IO1 – Methodology Toolkit

By: Eulab Consulting Srl

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Summary

Introduction

What does it mean to innovate? By definition, "**Innovation**" means "a new idea or method, or the use of new ideas and methods". In our case, when we talk about innovation, we talk about adhering to an ever-changing reality through the introduction of a new product, material, technology, organization, marketing system and/or new ways of communicating.

The key element of innovation is creativity as it is the starting point of every innovative process. The creative process includes 3 steps:

1. Definition of the problem/research object

2. Creative association of gathered information regarding the problem

3. Definition of an innovative solution

In past few years the United Nations in its 2019 World Youth Report introduced the importance of stimulating a particular type of entrepreneurship in youth: Social Entrepreneurship. This topic, focused on value creation, is of particular interest to teachers, who must increasingly refer to the interdependence between personal and social development, in didactic activities that can have not only an educational purpose, but also contribute to generating a positive impact for the world.

This **Methodology Toolkit** intends to support teachers in this direction, providing both tools and teaching methodologies based on an integrated use of the Competitive Arena Model, which focuses on innovation and development, useful to develop the entrepreneurial competence, to be transferred to the school context.

Action Research: pedagogical and research method conceived by the social psychologist Kurt Lewin, conceptualising the collection and processing of information as a process of exploration and learning about oneself and the world.

START READING:

Definition: *https://tinyurl.com/action-research-method*

Koshy et al., «Action Research in Healthcare», 2011, SAGE ed., Chapter 1 (What is Action Research):

https://tinyurl.com/action-research-Koshy

Morphological Analysis: creative technique invented by astrophysicist F. Zwicky in the field of engineering and used to map the Competitive Arenas of a problem. The purpose of the MA is to find innovative solutions to complex problems characterised by multiple aspects, defining their dimensions and categories within a box and selecting creative patterns, able to represent innovative solutions to the problem, following the criteria of the competitive arena.

START READING:

Training materials in several languages (English, Italian, Slovenian): https://tinyurl.com/MA-method

1. Provocation & Movement

To facilitate the generation of ideas, the problem must to be viewed from different perspectives. The Provocation & Movement technique allows to develop a creative solution to the problem (*movement*) formulating a series of apparently illogical thoughts (*provocation*).

This technique consists of **3 steps:**

1. **Defining the problem listing facts about it (*the more obvious, the better*).**

This phase may be called the "**PROBLEM IDENTIKIT"** and it consists in listing around 4 or 5 well-known facts about the problem.

Ex.1: «**Innovation in Restaurant field**»

1. Clients come to the restaurant to eat
2. It is necessary to pay the bill
3. It requires at least a chef and a waiter

2. **Transforming these facts into various forms of illogical thoughts**

What follows in this second phase is the choice of one of the **3 DIFFERENT TYPES OF PROVOCATION**

- **Negation** - to negate the reality of things.
  Ex:
  A restaurant requires at least a chef and a waiter – Fact
  A restaurant doesn't require at least a chef and a waiter - Negation
- **Change of Logic**: to modify cause & effect relationship, temporal sequence, semantic relationship, etc.

  Ex:
  A restaurant requires at least a chef and a waiter – Fact
  At least a chef and a waiter require a restaurant – Change of Logic
- Exaggeration - to suggest a new measure (frequence, size, quantity, etc.)

  Ex:
  Scooters have 2 wheels – Fact
  Scooters have 4 wheels - Exaggeration
- Dream - to make a wish that seems impossible to be granted

Ex:
Waiting for the bus is boring - Fact
Waiting for the bus is a fun moment – Dream

3. **Analyzing in detail these illogical thoughts in order to see what can be done to make them real.**

There are two ways of engaging this third step: extracting the features or focusing on the differences. This final step is the *"movement"*.
When extracting the features we come up with "logical" consequences to why the provocation is true.

Ex:
A restaurant requires at least a chef and a waiter – Fact
A restaurant doesn't require at least a chef and a waiter – Provocation
The customers cook and serve themselves – Movement – Extracting the features

Unlike the extraction of features, when we focus on the differences we come up with what can be done in order for the provocation to become a fact, therefore focusing on the differences between the fact and the provocation.

Ex:
Scooters don't have the same comfort level of a car - Fact
Scooters have the same comfort level of a car - Provocation
Scooters can have a heater system/adjustable backrest and seat/wider spaces… - Movement – Focus on Differences

1.2 PROVOCATION & MOVEMENT – SIMULATION

PROBLEM'S DEFINITION: PROMOTING VEGAN DIET		
MATTER OF FACTS	**PROVOCATIONS**	**MOVEMENTS**
1. Vegan food is expensive	**Negation** Vegan food is not expensive _____	**Extracting Features** 1. My food preferences are known 2. It is possible to associate my food preferences to vegan alternatives
2. Vegan food is perceived as less tasty		
3. Vegan food is yet not well-known	**Change of Logic** Vegan food knows me _____	
4. Vegan food has a good impact on environment on long-term		
5. _____	**Exaggeration** Vegan food has an immediate good impact on environment _____	**Focus on Differences** 1. Vegan food resembles known and tasty food, both for shape and colors
6. _____		
7. _____	**Dream** Vegan food is perceived as more tasty	
8. _____		

		_____		**2. Video on their preparation processes are included and compared to meat-based one**

2. Competitive Arena Mapping

The concept of competitive arena has been introduced in order to provide a new model to facilitate the identification of one's market segments on where to compete and innovate.

Using action research and applying morphological analysis in a competitive arena mapping procedure, enables firms to systematically plot possible competitive arenas and use managerial judgment to select those which are growing and for which the firm has exploitation capabilities. Competitive arena mapping allows firms to identify and investigate a large set of possible competitive arena configurations. The developed mapping method has certain characteristics:

1. It specifically focuses on the market boundaries and adjacencies.
2. It incorporates both exchange value and use value
3. It acts as a learning process that accelerates the practical application of the arenas in business strategy and practice

A competitive arena is the **smallest market area within which it is possible to be a valid competitor**. It is represented by the overlays of different segments of market, intersecting with one another but not necessarily congruent with one another.

5 criteria:

1. **Logical** – combination of market segments (*categories*) logically plausible
2. **Empirical** – concretely achievable in reality
3. **Normed** – aligned with the values and goals of 2030 Agenda
4. **Innovative** – includes an added value which distinguish the proposed solution to the already existing others
5. **Integrative** – combines creatively and successfully supply and demand factors

According to this method, marketing innovation strategy focuses on **where** to compete rather than how, thanks to the introduction of the **competitive arena** concept. Growth key is the elaboration of a **subjective and collaborative definition of one's "market" or goal,** by the means of **action-research process**. In the end, once the market/goal has been defined, it is possible to identify within it **competitive arenas in order to bring innovation,** by the means of **morphological analysis**.

2.1 Action Research

Action research – also known as Participatory Action Research (PAR), community-based study, co-operative enquiry, action science and action learning – is an approach commonly used for improving conditions and practices in a range healthcare environment (Lingard et al., 2008; Whitehead et al., 2003). It involves healthcare practitioners conducting systematic enquiries in order to help them improve their own practices, which in turn can enhance their working environment and the working environments of those who are part of it – clients, patients, and users. The purpose of undertaking action research is to bring about change in specific contexts. It is a pedagogical and research method conceived by the social

psychologist Kurt Lewin, conceptualising the collection and processing of information as a process of **exploration and learning about oneself and the world**.

Market analysis is seen as an exploration and learning process. During the action-research process, **data collection moments** (involving stakeholder, experts, clients, ecc) are alternated with **moments of collective reflection**, in order to systematize gathered information.

The tool to be used in this case is the **Logbook**, which could help the data collection providing sample of questions, already organized in different thematic areas.

The process of Action Research in this field can be applied in two different circumstances: when researching on the **supply side** (exploring market's boundaries) and when researching the **demand side** (incorporating both exchange value and use value)

Action researching on the supply side consists in rethinking the market's boundaries. This is a key element of the innovative process. It can be done analyzing client typologies yet to be served, modifying or developing new products, using new distribution channels, entering in new geographical areas, etc. This means that the market is seen as a set of products and services which the client perceives as coherent to one another and useful to respond to a specific need.
This type of action research has to look forward to answer the following questions:

1. On which resources (natural, human, technologies, organizations, etc.) the world can count to solve the problem?
2. Which resources need to be developed in order to better solve the problem?
3. Which solutions already exist to partly solve the problem?
4. Which aspect of the existing solutions needs to be improved to better address the problem (e.g. mindset, technology, etc.)?

Action researching on the demand side consists in researching a product that in order to be innovative, it must not only be fully respondent to the client's needs, but has to be able to anticipate their needs as well. In order to do so, it is helpful to explore in detail how the product is used by the user, following its own cycle from the delivery to the disposal. This process must ensure that its exchange value (its value on the market) is integrated with its use value (the degree to which it satisfies clients' needs). In this case, the market is seen as a set of the client's needs which can be addressed through different solutions and

services, in competition with each other. This type of action research has to look forward to answer the following questions:

1. Which targets are directly and/or indirectly influenced by the problem?
2. What are their needs related to the problem?
3. Which of these needs still needs to be properly addressed?
4. Which other needs can be considered a priority for the future?

Action study assumes the social world to be constantly changing and that both, researcher and research being one part of that change. Generally, action researches can be divided into three categories: positivist, interpretive and critical.

Positivist approach to action research, also known as 'classical action research' perceives research as a social experiment. Accordingly, action research is accepted as a method to test hypotheses in a real world environment.

Interpretive action research, also known as 'contemporary action research' perceives business reality as socially constructed and focuses on specifications of local and organisational factors when conducting the action research.

Critical action research is a specific type of action research that adopts critical approach towards business processes and aims for improvements.

The following features of action research need to be taken into account when considering its suitability for any given study:

- It is applied in order to improve specific practices. Action research is based on action, evaluation and critical analysis of practices based on collected data in order to introduce improvements in relevant practices.
- This type of research is facilitated by participation and collaboration of number of individuals with a common purpose
- Such research focuses on specific situations and their context

We define action research as an approach employed by practitioners for improving practice as part of the process of change. The research is context-bound and participative. It is a continuous learning process in which the researcher learns and also shares the newly generated knowledge with those who may benefit from it. In the context of practitioner research, Hopkins (2002) maintains that action research combines a substantive act with a research procedure and that it is action disciplined by enquiry and a personal attempt at understanding, while engaged in a process of improvement and reform.

Through action research one can obtain the following results:

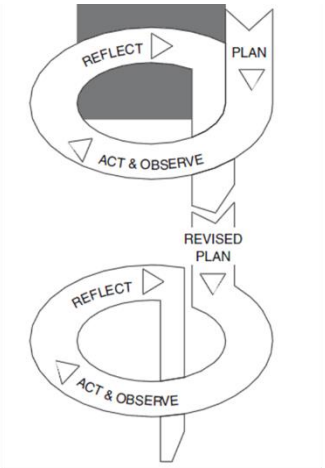
- High level of practical relevance of the business research;
- Can be used with quantitative, as well as, qualitative data;
- Possibility to gain in-depth knowledge about the problem.

It is important to make a clear distinction between action research and consulting. Specifically, action research is greater than consulting in a way that action research includes both action and research, whereas business activities of consulting are limited action without the research.

Action research is: essentially an on-the-spot procedure designed to deal with a concrete problem located in an immediate situation. This means that ideally, the step-by-step process is constantly monitored over varying periods of time and by a variety of mechanisms (questionnaires, diaries, interviews and case studies, for example) so that the ensuing feedback may be translated into modifications, adjustment, directional changes, redefinitions, as necessary, so as to bring about lasting benefit to the ongoing process itself rather than to some future occasion.

Action Research Spiral

Action study is a participatory study consisting of spiral of following self-reflective cycles:



1. Planning in order to initiate change
2. Implementing the change (acting) and observing the process of implementation and consequences
3. Reflecting on processes of change and re-planning
4. Acting and observing
5. Reflecting

Several other models have also been put forward by those who have studied different aspects of action research. No specific model is to be recommended since there are different types that have many similarities. Action researchers should always adopt the models which suit their purpose best.

2.2 Morphological Analysis

Used to identify competitive arenas, this technique was created by the astrophysics F. Zwicky in the field of mechanical engineering, in order to develop new jet motors, but it is now widely used in a variety of fields, including screenwriting.

The aim of using Morphological Analysis is **finding innovative solutions to complex problems** which are composed by multiple factors, **defining their dimensions and possible categories**, then selecting **creative patterns of categories**.

The morfological analysis is actually a group of methods that share the same structure. This method breaks down a system, product or process into its essential sub-concepts, each concept representing a dimension in a multi-dimensional matrix. Thus, every product is considered as a bundle of attributes. New ideas are found by searching the matrix for new combination of attributes that do not yet exist. It doesn't provide any specific guidelines for combining the parameters. It tends to provide a large number of ideas.

It has several advantages over less structured approaches like: help us discover new relationships or configurations, which may not be so evident, or which we might have overlooked by other less structured methods; it encourages the identification and investigation of boundary conditions, i.e. the limits and extremes of different contexts and factors; it has definite advantages for scientific communication and group work; it allows us to find possible solutions to complex problems characterised by several parameters like:

- Richness of data, which can provide a multitude of combinations permutations not yet explored
- Systematic analysis of future structure of an industry (or system) and identification of key gaps.

The technique requires the construction of a morphological box, based on two elements that characterize the problem:

- Dimensions: general and broad parameters based on which it is possible to describe a problem (columns of the box)
- Categories: particular parameters based on which the identified dimensions may vary (rows of the box).

VALUE / PARAMETER			
PARAMETER A			
PARAMETER B			
PARAMETER C			
PARAMETER D			

The approach begins by identifying and defining the parameters (or dimensions) of the problem complex to be investigated, and assigning each parameter a range of relevant ”values” or conditions. A morphological box is constructed by setting the parameters against each other in an n-dimensional matrix. Each cell of the n-dimensional box contains one particular ”value” or condition from each of the parameters, and thus marks out a particular state or configuration of the problem complex.

This is the point: to examine all of the configurations in the field, in order to establish which of them are possible, viable, practical, interesting, etc., and which are not. In doing this, we mark out in the field what might be called a ”solution space”. The ”solution space” of a Zwickian morphological field consists of the subset of configurations, which satisfy some criteria.

However, a typical morphological field can contain between 50,000 and 5,000,000 formal configurations, far too many to inspect by hand. Thus, the next step in the analysis-synthesis process is to examine the internal relationships between the field parameters and "reduce" the field by weeding out all mutually contradictory conditions.

This is achieved by a process of cross-consistency assessment: all of the parameter values in the morphological field are compared with one another, pair-wise, in the manner of a cross-impact matrix. As each pair of conditions is examined, a judgment is made as to whether – or to what extent – the pair can coexist, i.e. represent a consistent relationship. Note that there is no reference here to causality, but only to internal consistency.

Here are the 5 iterative steps of the process:

Step 1 → The problem to be solved must be very concisely formulated.

Step 2 → All of the parameters that might be of importance for the solution of the given problem must be localized and analysed. This step regards the identification of parameters, which involves studying the problem and present solutions to develop a framework. It is useful to develop a relevance tree to help define a given topic. Once parameters are identified, a morphological box that lists parameters along one dimension can be constructed. The second dimension is determined by the nature of the problem.

Step 3 → The morphological box or multidimensional matrix, which contains all of the potential solutions of the given problem, is constructed.

Step 4 → All solutions contained in the morphological box are closely scrutinized and evaluated with respect to the purposes that are to be achieved.

Step 5 → The optimally suitable solutions are selected and are practically applied, provided the necessary means are available. This reduction to practice requires in general a supplemental morphological study.

2.2.1 Morphological Box – CASE STUDY

Guarantee Shops' Earnings during Lockdown Period			
Delivery Type	**Products**	**Qualities**	**Technology**
Motorcyle	Food	Timely Service	Augmented Reality
Bicycle	Meds	Sustainability	App
Drone	Alcoholic Beverages	Always Available	Wristband
Take Away	Dress/Shoes	Automatic Orders	Website

The exercise will require to analyze the categories above in order to identify one or more competitive arenas.

Participants may add more categories/dimensions to demonstrate they understood the concept of dimension and categories.

When doing so, participant should consider which services already exist/are well-established, so they won't match competitive arenas criteria (e.g. the pattern *Bicycle →Food →Timely Service →App*), trying to find:

a) **completely new solutions** (e.g. *Drone →Meds →Automatic Orders →Wristband* for people living alone and affected by COVID-19, in order to monitor blood-oxygen levels and/or temperature, sending automatic alarm to doctors, which can prescribe required meds to be delivered from the nearest pharmacy by the use of drone, without any contact with the patient)

b) **improvements to existing solutions** (e.g. *Bicycle →Food →Timely Service* ***& Sustainability*** *→App*, promoting a new food-delivery service, fully based on sustainability [using only bicycle as means of transportation, including only restaurants with biological/vegan menu, etc.]).

2.2.2 MORPHOLOGICAL BOX – SIMULATION

Promoting Vegan Diet				
Appearance	**Base Ingredient**	**Price**	**Impact**	**Place**
Drinks	Fruits	Money	Health	School
Pasta/Noodles	Vegetables	Free	Environment	Vending Machine
Snacks	Seeds	Activity	Human rights	Gym
Candies	Beans	Coupon	Wildlife	Bus

The above dimensions and categories can be used to give inputs to the participants when constructing the morphological box.

It is of great help for dimension identification to start from facts listed during Provocation & Movement exercise.

Possible competitive arenas are highlighted in 2 different colors (green and orange), and can serve as an input in case participants would experience difficulties.

Green Competitive Arena: targeting adolescents using public transportation, promoting candies made from fruits and vegetables thus substituting those with a high-sugar content and/or produced by no-sustainable brand (which are widely consumed by the target), using incentives such as discount on bus pass when purchasing plant-based sustainable snacks. It could be of greater importance including the initiative within a

wider and broader eco-sustainability framework, result of a partnership between Ministry of Transportation and other vegan-food brands, focusing on environmental protection through the promotion of healthy habits (regarding both travel and diet).

Orange Competitive Arena: targeting people with a gym subscription.

2 Brainwriting

Brainstorming is the most commonly applied method in order to come up with ideas, yet it is not always the most efficient.

Brainwriting can be used to solve almost any problem. This method is often used in marketing, design, and advertising, but it is gaining popularity in other areas as well. It is preferable to use brainwriting rather than traditional brainstorming when you have people who are either too extroverted - who tend to centralize the discussion - or too introverted - who struggle to express themselves openly.

When applying the brainwriting technique, one needs to carefully and thoroughly define the problem that needs to be solved in order to generate more relevant ideas during the session. Much of the success of this process will depend on how well the problem is defined.

Another element that needs to be considered before the brainwriting sessione begins is to make sure that there are six qualified people to address the problem. The chosen people for this process should all be well aquaintant with the problem they are facing and should have experience in that area.

Choosing the right people is another big step towards a successful conclusion, as people with the right experience will be the most likely to develop useful solutions.

The aim of brainwriting it to define possible innovative ideas based on selected competitive arenas.

The participants will be divided into groups (max. 5 people per group; around 3-6 groups). Each group will receive a work-sheet for each of the identified competitive arenas (one per time). Starting from the same competitive arenas, every group will then try to write down their own idea. The following step is for the groups to be asked to pass their work-sheet to the group at their right and, taking inspiration from the idea already written by their colleagues, they will try to produce a related idea, an integration/improvement of the idea or a completely new idea.

The exercise will be finished after a full turn has been made. At this point, every group will select the best idea included in their work-sheet.

This method consists of the following advantages:

- Generation of many ideas in a short time

- Listening and considering the opinion of each participant
- Gradual and collaborative development of ideas
- Obtaining a comprehensive and diversified vision of the examined problem

2.2 N.A.F. Evaluation

Once the ideas have been written down, what follows is an evaluation in order to choose one, that is considered appliable and that responds to the problem's needs.

The **aim** of using the N.A.F. Evaluation form is to evaluate Brainwriting ideas and choose the most interesting one by giving a score (1 - 10) based on 3 factors to every idea:

- **Novelty**: the degree to which the idea represents a new approach to the problem. It has not to be necessarily something totally new, but can even be something personally I've never thought.

- **Appeal**: the degree to which the idea seems catchy and intriguing at first sight. Score on this factor should be high; ideas with medium scores, if chosen, should be better explored to improve their appeal prior to their implementation.

- **Feasibility**: the degree to which the idea results concrete and doable, not abstract. Scores equal or greater than 8 suggest an easily implementable idea, for which to define merely technical aspects such as funds, time, etc. Scores equal or lower than 5 make the idea worth being considered only if the remaining 2 factors gained extremely high scores.

The total score is simply the sum of the factors' scores.

NOTE: the higher total score is doesn't automatically imply the idea considered is the best; each factor can have a different weight based on different cases and problems, not to mention, a subsequent brainstorming session can bring participants to better evaluate lower scored ideas.

3 Arena Card

Once the ideas have been written down and evaluated, it is time to sythesize them all in what are to be considered the most interesting and suitable for the problem. This can be done by using the Arena Card technique.

The **aim** of this technique is to sum up specific information regarding the selected competitive arena and idea, within a shared card. This is helpful for a future implementation as well.

The arena card consists in the usage of the following elements:

- Morphological Box: the original matrix composed by the identified categories and dimensions, in order to keep in mind the problem's overall structure and allow to take back the morphological box for further analysis at any time.

- Selected competitive arena: within the morphological box, the chosen competitive arena pattern has to be highlighted.

- Categories analysis: to give additional information about the reason behind the categories' choice.
    - Why has this category been chosen?
    - Which are its distinctive features?
    - Which are the main models to take as a reference?

- Competitive arena analysis:

    - Which competitors (if any) already exist within the identified competitive arena?
    - How can I obtain a competitive advantage compared to the other competitors?
    - In which way the competitive arena has the potential to attract new clients?

    - Which are the resources (both technical and human) we can rely on to implement the idea?
    - Which already existing services and communication channels can we use?
    - In which way the idea can innovate the reference market?
    - What is the social impact of the idea?

- Proposed Idea: describing the idea that has been chosen during the brainwriting exercise

4 Competitive Arena Model Steps – Exercises

4.2 Training Module 1 - Provocation & Movement

Choose and define the **problem** using the Provocation & Movement technique:

PROBLEM'S DEFINITION: _____

_____

MATTER OF FACTS	PROVOCATIONS	MOVEMENTS
1. _____	**Negation** _____ _____	**Extracting Features** 1. _____ _____
2. _____		
3. _____	**Change of Logic** _____ _____	2. _____ _____
4. _____		
5. _____	**Exaggeration** _____ _____	**Focus on Differences** 1. _____ _____
6. _____		

7. _____		**Dream** **_____** **_____**		**2. _____** **_____**
8. _____				

4.2 Training Module 2 – Problem Dimension – Case Study

Identify the problem **dimensions,** related to the chosen problem in the Provocation & Movement exercise.

4.3 Training Module 3 – Dimension Categories – Case Study

After having identified the problem dimensions, identify the relevant **categories** for each dimension. Highlight the different categories with different colors.

4.4 Training Module 4 –Morphological Box

Now that you have identified the problem dimension and each dimension category, using the action-research methodology, build a Morphological box regarding the problem that has been identified in the Provocation & Movement exercise.

4.5 Training Module 5 – Competitive Arena

Identify the problem's **competitive arenas,** through the application of the competitive arenas criteria.

4.6 Training Module 6 – Brainwriting

Generate **innovative ideas** based on identified competitive arenas.

 **1.** _____	 **4.** _____	 **7.** _____
 **2.** _____	 **5.** _____	 **8.** _____
 **3.** _____	 **6.** _____	 **9.** _____

4.7 Training Module 7 – Evaluation

Evaluate and **describe** competitive arenas using the N.A.F. Evaluation Form and the Arena Card.