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CREATING A LEARNING PULL – TRIZ Business & Management Use Case

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Abstract

L&D head of an information technology organization has been challenged with a problem that there is not enough pull for learning interventions being offered to employees at various levels.

L&D head was trying her best to design & offer interventions as part of her role while having to tackle plethora of challenges such as scanty learning budget, execution pressure, employees schedule challenges for nominating themselves for learning interventions, ever changing business processes, models, & technology landscape to address learning needs, unavailability of experts for designing customized learning interventions amongst others.

Her manager Chief Human Resource Officer (CHRO) of the organization asks Learning Head to survey and identify the 'good' and the 'real' reasons as to why there is no pull from employees for learning interventions planned for them. CHRO, who have attended TRIZ for Business Innovation Course suggested L&D head to attend the course to learn TRIZ innovation methods and engage a facilitator to explore, ideate & implement innovative solutions to address the problem.

L&D head acting on advise of a TRIZ facilitator, reaches out mainly to employees and their reporting managers to get their honest views on why there is not enough pull for the learning interventions. She captures all the statements, eliminate duplicate ones, combine related ones, records her own views, and briefs CHRO with an overall picture.

TRIZ facilitator then helped the L&D team glean insights from the collected information by using Perception Mapping Tool [1] & further assisted team formulate key contradictions, that are directly or indirectly responsible for not having a pull for learning interventions. Facilitator conducted the ideation sessions with select employees & reporting managers to generate ideas to improve the situation.

Team was asked to shortlist the initial list of ideas & implement them to change the situation from 'learning push' to 'learning pull'. This transformative project is one of the key management interest projects and was getting their requisite attention.

Ideas emerged out of this exercise are implemented and there is a huge reduction in the dropout rate from learning interventions, which narrowed down from 60 % to 15% in the span of 1.5 year. Thus, there is almost 400% improvement in the chosen business metric.

1   Step By Step Assignment Approach

A) TRIZ facilitator interacted with L&D head & her team to understand various elements of learning & development system that included various processes, internal & external stakeholders, infrastructure.

B) Facilitator then put all the collected information in the form of a mind map for ease of retrieval and for not losing sight of any element which could potentially be useful for finding ingenious solutions. (Figure 1)

C) Facilitator also engaged with employees & their managers who are the main consumers of learning interventions and understand their views & experiences as to why there is not enough pull for learning interventions. Facilitator could sense that there are lot of perceptions coming out of these interactions, so she decided to use perception mapping tool to arrive at the key contradictions.

D) Facilitator then advised L&D head to collect views of employees and their managers in more explicit manner. It was not possible to reach out to all the employees and their managers, so a sample of 100 employees and managers have been selected and asked to put their top 3 reasons for not having enough pull for learning interventions.

E) All the statements thus collected were scrutinised to eliminate the duplicate ones, combine the related ones to arrive at the final set of statements to be analysed using perception map tool.

F) The analysis of perception mapping was used to arrive at the key contradictions that needs to be addressed using TRIZ for Business & Management Framework.

G) Using TRIZ Business & Management Contradiction Matrix and Corresponding Inventive Principles team generated ideas and put out the solutions for implementation.

H) Solutions are prioritised for implementation using EPIC Framework (Ease, Permanence, Impact & Cost of Solutions)

I) Action plan with responsibility & target date was finalised and regular reviews are conducted to ensure adherence to action plan & its effectiveness.

J) Results of implementation are monitored & validated.

1.1   Mapping Learning & Development Eco-system (Step A& B detailed above)

Figure 1: Holistic View of Learning & Development Eco-System

1.2 Perception Mapping : A Step By Step Process

The process of mapping perceptions involves 5 steps. Let's begin with the first step which is to collect all the perceptions from different stakeholders [1]

1.2.1 Collection of Perceptions of Different Stakeholders

When there are several stakeholders involved in a problem they have a different perception of a given reality. In this case there are many perceptions of different stakeholders as to 'Why there is no pull for learning interventions being offered?'. It therefore became apparent to reach out to those stakeholders to get those feelings & emotions out in the form of a raw statements that can be analysed using perception mapping tool basically to identify key contradictions and then using TRIZ Business Contradiction Matrix to generate solutions to address the problem.

Table 1 on the next page captures all those perceptions that are collected from employees, their reporting managers, learning head and CHRO. These statements then are finalised after deleting duplicate ones and consolidating similar ones.

The perception mapping tool is a derivation of a tool known as a 'flowscape'. A flowscape is a tool developed by Edward De Bono in 1990

1.2.2 Construction of Flow Map of Perceptions

Refer Table 1 for perception statements. The column 'Identifier' is the code given to each individual perception. The column 'Leads To' records to which other perception this identifier perception connects to. For e.g. Identifier A 'Unable to find time for learning due to work pressure' leads to another identifier in the list Y 'Long learning curve durations of interventions' so they appear in the same row.

1.2.2.1 The map is constructed by identifying each perception and asking a question where this leads to. Every perception we identified leads to one & only perception is the rule we need to follow. For e.g. 'faculties are not competent' leads (B) leads to 'not enough practical application to help do my job better' (C). Each perception feeds into one and only one other perception.

1.2.2.2 Identify a pair or pair of perceptions representing any statements that are contradictory or in conflicting with one another

1.2.2.3 The next step is to identify type of relationship between different perceptions

There are 3 types of relationships that get formed once we construct the perception mapping diagram.

The first type is known as 'LOOP' for e.g. 'No appreciation of acquired skills' (D) leads to 'No reward & recognition post learning' (F). So D leads to F and F leads to D. Since each perception leads to one & only one another, there will be at least one loop. The loop contains two perception as a minimum or there could be many forming one large loop.

The second type is known as 'COLLECTOR POINT' where several different perceptions lead to one perception. In this example perception C is a collector point which is 'no practical application of learning' so many perceptions leads to this one perception and makes it important

The third type is when several perceptions that form a 'CHAIN' between the conflict pair identified in the step 1.2.2.2.

Thus when we map the perception map we need to focus on 'LOOPS' 'CHAINS' and 'COLLECTOR POINTS' which will be more significant for us to spot issues to be addressed.

Table 1: Perception Statements and Their Connections To Other Perception Statements

Identifier	Perception Statements	Leads To
A	Unable to find time for learning due to work pressure	Y
B	Faculties are not competent	C
C	Not enough practical application to help do my job better	G
D	No appreciation of acquired skills	C1
E	No connection between learning and individual's performance	S
F	No reward & recognition post learning	D
G	Absence of alignment of learning interventions with business benefits	E
H	Learning modules are not customized to my need	C
I	Module development cost is high	M
J	Module development time is high	I
K	Module coverage need to be expansive	Y
L	No flexibility of choosing learning time	A
M	Insufficient / No learning budget	G
N	Lack of competency in internal expertise for developing contents	A1
O	Poor identification of learning need	P
P	Lack of learning customization	C
Q	Learning is seeing as a time waster	F
R	Learning is seen as must do thing to satisfy KRA of learning & development head	W
S	Effectiveness of learning on job performance is unknown	G
T	Inaccessibility of faculty for implementation assistance	U
U	No projects are encouraged and agreed upon before learning intervention	R
V	Doesn't aid enhancing professional value	U
W	Nomination to outside program which are not expensive doesn't address my need	G

Identifier	Perception Statements	Leads To
X	Learning interventions are not able to keep pace with the changes in the work content	C
Y	Longer learning duration of interventions	A
Z	No continuous upgradation of learning module	P
A1	Learning modules need to be designed by many outside experts	J
B1	Travel is discouraged to attend learning interventions	A
C1	Inhouse learning distracts participants as they are often called by their colleagues / bosses that comes in way of the undivided attention that they need to have and hence loss of interest of participants in learning.	L

There are 4 distinct areas of learning & development system. All perceptions that are captured fell under one of these categories

a) Enrolment, Attendance & Engagement
b) Meaning of learning interventions in executing one's job
c) Motivation for Learning
d) Content Design & Supply Cost

The perception statements received from employees surveyed echoed all the above areas. After putting down these statements on perception map, it was evident that not all the statements had 'lead to' statements for connection if they belong to a distinct category listed hereabove and hence 4 separate perception maps were prepared for formulating contradictions.[2]

1.2.2.4 Perception Maps

The first set of perception statements were related to employees not enrolling or attending the learning interventions because of lack of time due to work pressure
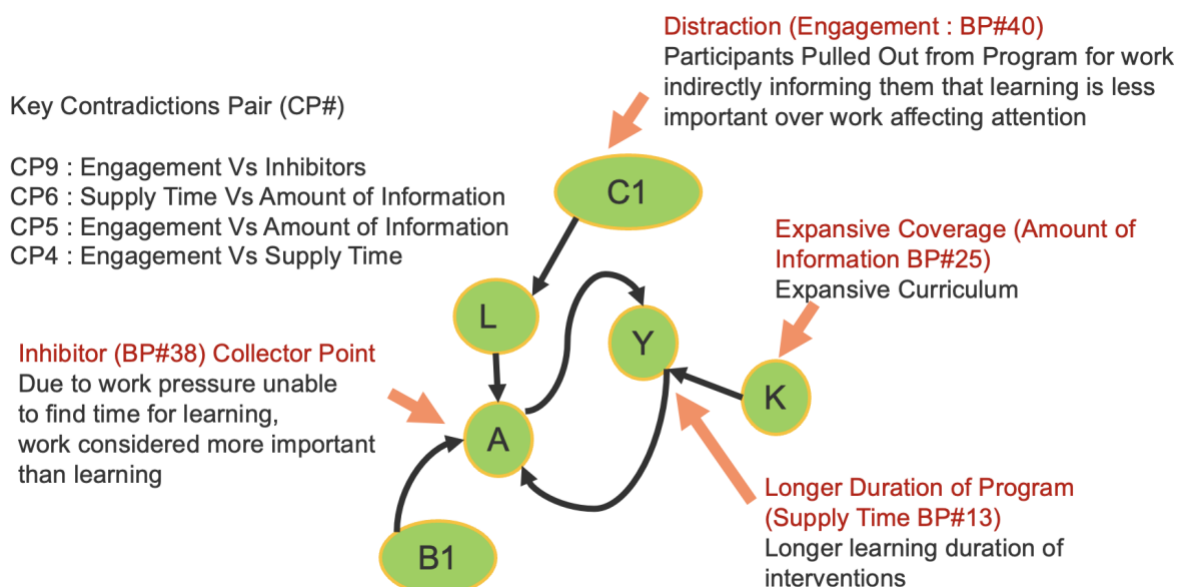

Figure 2 : Perceptions related to enrolment, attendance & engagement

The second set of perceptions were related to employees not finding meaning of learning interventions to the jobs that they do
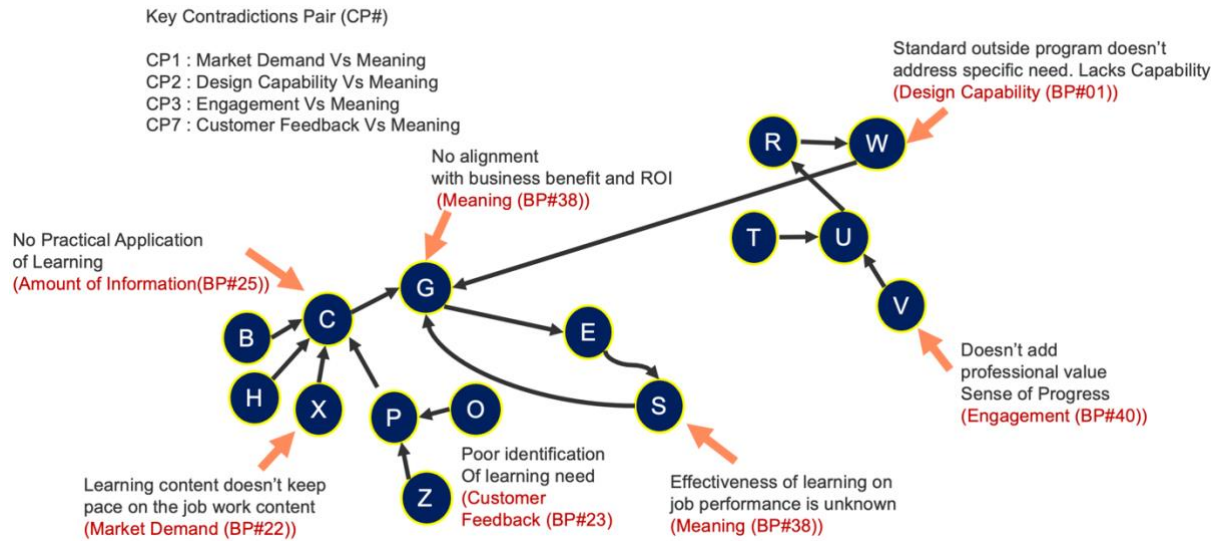

Figure 3 : Perceptions related to not finding meaning in learning interventions

The third set of perceptions were related to employee motivation for enrolment and engagement
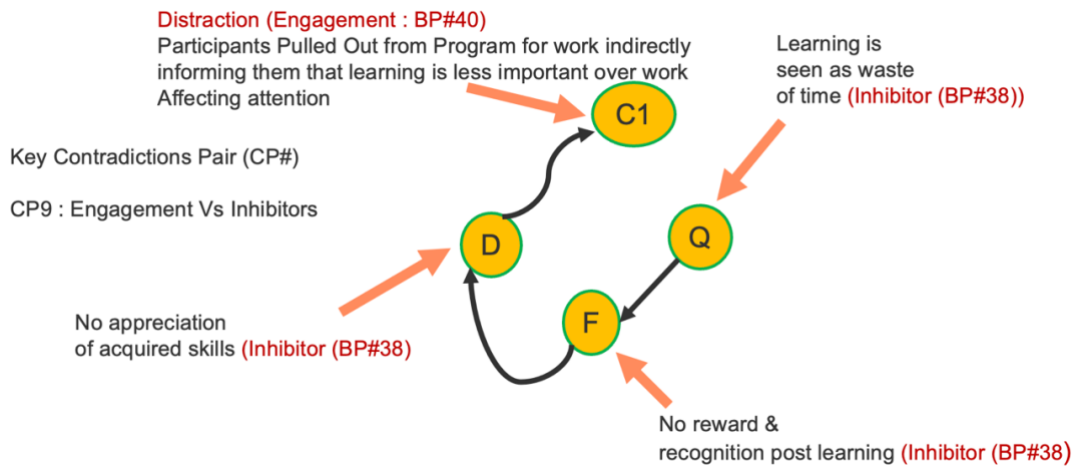

Figure 4 : Motivation for Learning

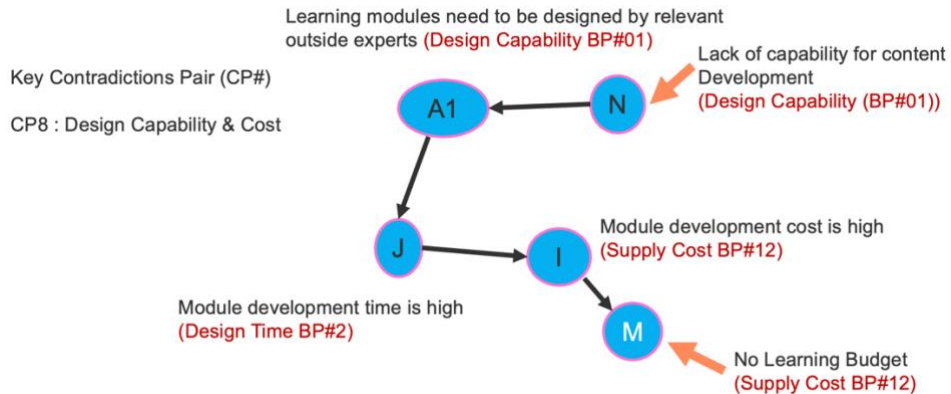The fourth set of perceptions were related to course content design & cost


Figure 5 : Content Design & Cost

Each perception map present a chain with contradiction pair at its end or along its way. This contradiction pair is denoted by nomenclature CP followed by the contradiction pair serial number for e.g. in the figure 5, CP#8 denotes a contradiction pair "Design Capability Vs Supply Cost" number 8 is a contradiction pair serial number. As an output of perception map analysis, a holistic attribute conflict diagram was created. The attributes in the attributes conflict diagram represents TRIZ Business Parameters. (Figure 6, for more details on business parameters) [2]
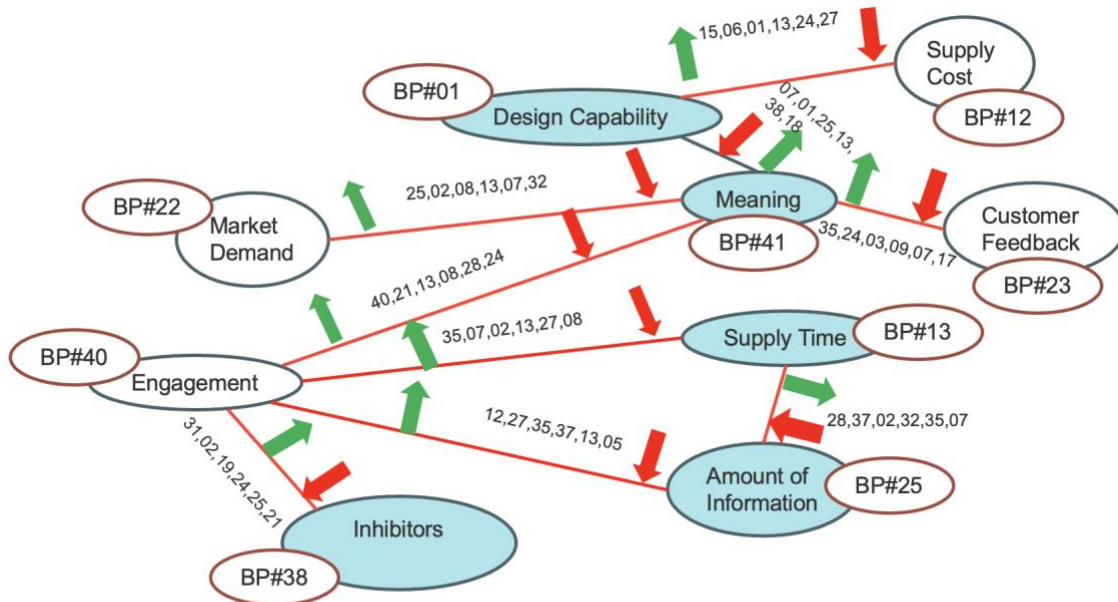
Note :
Red lines indicate there is a conflict between the attributes
BP# means TRIZ Business Contradiction Matrix Parameter
Blue color of bubbles Indicate that these parameters are in Innovator's direct control

Figure 6 : Attribute Conflict Diagram for Learning System

Attributes are represented by a bubble and nomenclature used represents TRIZ Business Parameter, the wine red coloured circle represents the parameter number of TRIZ Business matrix. For e.g. BP#40 "Engagement" means in contradiction matrix this is parameter number 40 and its nomenclature is 'Engagement' The red line represents conflict between two attributes. For detailed definition of matrix parameters refer [2]

The green arrow in the figure 6 pointing upwards represent the parameter to be improved and red arrow pointing downwards represent parameter that worsens or stops us from improving the former. Although there are many attributes on this diagram represented in a bubble, those represented by blue colour bubble are parameters that are in our direct control for effecting a change. We have given priority for ideation to those inventive principles that are connected with these blue bubbles.

The numbers written on arrow represents inventive principles which are used for ideation. There are total 23 inventive principles that seems to be applicable for ideation, now that's a lot. The following table gives principles that are repeated across most contradiction pairs. There 8 principles that have frequency of appearance of more than 3 across contradiction pairs are chosen for ideation first. We use these principles and elements associated with each pair of contradiction for ideation for example; amount of information in course module, course schedule, business KPI, cost, course faculties, course delivery etc. These elements can be picked up from 'figure 1' on page 2.

Table 2 : Inventive Principles and Frequency of Appearance

Inventive Principle Number	Inventive Principle Description	Frequency of Appearance	Inventive Principle Number	Inventive Principle Description	Frequency of Appearance
01	Segmentation	01	19	Periodic Action	02
02	Extraction	05	21	Skipping	03
04	Asymmetry	01	24	Intermediary	02
05	Merging	02	25	Self Service	04
07	Nested Doll	04	27	Cheap Short Living	02
08	Counter-Balance	03	28	Emotional Fields	02
10	Preliminary Action	02	31	Holes	01
12	Remove Tension	01	32	Transparency	03
13	The Other Way Round	06	35	Parameter Changes	03
16	Partial or Excessive Action	01	37	Relative Change	02
18	Resonance	02	38	Enriched Atmosphere	01
40	Composite	02			

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The following table gives a snapshot of few ideas that came out of the ideation session.. The solution clues are referenced with contradiction pair number it is supposed to address for e.g. CP #2

Table 3 : Select Solution Clues based on Suggested Inventive Principles for a Pair of Contradictions

Inventive Principle	Specific Ideas, Solution Clues / Contradictions They Address (CP#)
1A) Segmentation Divide an entity, process or system into separate parts or sections.	Divide the learning topic into sub-topics, sub-sub-topics and assign them to individual employees to prepare a learning module & be a faculty herself Divide the course into main course and refresher which is annex to the main course, refresher course focusses on changes that have happened in business practices / processes / technology landscape since the first course was designed and delivered (CP#2 & CP#8)
1C) Segmentation Increase the degree of fragmentation or segmentation.	Let every employee design his own content & offer to wider audience for scrutiny. Time investment for this can be budgeted in her time sheet. Take employees feedback on each of these modules to stitch together the best possible course. Create different versions of the training program Classroom, Video, Virtual, Audio Files as per the user's demography & need. Create module wise quiz, unless previous module quiz is cleared second module cannot be offered (CP#2 & CP#8)
2D) Taking Out Separate different elements of an object or	Employees to choose specific topics that they want to learn by providing them complete visibility of course coverage. It's like choosing a menu that they want to consume

Inventive Principle	Specific Ideas, Solution Clues / Contradictions They Address (CP#)
system based on different condition-based requirements.	Take best out of modules put up by the employees on the same subject and build a new module taking the best out of all these modules to make a final course that is most enriching. Use number of likes on learning portal as a criteria for choosing a specific content

Chose topic wise faculty instead one faculty for the entire course

Explain the topic with an example / case study rather than giving only theoretical details (CP#1,CP#4,CP#9,CP#6) |
| 5B) Merging

Physical join or merge identical or related entities, operations, or functions | Peer Group Training

Integrate learning performance into employee goal sheets

Learning hackathon

Merge learning with annual conference / weekly   meetings

(CP#5) |
| 7A) & C)

Nested Doll

Put one entity or system inside another.

Allow one entity or system to pass through an appropriate gap or pause in another. | Give a pause between course curriculum with On Job Assignment so that participants can apply their learning in practice

Identify existing available content and nest together with the new content. i.e., combination of existing content and new content

(CP#1,CP#2,CP#4,CP#6,CP#7) |
| 8B) Counterbalance

When an entity or system deviates from a desired path, introduce protocols or forces that provide a restabilizing effect | Let organization allow some of the working time to be utilized for training, employees have to then commit equal personal time to balance out the total time spent on learning

(CP#1,CP#3,CP#4) |
| 13) A&B The Other Way Round Effect

Invert the entity, process, or system.

Invert the actions to solve the problem. | Let the employees, instead of external faculty prepare a small topic by researching on the subject and then creating their own modules

Design learning modules to address causes that has resulted in performance gap instead of putting up the course and expecting that it will help in improving performance

Let business leaders design the course, make it part of their KRA and then sell the course. The amount thus gained can be added to their department budget as a revenue from sale of the course |

Inventive Principle	Specific Ideas, Solution Clues / Contradictions They Address (CP#)
	Let your colleague, buddy or peer managers of your boss recommend a program for you based on their assessment what skills upgrade might help you (CP#1,CP#2,CP#3,CP#4,CP#5, CP#8)
18) B Resonance Make use of emotional 'exciters'	Let employees write the feedback on the learning portal for others to feel excited about the program & thus enrol Handsomely reward employees with learners of the year award who applied learning to achieve a business result (CP#2)
19) Periodic Action Replace continuous actions with periodic.	Plan the course with different magnitudes of duration to gradually create interest. (CP#9)
25 A&B) Self Service 25 A & B) Self Service Enable an entity, process, or system to organize, manage, change, or transform itself.	Team identifies & designs their own learning together Accredited training Teams pick & chose the content they like to learn from the learning reservoir and make a course. They can edit the course like WIKPEDIA whenever they feel they have a better ideas to present the content which will be useful to subsequent users (CP#1,CP#2,CP#9)
28)A Emotional Fields Introduce an emotional experience element to an entity, process, or system	Let the learning happen by simulating a business scenario and teams competing through a simulation exercise. Share the theory and / or approach afterwards for participants to learn where they could have been better in terms of their approach & thinking and finally offer facilitator's expert view to conclude the exercise. (CP#3,CP#6)
35) Parameter Change Change the form / attribute of a product or service.	Virtual learning modules Learning department is not a cost centre but a profit centre and should be run as a business so that more competitive learning products can be built Create silent rooms away from workplace where employee can go sit in a relaxed manner and either listen or see the small bits of course modules (CP#4,CP#5,CP#6,CP#7)

Inventive Principle	Specific Ideas, Solution Clues / Contradictions They Address (CP#)
37) Relative Change Use the relative difference that exist in an object or system to do something useful.	Create future scenario exercises to demonstrate why the program is necessary and what it can deliver & how it can bridge the knowledge gaps Offer different types of programs according to the generation of the learner, offer different delivery means for every generation of employees (Classroom, Simulation, Virtual, Video Clips etc.) (CP#5,CP#6)
40) Composite Change from uniform to composite structures where each element is optimized to a particular functional requirement	Create module wise / topic wise nominations so that participants attend what they need to learn and may not attend the entire program if they are time stressed. (#CP3)

2. Conclusion

TRIZ is a system thinking framework that fuels innovations.

The case presented here shows application of TRIZ for non-technical problem. When there are many entities and many voices involved and problem statement is as abstract as was initially presented which was 'how to create a learning pull' it is necessary capture all the voices & opinions to extract the real system conflicts. A perception map helps us zero down on key contradictions & attributes that we can improve to achieve the set objective in this case 'how to create a learning pull' After having done this we used TRIZ Business Contradiction Matrix and identified inventive principles to generate solution clues.

The mind map of the entire system helped team ideate on several elements using inventive principles. The solutions thus generated touched several elements of the system, in this case 'learning system' to address the original problem we started with which was 'how do we create a learning pull'

The solutions are prioritised and action plan with responsibility was prepared for its implementation. Several communication meetings happened to start with implementation of some of the 'out of box' ideas like employees creating own content, putting up most liked content to form a course curriculum' etc. This created excitement & involvement in few employees to start with and they actively participated in putting the idea into practice .

After 1.5 years into implementation employee dropout rate out of learning interventions narrowed down from 60 % to 15%. Thus, there is almost 400% improvement in this chosen business metric. Also the re-survey of select employees & managers showed that there was an

improvement in on the job performance due to new way of doing things in learning course designing & executing learning interventions.

References :

1. Darrell Mann, Hands on Systematic Innovation for Business & Management, IFR Press, UK, 2007

2. Darrell Mann, Business Matrix 3.0, Solving Management, People & Process Contradictions, IFR Press, UK, 2018