact the learning. Different behaviours exhibited by the learners help them in different aspects of learning. For example: “note taking behavior” is recognized as constructive learning (Tynaja, 1990). It helps in retention of the learning and in focusing upon

important concepts taught. Researchers were able to link this behavior with the characteristics of the learners (Nakayama, Mutsuura, & Yamamoto, 2011). Baldwin and Ford (1998) also identified that transfer of learning is significantly dependent on trainee characteristics, work environment and training design. Similarly, it has been found that proactiveness is positively related to learning goal orientation (Brown S. & O'Donnell E., 2011). According to the findings, it was noted that proactiveness increases the motivation to learn which in turn leads to better learning performance. As per William McDougall's instinct theory, goal-oriented behaviours are motivated by instincts of an individual which makes learning possible as learning itself is "goal oriented". Another such characteristic that finds much relevance is "self-regulation". It is an individual directive process through which the learner transforms mental abilities to task related skills (Zimmerman, 2001). He researched upon 4 levels of self-regulation i.e. observation, emulative, self-control and self-regulation. The final level according to him has been achieved when the learner is able to adapt the behavior as needed independent of the teacher using one's own internal resources. It is known to be a very important aspect of learning as learners need to control various resources available to them like: time for learning, study environment, help from instructors and peers.

1.2. Peer Collaboration among Learners

Collaborative learning theory took its birth in the studies conducted by Lev Vygotsky. According to his findings, learners have strong reliance on each other to accomplish a task assigned to them else they would not be able to perform it if it was assigned to them on an individual basis. Early research established that in a collaborative learning environment, learners generally perform better than their peers who study alone irrespective of the level of learning achievement. (Aitken, 1982). Later, studies were conducted in the area of peer collaboration across different clusters/groups to measure its effect on learning. One such research which focused on teachers specifically, concluded that collaboration amongst teachers has been reported to be one of the strongest indicators in development of teachers (Sparks, 2002). With the advancement in technology, researchers started using different tools and techniques to measure the impact of peer collaboration. Duncan, D. (2005) assessed the use of clickers (wireless response systems) for learners to become active participants, not merely passive listeners. His studies showed that if the learners are allowed to discuss their answers with their neighbors before responding, the impact is even stronger. Even though the nature of this construct is highly unstructured, owing to the nature of interaction as no specific roles or tasks are provided to the learners, it is one of the most essential aspects of the learning

process as it ensures convergence of knowledge, ideas, and creativity. With the boom in the technologies today, there are several ways in which peer collaboration can be achieved even virtually. Collaboration tools like mural, zoom, mails etc., saw a huge rise particularly during the time of pandemic that helped facilitate learning to a very large extent and are being extensively used even today post pandemic.

1.3. Learning Satisfaction

Extensive research has been conducted in the area of learner satisfaction. Early researchers Hatcher, Prus, Kryter and Fitzgerald (1992) assessed learners' satisfaction with learning performance in terms of investment. According to the investment theory established by them, a learner perceives their energy, time and effort as an investment and seeks a return on their investment. Later on, Hartman and Schmidt (1995) examined learner satisfaction as multi-dimensional construct which depends largely on the degree of goal development established by the learner. The study reflected that, if the learners have poorly formed goals for an aspect of learning, they are likely to base their satisfaction judgments on the outcomes of the institutional training performance. Elliott, K., & Healy, M. (2001), defined learner satisfaction as a “short term attitude” which is greatly influenced by the learner’s evaluation of learning experience. The researchers conducted a survey in their research work which accounted for 11 factors of learning experience that impact learner satisfaction. The findings of their research are being applied even today, as most organisations have a strong learner feedback system which captures their learning experience through questionnaire surveys on a likert scale in order to measure how satisfied the learners are, with a particular learning session and to seek for suggestions in improving the session. It can be thus inferred that learner satisfaction is one of the strongest drivers in learning and serves as an “engine” for continuous learning intention. As per the study conducted by Ko & Chung (2014), there is a strong relationship between learning satisfaction and performance of the learner. Jamelske (2009); Borden (1995), found that satisfied learners tend to be much more dedicated towards their learning in comparison to those unsatisfied. Their research work implied that learners who are not satisfied are more likely to indulge in absenteeism and irregularity ultimately resorting to quitting their learning process.

1.4. Cognitive Engagement of Learners

Pioneering research has been conducted to demonstrate that cognitive engagement helps in improving memory, comprehension and learning of an individual. Therefore, it is a very

critical aspect of the learning process. According to Corno & Mandinach (1983), cognitive engagement refers to the amount of efforts that an individual is willing to invest upon a task. Their research suggested that cognitive engagement is directly related to the task at hand as the task determines the degree of the student's autonomy. Psychologist John B. Biggs (1987) further examined cognitive engagement in general as opposed to a single task. His findings reflected that an individual's approach to learning is an integral part of the total system in which a learning event is located and that both the "learners" and the "teachers" are jointly responsible for the outcome. However, engaging oneself in the learning process is an individual choice (Pintrich & De Groot, 1990) and may vary depending upon self-defined goals. Further research confirmed that decreased levels of engagement leads to underachievement and negative behaviours (Finn and Rock, 1997). It was identified that learners who can pay attention and focus on learning activities are more cognitively engaged (Wang et al, 2011) as opposed to students who are distracted. To measure this construct, researchers resorted to using existing instruments that are used to measure somewhat similar constructs due to unavailability of tools to measure cognitive engagement specifically. For example: self-regulatory learning subscales (*Motivated Strategies of Learning Questionnaire* (Pintrich et al., 1991) like organizational strategies, rehearsal, elaboration, organizational strategies etc.

1.5. Learning Motivation

Learning motivation can be referred to as the overall driving force within a learner that raises, ensures continuity and provides direction for learning activities so that objectives of learning can be expected to be achieved. Learning motivation can be both intrinsic and extrinsic in nature (Cerasoli et al., 2014; Deci et al., 2017). Many experiments have been conducted to analyse extrinsic motivation. Harlow reported in his findings that monkeys who had enjoyed solving puzzles in exchange for food no longer solved them when the "reward" was taken away. However, those monkeys who were not provided with any "reward" from the starting continued to solve puzzles without any motivation. Therefore, research conducted by him does not portray extrinsic motivation to be a driving force. However, not all extrinsic motivation can be the same. Rather, it is a multi-dimensional construct consisting of a wide range of motivations that pertains to an individual's perceived notions. While extrinsic motivation is generally owing to external factors that serve as a driving force, intrinsic motivation takes birth from within. It is characterized by a strong valuation of personal engagement and investment. (Ryan and Deci, 2017). Their self-determination theory gauges

the interaction between extrinsic forces and intrinsic motives and needs. Several research works have shown that the relationship between intrinsic motivation and performance of an individual is significantly positive. In 2012, Cho and Perry conducted a study that concluded that intrinsic motivation has thrice the impact on employee engagement levels compared to extrinsic motives. The findings of the research stated that intrinsic motivation was positively associated with employee satisfaction and negatively associated with the intention to leave. Our research focuses on the intrinsic motivation of a learner that drives oneself towards effective learning.

1.6. Learning Outcome

Learning outcome has been closely linked to learning objectives and for a long time, scholars were confused regarding the practical applications of learning objective, outcome and aim (Burke, 2002). Later research defined learning outcome as a statement of what the learner is expected to know, understand and is able to do at the end of the period of learning (Donnelly & Fitzmaurice, 2005). It is a critical measure to understand the effectiveness of the entire learning process and the value addition from the learning program. Studies examine that it is imperative to decide the outcomes of learning before designing a course for effective learning. However, there have been many discussions on what the learning outcomes could be and how they must be operationalized (Pröitz, 2010). Researchers have acknowledged the existence of a “measurement problem” (Stensaker & Sweetman, 2014). In order to categorize learning outcomes, scholars take the help of bloom’s taxonomy which divides learning outcome into three domains-cognitive, affective and psychomotor (Bloom *et al.* 1956). There are different approaches to measure the learning outcome. For the purpose of our research, we have taken the help of a questionnaire survey and captured the responses through a likert scale.

2. Research Methodology

2.1. Procedure

The authors have adopted the generally accepted instrument design principles (Churchill, 1979). The following steps are involved in this study:

2.1.1. Identification of constructs

2.1.2. Literature review and item generation

2.1.3. Focus group discussion

2.1.4. Categorization of items

2.1.5. Data purification

- a. Expert validation
- b. Pilot survey
- c. Scale refinement

2.1.6. Collection of data

2.1.7. Exploratory Factor Analysis to identify construct

2.1.8. Confirmatory factor analysis to assess reliability and validity

2.2. Item Generation

The study intends to develop and validate a scale to measure the comparative learning outcome of entry level executives. Keeping young professionals in mind as the primary stakeholder, various discussions were conducted to gain insights. An extensive review of the literature was the primary source of items generated for further refinement. Three focused group discussions were held with five members each. The objective of the focus group discussion was to check the readability of the items. Findings of the focus groups proposed that all the items were easily understood.

2.3. Item Purification

After this process, the items were sent to domain-specific experts. Two of the four experts contacted agreed to validate the item. As per the suggestions taken from the experts, some redundant items were dropped, and overlapping items were merged. Experts also validated the reverse nature of items that need to be converted correctly during analysis. A pilot survey

was conducted to reconfirm the face validity of the item. Twenty entry level professionals were contacted. All 20 volunteers agreed to review the construct. These volunteers were asked to respond to the items on a 5-point Likert Scale ranging from "Strongly Disagree to Strongly Agree." The result showed that all the elements were easy to understand. Few of the items needed minor modifications.

2.4. Data Collection

- A survey instrument was employed to collect views and opinions of respondents across different organizations in India including IT, manufacturing, and consulting industries.
- The sample population comprised of recently joined entry level executives with less than two years of corporate experience.
- Questions in the survey instrument aimed to probe respondents regarding their experience and their perception of personal learning outcomes of training sessions.
- Responses were obtained by means of a 5-point Likert scale.

2.5. Data Analysis

Collected data were cleaned by making sure any duplicate or missing entries. After deleting cases with missing values and invalid responses, 201 responses out of 240 complete cases were used for data analysis. This study's number of observations per variable met the desired ratio (5:1) (Hair et al., 2014). SPSS 25 was used to analyze data for exploratory factor analysis, and AMOS 23 was used to do confirmatory factor analysis.

2.6. Exploratory Factor Analysis

Dimension structures of executives learning outcomes were identified using principal component analysis and varimax rotation. The minimum factor loading criteria was set at 0.5 (Leech et al., 2005). The amount of variance in each variable was assessed through

communalities. All the communalities' values were over 0.40. The factor solution yielded 67.239% of variation spread across three factors. All the factors having a significant loading were identified.

Factor analysis was re-run after eliminating items on the following basis:

- Failed to load substantially
- Cross Loading across factors

The final factor analysis, as shown in (Table 1) Kaiser-Mayer-Olkin MSA to be 0.886, indicates the sample's adequacy. Bartlett's test marked the overall significance of the correlation matrix. The result as indicated in (Table 2) showed a five-factor solution having an eigenvalue greater than 1 with a 67.239% variance explained by items.

Table 1

<i>KMO- Bartlett's Test of Sphericity</i>			
KMO-MSA	χ^2	df	P
0.886	2693	253	< .001

Table 2

<i>Summary</i>			
Component	Loadings	% of Variance	Cumulative %
1	8.415	15.634	15.634
2	3.436	15.141	30.774
3	1.457	13.271	44.045
4	1.157	12.423	56.468
5	1	10.771	67.239

Table 3*Results from Factor Analysis of Integrated Training Effectiveness Scale (ITES)*

	Factor Loading				
	1	2	3	4	5
I confidently interact with everyone during my learning session	0.787				
I comfortably put forward my opinion during learning sessions	0.752				
I actively contribute during learning sessions	0.756				
I feel connected to the learners who are in my learning sessions		0.709			
I share notes and learning resources with my co-learners		0.746			
I try to help other learners in my learning sessions		0.68			
I interact with my co-learners to work for projects and assignments		0.721			
I prepare myself for the assessments and tests that are a part of my learning sessions			0.669		
I try to explore and learn new things about the topics taught in my learning sessions			0.735		
I try to manage my learning schedule effectively			0.548		
I am glad with my learning progress				0.771	
I feel satisfied with my learning outcome				0.757	
I have grown as a professional because of my learning session				0.648	
My learning has made me more efficient as a person					0.651
I am able to inculcate the learnings in myself					0.601
I am able to use my learning to solve different problems					0.623
My learning sessions help in improving my skillset					0.699

Cronbach's alpha values for the three-dimension ranged from 0.761 to 0.882 (Table-4) demonstrating adequate reliabilities (Hair et al., 2014).

Table 4

Results of Reliability Analysis

Sl. No.	Dimension	Cronbach's Alpha	No. of Items
1	A	0.802	3
2	B	0.815	4
3	C	0.761	3
4	D	0.881	3
5	E	0.882	4

2.7. Confirmatory Factor Analysis

Models were tested using structural equation modelling. To assess goodness of fit, composite reliability, convergent and discriminant validity, SPSS AMOS 23 was employed. The measurement model confirms the relationship between the latent variable and its corresponding observed measure. The model offers a good fit to the data ($\chi^2 = 2693$, $df = 253$, $GFI = 0.894$, $RMSEA = 0.067$, $TLI = 0.934$).

Table 5

Model Fit Indices

Fit Indices	Recommended Value	Value
CMIN/df	≤ 5	1.894
CFI	≥ 0.9	0.947
GFI	≥ 0.9	0.894
TLI	≥ 0.9	0.934
SRMR	≤ 0.8	0.056
RMSEA	≤ 0.8	0.067

2.8. Reliability and Validity Analysis

The reliability of the model was assessed by composite reliability (CR). Composite reliability equal to and above 0.7 is considered good (Malhotra, 2010). Convergent validity was evaluated by examining AVE (Hair et al., 2014). Constructs should measure distinctly from

other constructs in a model and their indicators. Fornell-Larcker Assessment was used to detect discriminant validity among constructs.

2.9. Fornell-Larcker Assessment

All the AVE values of particular constructs are recommended to be greater than the corresponding constructs (Fornell & Larcker, 1981). All bold values in Table-7 indicate AVE and the AVE's value along with corresponding vertical values of other constructs. The bolded values were observed to be greater than the corresponding vertical value.

Table 6

<i>Factor Loadings and Composite Reliability</i>				
Factors	Items	Factor Loading	CR	AVE
<i>A</i>			0.807	0.584
	B2	0.667		
	B3	0.853		
	B4	0.763		
<i>B</i>			0.817	0.53
	B10	0.784		
	B11	0.677		
	B12	0.785		
	B13	0.655		
<i>C</i>			0.768	0.528
	B32	0.757		
	B33	0.791		
	B34	0.62		
<i>D</i>			0.881	0.712
	B21	0.852		
	B22	0.757		
	B23	0.816		
<i>E</i>			0.885	0.659
	B15	0.852		
	B16	0.863		
	B17	0.829		
	B18	0.691		

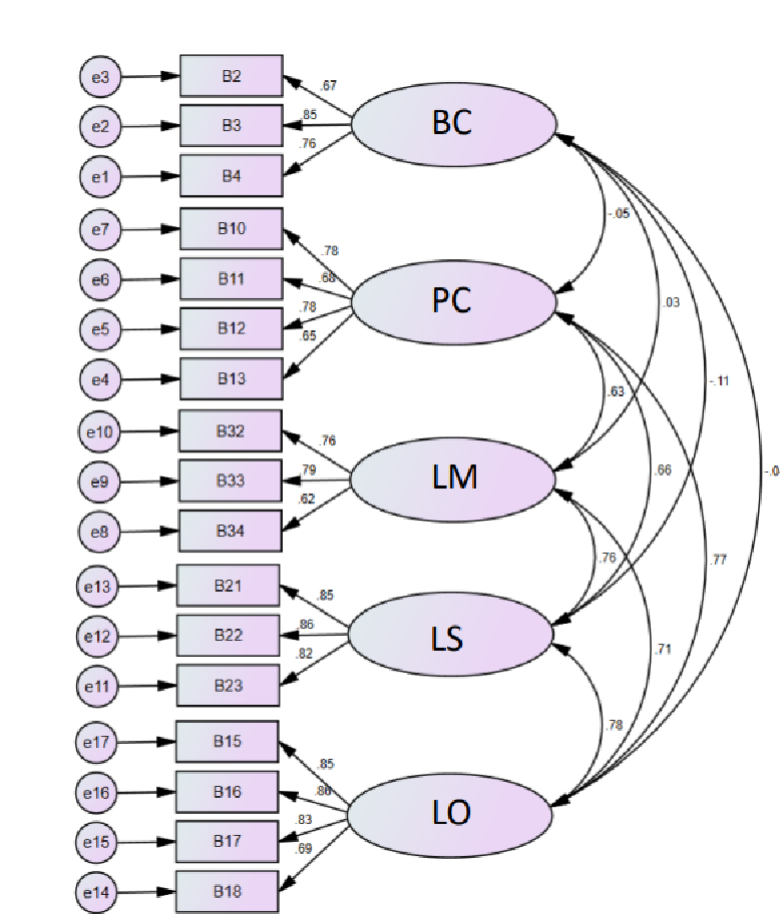
Table 7

Results from Fornell-Lacker Assessment

	A	B	C	D	E
A	0.764				
B	0.051	0.728			
C	0.032	0.629	0.727		
D	0.111	0.665	0.705	0.844	
E	0.043	0.677	0.714	0.778	0.812

Figure 1

Structure Coefficients of the Integrated Training Environment Scale



3. Regression Analysis

3.1. Objective: To investigate if Behavioural characteristic, Peer Collaborative Nature and Learning Motivation of learner has a significant impact on Learning Outcome

3.1.1. Hypotheses:

H1: *There is a significant impact of learner's behavioural characteristics on learning outcome*

H2: *There is a significant impact of peer collaborative nature on learning outcome*

H3: *There is a significant impact of learning motivation on learning outcome*

The dependent variable LO was regressed on predicting variable Behavioural characteristic, Peer Collaborative Nature and Learning Motivation of learner to test the hypothesis. Two of the three independent variables Peer Collaborative Nature and Learning Motivation except Behavioural Characteristics significantly predicted Learning Outcome, $F(3,198)=77.820$, $p<0.001$, which indicates the factors BC and LM play a significant role in shaping LO. Moreover, $R^2=0.541$ depicts the model explains 54.1% of the variance in LO.

Hypothesis	Regression Weights	B	T	P-Value	Hypothesis Supported
H1	BC→LO	-0.027	-0.762	0.447	No
H2	PC→LO	0.481	8.18	0.000	Yes
H3	LM→LO	0.367	7.19	0.000	Yes
R^2	0.541				
F (3,198)	77.820				

3.1.2. Discussion

- **Behavioural Characteristics and Learning Outcome:** It can be inferred from our study that there exists a negative relationship between the learner's behavioural characteristics and the learning outcome. Our research considers behavioural characteristics in terms of nature of interaction, urge of learnings, putting forth opinions and answering questions. A learner's behavioural characteristics can only be particularly useful by creating tailored learning courses for a target group. Taking the

target group's characteristics into consideration while designing a course (personalized learning) can lead to effective learning outcomes owing to increase in motivation, understanding and engagement (Pontual *et al*, 2018).

- **Learning Motivation and Learning Outcome:** Strong positive relationship exists between learning motivation and learning outcome. Recent research studies have also tested the link between motivation and quitting the learning process by applying expectancy value theory (Schnettler *et al.*, 2020). It was found that low study motivation could be one of the most important predictors of study dropouts (Jiang *et al.*, 2018).
- **Peer Collaboration and Learning Outcome:** Positive relationship could be established between peer collaboration and learning outcome. It has been found that peer performance rewards are imperative to collaboratively achieve the goal which in turn can lead to increase in motivation to learn and thus result in an effective learning outcome (Bartol & Srivastava, 2002). Research studies have shown that when isolated, learners had a decreased level of motivation owing to which they could not learn effectively.

3.2. **Objective:** To investigate if Behavioural Characteristic, Peer Collaborative Nature and Learning Motivation of learner has a significant impact on Learning Satisfaction

3.2.1. Hypotheses:

H1: *There is a significant impact of learner's behavioural characteristics on learning satisfaction*

H2: *There is a significant impact of Peer Collaborative nature on learning satisfaction*

H3: *There is a significant impact of Learning Motivation on learning satisfaction*

The dependent variable LS was regressed on predicting variable Behavioural characteristic, Peer Collaborative Nature and Learning Motivation of learner to test the hypothesis. Two of the three independent variables Peer Collaborative Nature and Learning Motivation except Behavioural Characteristics significantly predicted Learning Outcome, $F(3,198)=64.531$, $p<0.001$, which indicates the factors BC and LM play a significant role in shaping LS. Moreover, $R^2=0.494$ depicts the model explains 49.4% of the variance in LS.

Hypothesis	Regression Weights	B	t	P-Value	Hypothesis Supported
H1	BC→LS	-0.091	-1.996	0.047	No
H2	PC→LS	0.414	5.557	0.000	Yes
H3	LM→LS	0.533	8.241	0.000	Yes
R ²	0.494				
F(3,198)	64.531				

3.2.2. Discussion

- Behavioural characteristics and Learning satisfaction:** Negative relationship was established between both the behavioural characteristics and learning satisfaction. If the learner has a strong learning goal orientation as a characteristic, the individual is thus more interactive in class, puts forward relevant points while also indulging in discussions. Such proactive characteristics of an individual translate into actual effort and effective learning outcomes (Brown & O'Donnell, 2011). This enhances the learning experience of the individual thereby increasing the satisfaction level. However, the above can only be true when there is personalized approach based on the behavioural characteristics is taken to design the training course to make it more effective.
- Learning Motivation and Learning Satisfaction:** Strong positive relationship exists between Learning motivation and learning satisfaction. The more invested the learners are (in terms of time spent in learning, efforts etc.), the more cognitively engaged the learner is. The cognitive engagement further translates to the satisfaction of the learners in the learning process. Studies showed that lack of interaction with instructor leads to lesser engagement and thus decreased learning satisfaction (Martin *et al.*, 2018).
- Peer Collaboration and Learning Satisfaction:** Positive relationship could be established between peer collaboration and learning satisfaction. Engaging in collaborations enhances the learning experience of the learners thus leading to an increase in learner satisfaction. Strokes (2003) conceptualized the collaborative learning activities with learning satisfaction. It has been found that collaborative

learning enables learners to engage themselves in high quality social interaction (Visschers-Pleijers *et al.*, 2006) thereby enhancing their learning experience and increasing their overall satisfaction.

4. Implications

4.1. The scale has various implications:

- a. The five-factor scale can be used to gauge trainee's preparedness towards shifting to virtual settings from a conventional training approach.
- b. This scale can identify the level of trainer's satisfaction in a virtual scenario and redraft training approach to optimize effectiveness of the training module.

4.2. Also, the findings of the paper can be implied to gauge the effectiveness of training module and make essential changes based on the factors that influences the learning outcome and learning satisfaction.

4.3. The research results can also be used to address the attrition of entry level executives due to ineffectiveness of training programs.

5. Limitations and Future Research

The study used a sample of entry level executives with a set of developed training infrastructure and stakeholders with adequate technological awareness. Another limitation of this research is that it only captures the trainee's perspective. It is recommended for authors to validate this scale in different training contexts other than entry level executives' training module. The factors listed in the paper are not exhaustive in nature hence it is recommended to experiment the influence of different factors on training effectiveness of a module in both conventional and virtual scenario. It is also suggested to explore the possibility of hybrid training module that may be relevant and easily implementable.

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