

Expressing oneself in order to participate: tacit knowledge, learning and the Metaplan

Michela Mayer, Adriana Valente

The Metaplan: why and how should it be used in schools?

The Metaplan is a «task-oriented method of organisational analysis» that was conceived in Germany for corporate training (it is not by coincidence that it is also a trademark), with the aim of streamlining communication flows within enterprises and involving in change planning those people who will then implement it.

The Metaplan presupposes prior knowledge and different practices and interests corresponding to the various roles within a company, and that this knowledge and these interests can be joined to work out an acceptable approach to change that is also desirable for most of the people involved.

The techniques suggested by the Metaplan, which alternate individual moments, activities involving small groups and ones involving the entire group with the visualisation of collective knowledge-building processes, encourage communication flows, try to minimise unfocused discussions, and, when properly managed, stimulate and strengthen the creative process, making each person feel he or she has contributed constructively to the final solution/proposal.

It is easy to recognise the validity of this type of technique not only within a company but within a territory every time it

is necessary to involve the 'stakeholders' in collective decisions requiring organisational and individual changes: local Agenda 21 programmes have used the Metaplan widely and still do, in conjunction with other participative techniques (EASW¹, OST, etc.). However, in the case of enterprises and territory, the goal is to arrive at an 'action proposal', not the knowledge-building process necessary for that action to be effectively understood and shared by all.

Applying this methodology to schools thus implies changing points of view: the main goal is no longer the action but the knowledge acquired during the process which, at least in our experience, does not require a final action (this does not mean that the Metaplan cannot also be used for its original goal, that is, to arrive at proposals for change that are shared by the school organisation). The starting hypothesis is that, through participation techniques of which the Metaplan and the OST are examples, schools can once again become aware of the social and collective nature of knowledge building, which is often limited to an individual process that is, at best, guided and stimulated by the teacher and even more so as the school level increases.

Another difference in the 'school' use of the Metaplan, compared to its ordinary use, is the 'non heterogeneity' of the participants: indeed, that diversity – of experiences, of practiced theories and of roles – which greatly enriches the process when it is carried out in a company or in a territory is lacking when the technique is used in schools, and even more so in classrooms, where we are faced with considerable standardisation in terms of age, role and cultural and social background (which in Italy schools is strongly determined by the school's location and course of studies).

Therefore the Metaplan has also been used to achieve new goals, originally not considered in the project:

- One of the first was to rouse interest in the suggested topic,

¹ EASW, European Awareness Scenario Workshop, is a method born in Denmark and aimed at finding an agreement among the various groups of interest bearers in a local framework.

causing elements of uncertainty and debate to emerge even before the documentation was distributed: the goal was thus to pave the way for the next step in the process;

- This first goal was quickly joined by a second one, linked to 'citizenship' competences and to the possibility of using the technique to develop dialogue and reasoning skills;
- The first test of the technique, carried out at the "Francesco d'Assisi" High School in 2006, also highlighted the possibility of using the Metaplan to better understand dynamics – among groups but also among the sexes – and to hone skills that are often not taken into consideration by traditional learning-teaching processes: the role of facilitator in the group, for example, or communication skills using visual tools. A reflection on the roles that the students adopted during the testing of the technique, and on those that they 'usually played in class', clearly showed how school tends to pigeonhole and crystallise roles and skills by presenting the same tasks time and time again, while the Metaplan managed to mobilise a different kind of competences;
- Finally, a central research objective emerged concerning the knowledge-building process and, in particular, the mobilisation of 'tacit' and implicit individual knowledge to implement a spiral process leading to new forms of knowledge, both tacit and explicit, both as individuals and as a group, as we shall explain better later.

The Metaplan was therefore proposed in 2007 to all the classrooms that took part in the project. The researchers' main aim was to follow the collective knowledge-building process, obviously without neglecting the other goals necessary for the project's implementation: encouragement and motivation, skill improvement, and introduction to democratic participation in debates and decisions.

The following diagram, proposed for the school version of the Metaplan, is a simplification of the original diagram (which envisages several divisions into microgroups and reunifications into wider groups, above all to enhance the differences).

Diagram of the Metaplan sessions that took part in schools

N.	Stage	Duration (min)	Goals	Activities
1	Presentation of the activity and of the methodology to follow	5	Sharing the aims and understanding the reasons of the requests that will be made	The research group introduces itself, socialises and explains the stages to follow
2	Organisation of groups and spaces	5	Offering an adequate context for the work to be carried out	Teacher/ facilitator divides the youngsters into groups of 8/10 students, around a table/ desks, with a poster available
3	Production of 5 individual ideas on the sentence suggested as a stimulus	15	Focusing attention on the topic suggested. Rendering tacit knowledge explicit	The participants write their ideas on post-it notes
4	Collection of individual inputs and organisation of collected ideas	20	Comparing explicit knowledge, rendering other tacit knowledge explicit in the group debate	The participants attach their post-it notes to the posters divided by subjects and a coordinator is chosen
5	Selection of the most relevant ideas	20	Implementing a debate on the basis of shared knowledge	Each participant votes by choosing the ideas he or she agrees with
6	Organisation of the results to present them to the whole group	30 + 5xN	Rediscussing the knowledge made explicit and its links also in view of "communication"	The groups prepare a final product that they then present in a plenary session (5 minutes per group)

Metaplan, cooperative learning and key competences

When the Metaplan is employed in schools, mainly to motivate and encourage learning, it can be included in the processes of cooperative learning. When we speak of 'cooperative learning' we refer to «a vast educational movement which, although starting from different theoretical viewpoints, applies particular cooperation techniques to classroom learning» (Midoro, 1994).

M. Comoglio defines 'cooperative learning' (1996) as

A method of class management that involves the students' resources in the learning process. Hence, it is different from traditional methods that aim at increasing the quality of the teacher's didactic and content knowledge and extending it.

As in the Metaplan methodology, cooperative learning envisages the students undertaking responsibilities in a process that is not guided but 'facilitated' and in which interacting with others is fundamental. This kind of process has a good chance of inducing 'autonomous, significant learning' in the sense suggested by Rogers (1978):

When a school develops an education system centred on the person, in a climate that encourages growth, learning goes deeper, proceeds more rapidly and extends to the life and behaviour of the student more than education acquired in a traditional classroom. This happens because the direction is self-chosen, education is self-established and the entire person invests feelings and passion in the process at the same time as intellect.

Cooperative learning is organised around complex tasks that 'challenge' individual students and groups. The Metaplan is a technique that enables this challenge to be introduced gently. The task is progressively accepted, sharing with group members happens gradually – criticism is not allowed during the first sharing of ideas criticism, only requests for clarification are – and everyone is given the chance to their own opinion, both rendering their own tacit knowledge explicit and undertaking the task of restructuring ideas within the group.

The Metaplan technique thus enables those skills defined by Comoglio (1998) to be put in practice and developed as «a series of

motivated and cognitively controlled behaviours that enable a person to start, develop, maintain and effectively implement a good relationship with the others, ensuring he or she is well inserted in the surrounding environment». Social skills are usually neglected by schools, which take them for granted or entrust them to family and society (in Italy more so than in other countries). In actual fact it is extremely necessary to learn these skills, possibly precisely in a protected context, and among one's peers, such as schools can offer. Indeed, these are interpersonal communication skills, leadership skills, problem solving skills, action skills for positive, constructive conflict management, decision-making skills, all competences that society requires and that the Metaplan methodology strengthens. Of course, a Metaplan session is not sufficient to build them but it is certainly sufficient to denounce their absence, the lack of practice with them and the difficulty of considering them as school competences.

These very competences appeared again as part of the key competences in a fundamental research in this field: the OECD DeSeCo project (Rychen and Salganik, 2003; OECD, 2005). Key competences are those necessary and indispensable competences that enable individuals to play an active role in multiple social contexts and to contribute to the success of their lives and to the good functioning of society. One of the three fundamental categories of competences is that of «functioning in socially heterogeneous groups». In this category the focal point is the interaction with the 'other', who is different from oneself, which is considered fundamental for physical and psychological survival. The essential skills of this category are:

- The ability to establish good relationships with others: it enables personal relations to be established, maintained and managed;
- The ability to cooperate: it enables people to work together and aim at a common goal;
- The ability to manage and solve conflicts: it presupposes the acceptance of conflict as an intrinsic aspect of human relations and the adoption of a constructive way of managing and solving it.

The Metaplan thus appears as a useful tool that can be used in schools not just to rouse interest, motivation and participation but

to build social skills and, as we shall see in the next paragraph, cognitive skills as well. But are teachers prepared to use it? Discussing its use outside of the project was not one of our goals, but while all the teachers got involved and seemed very interested, our impression was that they considered the experience as 'exceptional', tied to the project and not capable of being implemented again in the daily practice of teaching.

Metaplan, participation and tacit knowledge

Some of the Metaplan's characteristics, the fact that it is a 'dynamic', 'democratic' technique aimed at visualising the debate (Lauche, 2002) undoubtedly encouraged us to choose this methodology for our communication project which focuses on the very aspects linked to participation. However, another of the Metaplan's characteristics was no less relevant to our chosen goals: even though it is a participative methodology which, by definition, is based on the simultaneous presence of individuals and groups, emphasis is devoted to individual reflection, which is particularly significant precisely in the first stage of the process.

Antinucci pointed out that the learning method we are used to is of the *symbolic-reconstructive* type (Antinucci, 2001) in which symbols are first decoded and then reconstructed in one's mind (interpreting text and language). Unlike the very old learning techniques of the *perceptive-motor* type, *symbolic-reconstructive* learning has a minimal exchange with the exterior: moreover, this exchange ends in the initial input. But is the initial stage the one in which exchange with the exterior is the most useful? Is it possible to define learning methods whose central significance is given by the possibility of roaming around within ourselves, of giving our thoughts free rein for a while?

The use of the Metaplan methodology, if well carried out, is aimed precisely at expanding thought in view of its subsequent synthesis.

It is a similar process to the one described by Nancy Tague (Tague, 2005) regarding the need to both expand and focus our thought accordingly on the decision-making process. Tague defines

a sequence of expansion and focusing phases, the first of which are apparently connected to identifying problems, analysing causes, and generating solutions. The focusing stages are apparently connected to the moments of synthesis, such as identifying the root of the problem, its ultimate cause, and the choice of the optimal solution. Adopting this model stimulates the awareness that, in order to focus, it is first of all necessary to expand one's thought. The outcome is a process of expansion and contraction, in which it is necessary to dwell on the first stage in order to go on to the second. The subsequent focusing stage enables the creative potential produced not to be dispersed, formalising ideas, judgements, proposals, and giving them fixity, albeit in the framework of a continuously evolving process. As with respiration, only a calm and complete exhalation enables a long inspiration. This metaphor is well suited to the methodology used in our project, in which individual (and then collective) reflection spaces and times are defined for students who are about to undertake a process of articulated and challenging further study.

In reality, however, it is not easy to operate a clear-cut distinction between the focusing and expansion stages. Moreover, the reflection on the role of tacit knowledge cannot be left out when the initial stage of thought expansion is elaborated upon. Tacit knowledge is of an unconscious subsidiary nature, based on practice and experience rather than on concentrating on the focal aspects of knowledge, which only subsequently can become explicit knowledge but which, according to Polanyi, is the primary source of any kind of knowledge (Polanyi, 1988).

However, in reality it is also difficult to pin down the linear stages in which the transformation of tacit knowledge into explicit knowledge is fully and completely achieved. The Nonaka model (Nonaka, Takeuchi, 1997), in contemplating the various kinds of knowledge conversion (from tacit to explicit, from explicit to tacit, from explicit to explicit and from tacit to tacit), suggested considerable innovation along the line traced by Polanyi, envisaging the recursion of the processes. However, reality is even more complex, inasmuch as it is quite likely that the different modes of knowledge conversion will coexist simultaneously in a plurality of synchronously-connected cognitive processes. The Nonaka model

that keeps the various stages separate, not only logically but also temporally, inevitably operates a simplification that makes the model more easy to use for the analysis of certain corporate processes but less suited to grasping the complexity of knowledge-sharing and conversion processes, which is fundamental to test participative approaches and science communication models (Valente, Luzi, 2000).

It is thus necessary to reflect on the role of tacit knowledge accepting the coexistence of various knowledge conversion possibilities, as they appear in Figure 1.

Figure 1. Main conversion methods of tacit and explicit knowledge in the Metaplan's stages

Stages and levels Knowledge	Reflection and first formalisation <i>individual level</i>	Group debate and classification of the contributions <i>inter group level</i>	Presentation, final discussion <i>intra group level</i>
from tacit to tacit socialisation	New tacit knowledge is in part produced		New tacit knowledge is in part produced
from tacit to explicit externalisation	Part of tacit knowledge is externalised (indiv.)		Externalising of tacit knowledge by individuals and groups
from explicit to tacit internalisation		Production of tacit knowledge of the group	Production of shared tacit knowledge
from explicit to explicit combination		Production of explicit knowledge by the group	Production of shared explicit knowledge

The Metaplan methodology adopted heightens the initial stage of reflection and formalisation of concepts and opinions on the topic. Each participant is required to express the same number² of considerations on the topic in full and possibly³ complete autonomy. Each participant, therefore, tries to render explicit his or her points of view on whether and how climate change and the water crisis are experienced as problems on the basis of his or her own personal experience, on the causes and possible solutions. Each expresses his or her own points of view making a considerable effort to externalise part of his or her tacit knowledge, of that knowledge that he or she did not even know he or she possessed on the topic and that, although mixed with the universe of beliefs⁴, is at the basis of the cognitive (Polanyi, 1988) and learning process. In order to do so, each will have to provide a contribution that starts from the deepest self, potentially facing the risk of it appearing as 'banal'. Normally the result is a plurality of reflections, including ironic ones, which express more or less articulately an attention towards local or global, individual or collective aspects of the problem, with a bias that is more social or political, more scientific or technical or linked to health, etc.

This initial stage of becoming aware of one's own knowledge is fundamental in order for everyone to be able to recognise parts of him or herself both in the course of the Metaplan, in the stages of exchanges of opinion within the group and with the other groups, and in all the project's subsequent activities. And in particular:

- In the study of the scientific documentation provided by the Cnr and by the teachers (explicit knowledge);
- In the interaction with national and international experts, in

² To this end, a standard number of post-it notes was handed to each person.

³ In relation to situations of greater difficulty or in consideration of the age of the participants we tempered individual 'isolation' with actions aimed at facilitating the explicitation of knowledge.

⁴ I will not enter here into the issue of the relation between knowledge and beliefs, for which I devolve matters to Silvia Caravita *et al.* 2008, Boldrin, Mason 2007, Cerroni 2003, Valente, Luzi 2000.

which tacit and explicit knowledge integrate with one other.

Indeed, next to the fact of being fascinated by the novelty, the Sartrean concept of recognition is very influential in each learning process, i.e. finding parts of ourselves, of our thoughts, judgements and values in the new knowledge that is offered to us. However, this is neither an easy process nor one to be taken for granted, since it implies determination and individual effort and, especially, requires that time and space are reserved for it.

The second stage is characterised by two fundamental phases: a group discussion starting from the concepts highlighted by each person and the organisation of the contributions according to criteria defined by the group. In this phase the externalisation of tacit knowledge is less important, while the combination of already explicated knowledge takes on particular consistence. The main cognitive activities consist in:

- Analysing and comparing the concepts (opinions and judgements) expressed by each person;
- Seeking the relations among concepts (analogy, synonymia, affinity, oppositiveness, hierarchy⁵, cause/effect relation, logical-temporal relation, etc);
- Graphic representation of the concepts and relations among them⁶.

Normally students are not aware of the various knowledge classification and representation models, thus their choice of criteria and methods happens unconsciously. Moreover, it is interesting to note that several representation models are frequently used, with the consequent creation of very interesting schemes.

The third phase is characterised by the presentation of the group's work, the final discussion and the drafting of the reports.

⁵ The relation of hierarchy is one of the most used by male and female students.

⁶ Some male and female students spent their time and energy devising the graphic design and the other aesthetic aspects of the poster summarising the group's work. This shows a sense of belonging and identification with the work carried out, but also the willingness to contribute to the group's work: in some cases the 'artists' took part in the debate within the group to a lesser extent compared to the other students.

First of all what is witnessed is a combination of explicit knowledge among the groups, but, during the debate, the tacit knowledge belonging to each group is externalised and new tacit knowledge is generated as an outcome of the final discussion.

Although the greater dynamism of the exchange of tacit and explicit knowledge happens in this phase, the impulse given to the process finds its origin in the activity of elicitation of one's own tacit knowledge that took place in the first phase. Tacit knowledge fosters the dynamic process of stabilisation/ construction of knowledge and the result is extra tacit knowledge generated by the knowledge production system.

Conclusions

In our project we tried to stimulate a *condensation* process from a *nebulous, vague knowledge* in which scattered information was memorised without connections, and thus wandered freely, to a *liquid knowledge*; the latter is more defined, but still flexible and better suited to a situation of exchange of ideas and learning than the less flexible and less usable *crystallised* one that schools provide. Like a crystal, with a well-defined form and structure, school knowledge can be memorised rather easily but has a difficult time aggregating around it the unordered structures of thoughts being formed.

This process, from unordered nebula to liquid, from tacit knowledge to explicit knowledge, but always liquid, which is different from codified knowledge, happens in continuous spirals in which exchanging opinions with others is fundamental for the process of condensation of ideas. It is especially important for the exchange to be among peers (and the Metaplan technique helps in this), in the sense that there is no established authority that imposes the crystal as the truth even before the individuals have had the chance to present their own knowledge and intelligence. In this process, it is not only the individual who learns: the group learns too and learning is not just about content but also about the aforementioned social competences.

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