

Transferring Systematic Innovation Training to an online setting

C.M. Thurnes


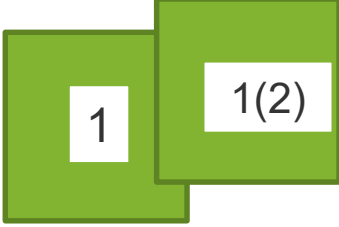
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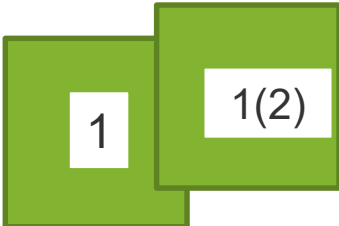
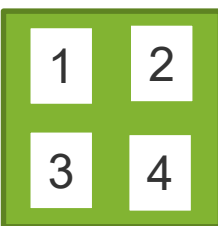
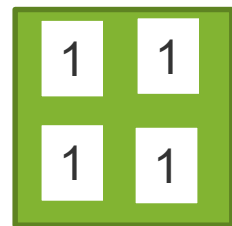
Background & Action

- Voluntary course for students (MBA Innovations-Management)
- Adding the donation factor
- Teaching systematic innovation (TRIZ): specific methods to analyse problems, model them on an abstract level, systematically identify abstract solutions and ideate real solutions
- Syllabus is predefined (international TRIZ Organization certificate L1)
- Classical didactical setting: interactive teaching in presence with many group tasks
- After 1 year of postponing, switching to an online setting: 3 days with final test:
 - Selecting the tools
 - Exploring the didactic fine details using the tools

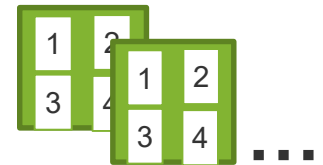
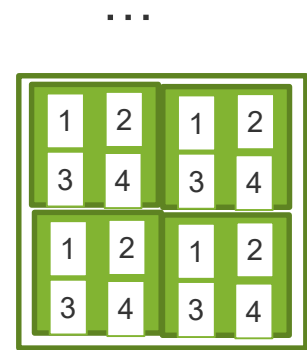
Combinations of digital workboard(s) and A/V-conferencing to refine didactical settings (examples - not exhaustive)

board setup A/V setup				
All together in 1 room /session	<ul style="list-style-type: none"> • Frontal teaching • black/whiteboard usage • Brainstorming • warm-up, opinions, 			
Several teams in several rooms /sessions	...	<ul style="list-style-type: none"> • teamwork • same group tasks • Different group tasks 		


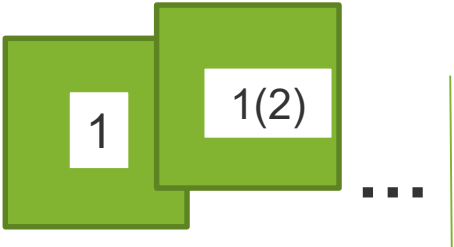
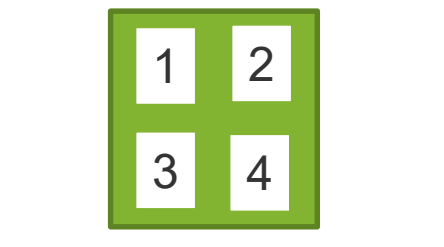
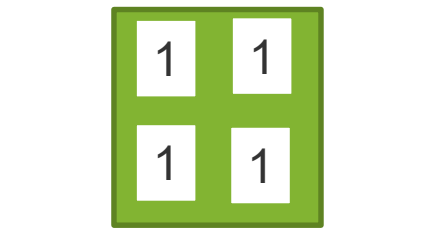
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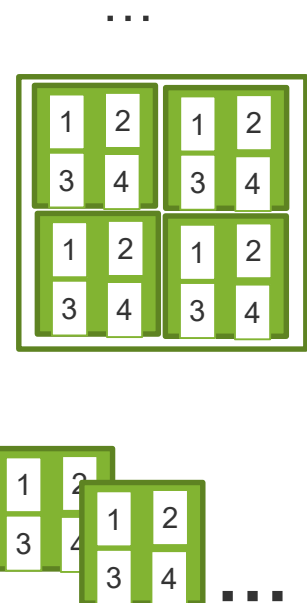
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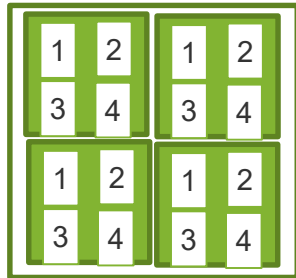
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Several teams in several rooms /sessions	<ul style="list-style-type: none"> • Teams discuss, collect and create content for one task/assessment 	<ul style="list-style-type: none"> • teamwork • same group tasks • Different group tasks 	<ul style="list-style-type: none"> • Teams build their teamcontributions to the process/sequence 	<ul style="list-style-type: none"> • teamwork • same group tasks • Cheating allowed
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Example:



Example of didactical settings for a mouse case study, showing four panels (A, B, C, D) illustrating different combinations of digital workboard(s) and A/V-conferencing.

Panel A: Funktionsmodellierung

Kosten Mausefalle:

Komponente	Materialkosten	Montagekosten	Herstellkosten	Normierte Kosten	€100
Sicherheitsblei gel	1	1	2	0,33	33
Feder	2	4	6	1	100
Platte	1	1	2	0,33	33
Achse	0,5	0,5	1	0,17	16,5
Schlagkugel	1	2	3	0,5	50
Köhl.m. Ose	1	2	3	0,5	50
Köder	4	0	4	0,6	60
Köderhaken	1	1	2	0,33	33

Panel B: 4.4 Wertanalytische Betrachtung

Funktionalität Mausefalle

Komponente	Fkt. Ränge	Fkt. Punkte	Normierte Kosten	€100
Schlagkugel	0,1	4	0,33	33%
Feder	0,1	6	0,36	36%
Platte	2,0/2,5/0,1	11	1	100%
Achse	1,0/3	2	0,33	33%
Schlagkugel	0,1/5	10	0,5	50%
Köhl.m. Ose	3,0/2	6	0,55	55%
Köder	5	6	0,55	55%
Köderhaken	0,1	2	0,33	33%

Panel C: Funktionsmodellierung

Kosten Mausefalle:

Komponente	Materialkosten	Montagekosten	Herstellkosten	Normierte Kosten	€100
Sicherheitsblei gel	1	1	2	0,33	33
Feder	2	4	6	1	100
Platte	1	1	2	0,33	33
Achse	0,5	0,5	1	0,17	16,5
Schlagkugel	1	2	3	0,5	50
Köhl.m. Ose	1	2	3	0,5	50
Köder	4	0	4	0,6	60
Köderhaken	1	1	2	0,33	33

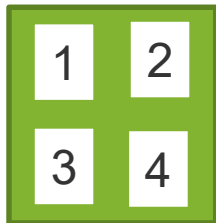
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Platte	2,0/2,5/0,1	11	1	100%
Achse	1,0/3	2	0,33	33%
Schlagkugel	0,1/5	10	0,5	50%
Köhl.m. Ose	3,0/2	6	0,55	55%
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Combinations of digital workboard(s) and A/V-conferencing to refine didactical settings (examples - not exhaustive)

Example:



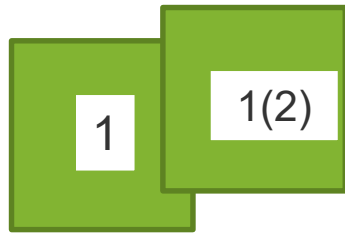
A grid of 20 digital workboard screenshots, arranged in 5 rows and 4 columns. Each screenshot shows a different task (Aufgabe) related to functional analysis, system design, or technical problem-solving. The tasks include:

- Aufgabe 1: Funktionsanalyse** (Functional Analysis) - Parts a, b, c, and d, involving component identification and system diagrams.
- Aufgabe 2: Funktionsanalyse (Wertanalyse) - Teil a/b** (Value Analysis) - Involves cost breakdown tables and Pareto charts.
- Aufgabe 3: Trimmen** (Trimming) - Involves network diagrams for system optimization.
- Aufgabe 4: Arbeit mit technischen Widersprüchen** (Working with technical contradictions) - Parts a, b, c, and d, involving TRIZ matrices and contradiction tables.
- Aufgabe 6: System-Operator/9-Feiler-Denker** (System Operator/9-Fields Thinking) - Involves 9-field matrices and system diagrams.

Each workboard contains text, diagrams, tables, and input fields for student responses.

Combinations of digital workboard(s) and A/V-conferencing to refine didactical settings (examples - not exhaustive)

Example:




The diagram illustrates the 'Methode 6-3-5' technique through six overlapping digital workboards, numbered 1 to 6. Each workboard contains a table with columns for 'Name', 'Date', and 'Content'. The boards are arranged in a staggered, overlapping fashion to show the progression of the activity.

Combinations of digital workboard(s) and A/V-conferencing to refine didactical settings (examples - not exhaustive)

Example:



Simulation

Produzent/Lieferant in Station 1-8:
Reihenfolge strikt einhalten - alle sechs Stationen durchlaufen synchron zueinander diese Schritte in einer Periode:
1) Zwei Würfel werfen pro Periode (dies ist die in dieser Periode verfügbare Kapazität).
2) Kapazität: so viele Produkte werden aus dem eigenen WIP in den Eingang der nächsten Station verschoben.
3) Alle Teile aus dem eigenen Eingang werden in den eigenen WP verschoben (dort aber max. 7 Teile).
4) Ende der Periode.

Station 1
Rohmaterial/WIP

Station 2
Eingang | WIP

Station 3
Eingang | WIP

Station 4
Eingang | WIP

Station 5
WIP | Eingang

Station 6
WIP | Eingang

Station 7
WIP | Eingang

Station 8
WIP | Eingang

Bestand


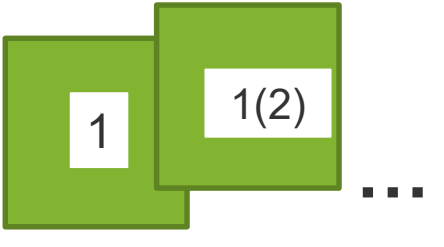
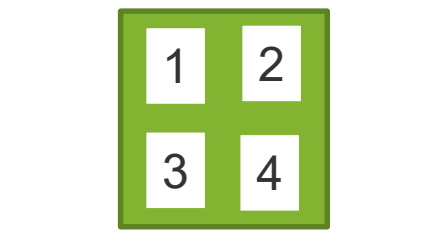
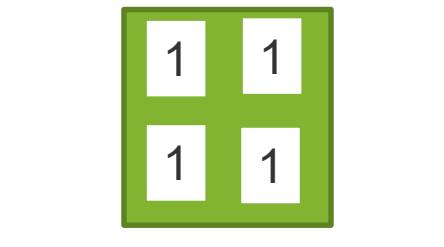
- In Tabelle notieren, wieviele Produkte den Kunden erreicht haben
nach Periode 10:
- Gesamtbestand zählen: WIP + Eingänge von Station 2-8
nach Periode 20:
- Gesamtbestand zählen: WIP + Eingänge von Station 2-8

Station	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8	Summe
WIP	2	2	2	2	2	2	2	14
Eingang	2	2	2	2	2	2	2	14
Gesamt	4	4	4	4	4	4	4	28

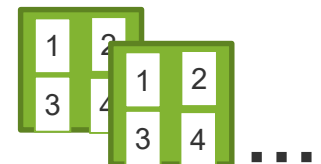
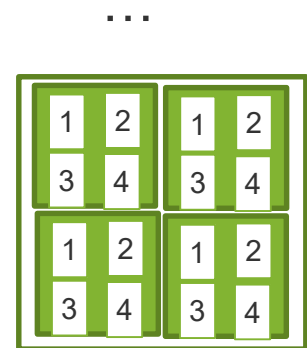
Produkte kumuliert

Navigation Se...

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- Morphological schemes may help transferring your tacit knowledge about learning designs to new settings
- Two more dimensions:
 - Interactions of the facilitator
 - Feedback and/or presentation of results

Find the slides here:

- <https://www.opinnometh.de/downloads>
- Instagram & TikTok: @professorthurnes

