The Problem Solving Methods To Support Teacher's Life Long Learning

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abstract:

Changes in the labour market in rural areas, depopulation in some of them and a growing number of drop-outs in the agricultural and general schools increase the challenges and problems of the educational teams. Various problem-solving methods have been introduced in schools with the aim of creating a learning organisation, in order to develop its flexibility according to a changing context, and allow the educators and the students to manage autonomously their lifelong learning.

1. New challenges for the teacher trainers

With the land abandonment and the depopulation of some geographically disadvantaged rural areas, with the evolution of the common agriculture policy, the challenges of vocational schools are changing :

- in order to survive, they have to attract a new public, creating and suggesting new types of curricula ;
- simultaneously, and paradoxically, they manage more and more students without any professional project, usually drop-outs from the general educational system.

Confronted with these two challenges, the educational staffs have to imagine new types of learning organisation, new styles of pedagogy, to take new types of position, to develop new skills, in order to :

- help students who intend to be project managers, to create sustainable projects in rural areas in an unclear employment market; this means to allow them to learn during all their life so they can adapt themselves to changing contexts.
- to reduce the number of drop-outs, trying to re-motivate students in huge difficulties.

The teachers, who have been considered dealers of knowledge, are becoming tutors, leaders, facilitators, "inspirators". They have to adapt themselves continuously, constantly resolving new problems and giving students the skills to resolve their problems by themselves.

2. How to support the teacher to manage these new challenges

The support systems and organisations, created by each country to help teachers, are more or less efficient to answer to concrete and frequently urgent problems submitted by the schools. Within the eight European countries[*] participating in the Comenius project "Prosolva"[**], three types of support system profiles are distinguished :

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[*] Bulgaria (Аграрен университет of Plovdiv, Agricultural High school "Tzantza Yoanna" of Pzardjik, High Mechanical school "prof.Cvetan Lazarov" of Plovdiv), France (Metafor enterprise of Avignon, Agricultural school of Saint Génis Laval, SupAgro Florac), Greece (Panepistimio Paton of Patras, Filekpaideftiki Etaireia

- a system which proposes an offer mostly for in-service trainings ; these offers are determined according to references defined by the supporting institutes, or by the national/regional administrators.

- a system which proposes an offer according to the requests of the teachers and the educational teams ; these requests are synthesised and serve as a guide for the creation of a national frame, within which the support organisations will define an offer.

- a system which will answer directly to the requests of the educational staffs and school teams. Usually the assistance is carried out *in situ,* with the whole educational team or with a part of it. The objective is to resolve directly the difficulties.

This latter system is beginning to be very usual in some countries, and in emergence in some others. Even if each system is relevant and can be combined with the others, our hypothesis is that, if we want to allow a change in teachers' or students' behaviours or values, the resolution of c**oncrete** problems is more efficient than finding answers to needs defined *externally*, or than suggesting solutions to problems which have been so conceptualized that they become abstract. Moreover, to resolve concrete problems, it will be more suitable to work with the educational team of a school than with a group of people from different contexts.

This approach to supporting teachers implies that the teacher trainers/the supporters implement specific skills : if it is better for them to be a little expert in some kinds of problems, they also *have* to be able to animate various problem-solving methods that will make solutions emerge.

3. Various problems to solve

If each partner has worked in his country with specific problems, all these problems can be considered european, and can appear in any schools (see table 1).

Problems analysed by the educational team

Arsakeo Lyceo of Patras), The Netherlands (STOAS of Dronten), Norway (Universitetet for miljø- og biovitenskap of Aas, Valle videregående skole of Lena), Poland (V Liceum Ogólnokształcące imenia Wspólnej Europy of Olzstyn, Zespoll skol ogolnoksztalcacych of Olzstyn), Spain (IFAPA of Cordoba, CIFA de Malaga, Greguerias secondary school of Cordoba), The Czech Republic (Česká zemědělská univerzita v Praze, Stredni zemedelska škola a Stredni odborna skola)

* *European Comenius 2.1. 226675-CP-1-2005-1-FR-COMENIUS-C21 about the problem-solving methods for teachers

in the teacher-student relationship - Lack of motivation, of interest; lack of will to make efforts, reject of the school system, absenteeism - conflict in intercultural relation - management of a big number of student, of group (development of differenciated pedagogy), - management of dyslexia
in the student-student relationship management of intercultural diversities, racist and sexist behaviour
in the relationship between students with their own self Prevention of specific risk (alcoholism, drug consumption, sexuality, ...)
in the teacher-teacher relationship difficulty to create a team
in the teacher –headmaster relationship Refusal to permit new pedagogy (risky, financially expensive)
in the teacher-educational system relationship - Inability to develop active pedagogies because of a heavy curriculum - Divergence of ethic between the teacher and the program, the school, inspector values - Lack of hierarchic support - Constraint of result - difficulties to answer to the demand of the governement changing from a teacher centred approach to a student ones. - Awful learning context (buildings)

Table 1: *problems observed in some European schools*

4. different problem-solving methods

A support to these challenges, Comenius 2.1. project « prosolva », aims at giving an overview of problem-solving methods helpful for teachers with difficulties; its aim is also to introduce problem-solving methods in schools, as a main approach to allow teachers and students to develop their personal and professional awareness, autonomy and adaptation ability influencing on their professional practice, and eventually to develop lifelong learning skills.

The participants of the project, that are general and agricultural secondary schools or teacher training centres, have collected an exhaustive list of problem-solving methods which can be used by teachers and teacher trainers; three types of methods can be distinguished:

- reflexive methods usable by one person : video-observation, log, ...
- methods usable by two-person teams or very small peer groups: mutual observation, log, cross-analysis, ...
- peer groups methods which require at least seven people: forum theatre, practice analysing group, Bono's six thinking hats, ...

The objectives of these approaches can be either to analyse the situation, or to suggest new solutions, or to test new solutions or a mix. Table 2 clarifies the specificity of a few of the main problem-solving methods.

name	***objective***	***Main steps***	***Main interests***
log	- to be reflexive about your own professional experiences	1. remember a recent event which posed problems 2. write down the facts, and your feelings 3. exchange your writing with others, who will do a small feedback (optional) (the process has to be realized several times)	– to formulate the problem through writing – to observe the kinds of situations which cause you problems.
Video-observation	- to observe and be reflexive about your own experience	1. film your own professional situation 2. observe the recording and analyse your professional behaviours (alone or with peers)	– to analyse teacher-learner interaction or students in learning situations – to have an objective mirror of your own behaviour
Mutual observation	- to develop a mutual observation and feed-back between at least two teachers/students in their respective activities	1. observe respectively the course of a colleague, or a learning situation of a schoolfriend 2. give them a feedback	- the questioning comes from a shared reality
Cross-analysis and practice analyse group	- to analyse the problem of one person, give a feedback and suggest solutions (cross-analysis per group of 3 peers), intervision (larger group)	1. let someone describe a problem 2. the other participants ask questions about the situation for clarification 3. the other participants make an hypothesis about the problem 4. the other participants suggest new solutions	– to change the point of view of the person about their problem – to enhance creativity

name	*objective*	*Main steps*	*Main interests*
Forum theatre	- to test different solutions / proposals for one problem-situation	1. let someone describe a problem 2. with some of the other participants, script the situation 3. play the scene in front of spectators 4. suggest spectators to test potential solutions, taking a role in the scene	– to test the impact of new potential solutions – to enhance creativity
Bono's six thinking hats	- to allow a group to resolve a common problem	to solve the problem of a group in 6 steps : description of the facts (white hat), proposal of new solutions (green hat), selection of some of them through advantages (yellow hat), disavantages (black hat), motivation /feelings (red hat), organisation of the process (blue hat)	– to share the process of creation in steps, avoiding a confuse discussion – to open creativity

***table 2**: description of some problem solving methods*

All these methods find their basis in the tradition of humanistic psychology. The characteristics of this tradition have been described in five postulates by James Bugental in 1964 : 1. Human beings cannot be reduced to components, 2. Human beings have in them a uniquely human context, 3. Human consciousness includes an awareness of oneself in the context of other people, 4. Human beings have choices and responsibilities, 5. Human beings are intentional, they seek meaning, value and creativity.

Nevertheless, if these methods carry the same values, they don't have the same psychological orientations : some of them take root in the systemic approach , others are more behaviourist, or more related to a psycho-analytic background.

5. Experimentation: the introduction of the problem-solving methods in schools

All these methods have been introduced and tested in school problems and challenges. The main aim is to give educators/teachers and students the ability to use them by themselves as important tools of learning, allowing them to adapt their professional behaviours in changing contexts. Moreover the aim is to analyse how the problem-solving methods can contribute to make the school a real learning organisation.

To improve the way to resolve a problem, Palo Alto's approach* has been introduced in the project as a metamodel which can be used with any problem-solving methods ; it helps the questioning of a problem, and is useful to assess the impact of a problem-solving method.

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* Created by a team of researchers from Palo Alto (whose originally Gregory Bateson, Milton Erickson), the Palo Alto approach was developed at first to manage different types of persons' problems through systemic therapy (better known as brief therapy). Palo Alto metamodel gives a clear frame to analyse a problem and imagine new solutions to resolve it. Totally different from the other schools of thinking, this approach does no pathologization and doesn't tag the persons in difficulty; during the problem-analysis process, the analyser doesn't try to understand the causes of the problem, but the dynamic of the problem in the context, the relations in a systemic way. Last specific point about the metamodel : ***the solutions 'attempts*** : the analyser will look for the attempts that the problems' owner tries to develop to resolve his problem without success. According to them, he will propose a new attempt in the opposite way, usually out of the logical mind. Used in different

In practical terms, in ten general or agricultural secondary schools, mostly rural, the project has been suggested to the educational team ; voluntary educators (usually teachers) have tested from one to three methods, during one year, with the purpose to introduce them in the school organisation.

The research teams (teacher trainers/researchers/teachers) from each country with the participants had to :

1. find way to attract the teams

2. analyse the situation according to the autonomy of the teachers with their problems/challenges : knowledge about their problems, methods already developed to resolve them, ...(a tool to describe the initial situation)

3. find a way to make the challenges or problems emerge, favour their expression

4. find a way to choose the strategy of solving problems, the process of answer

5. adapt the methods

6. analyse the efficiency of the solution proposed ; or the interest for the solution proposed (to fight against the resistance to change)

7. analyse the autonomy of the teachers ; their awareness about problems, ...

8. analyse impact of the introduction of the methods at school

5.1. About the strategies to introduce the problem solving methods at school

According to the situation, the type of support system existing in each country, or the origin of the request (the school or the research institute), the approach to motivate educational teams and to allow them to appropriate problems solving methods is not the same; it seems useful to explain our own experience to the schools support institutes which would like to implement it.

Our hypothesis stems around the notion that the problem solving methods are excellent approaches to develop life long learning and to create a *learning* educational team in the school.

According to the different strategies used by prosolva partners, we can identify different main steps which can be useful to introduce the topic if you are someone external to the school. Of course, if you are internal to the school, some steps will not concern you. In what follows, we will use the term leader for the person who will introduce the PSM at school.

- To analyse the demand

You can identify two types of situation:

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problem solving methods, it is finally an excellent approach to analyse and understand a problem, in any psychological or sociological situations and to change deeply the attitude of the person.

- the demand comes from the school (a teacher, another staff memeber, the director, ...): in such case, the first activity of the leader will be to analyse such a demand: who has defined the problem? What is the origin of the demand? Which persons are concerned with the demand (a part of the educational team, the learners, ...) ? Who agrees with the demand? If the demand doesn't come from the headmaster, is he informed, does he agree? What are the expected results? (to resolve a concrete problem, to learn new problem solving methods, to create a coherent educational team, ...? The analysis of the demand will allow the leader to decide which strategy to use to continue, or to stop ....
- the proposal comes from the leader who wants for instance to suggest new ways of continous teachers training. Such a situation is certainly less easy if the school team feels that they don't have important problems and consequently they don't need to learn such problem solving methods. The leader will promote the problem solving methods to the headmaster or other administrative staff, or to some teachers. If they express an interest, the leader will have to analyse what kind of interest it is.

- To promote the problem solving methods to the entire educational team

The main challenge of this step will be to attract most of the educational staff. There are two possibilities here:
- the participants who will engage in the problem solving methods that we recommend are volunteers. The problem solving methods presuppose an important involvement of the person, which will be easier to have if the persons are volunteers. At the same time, there is a risk to have a 'separation' in the educational team between the 'problem solvers' and the others.
- The director decides to define a specific time and place to permit the entire team to participate. The training is compulsory. The challenge of the leader will be to interest each participant. A confident atmosphere is undispensable to implement problem solving methods. It means that the motivation has to be created before starting.

During this step, the leader will have to analyse again the demand, the wishes, and the fears of the participants.

- To create the group of participants

Can we accept everybody? The direction team has a specific place to take in the process. In some case, he decides to participate, in some others, he decides to let the participants work by themselves, to allow them to speak freely. Finally, the participants decide to include or exclude the director from the training.
No solution is better than the other. The relationship of the director with his staff and his own sensitivity are certainly predominant in the choice.
Any choice which will be taken as well as the contract with the group and the headmaster will make establish a framework for working together and thus the responsibilities each memeber will have during the process.

- to make discover the problem solving methods

The problems solving methods can be discovered through a long training process or through different short sessions. In this latter case, the proposed solutions which can emerge from a session can be tested during the inter-session; the next session will give the opportunity to have feed-back.

Regardless of the type of process chosen, the objectives will be:

- to discover different types of problem solving methods
- to implement them
- to learn to lead them

Two main strategies have been developed according to the main interests of the participants:
- to start with problem/challenges/difficulties
- to start through problem solving methods

- to start with problem/challenges/difficulties

The participants can be interested in the action, because they have to resolve concrete problems. In such case, the leader will prefer to collect these problems and will try to solve them using problem solving methods through. This strategy allows to attract the participants directly with their own motivation; but on the other hand, they can be so concentrated on their own problem resolution, that they won't pay attention to the method itself.

Another question is to know if it's better to start with the resolution of a difficulty, a problem, or a challenge. The resolution of a difficulty (defined as a problem which took place one time) won't certainly have the same impact as a problem (defined as a redundant difficulty). The proposal made during the problem solving process, maybe will never be tested (the situation of the difficulty will not necessarily be reproduced another time).
Avoiding the term problem can be another strategy. Instead using the term challenge gives a positive point of view of a problem, and a way to resolve it. At the same time, the term challenge doesn't have to be used to hide problems.

- to start through problem solving methods

Another strategy is to concentrate the attention directly on the problem solving methods themselves. Some of them can be demonstrated through the problems of some participants.

- to communicate in the school

If only a part of the educational staff participates in the approach, it's important to talk about the process to the others thus allowing others to be integrated in the process. This approach will not allow the 'creation of a formal' group which would be segregated in the school. After each session, it can be possible, for instance, to spread the main results of the workshop, taking care at the same time to the respect the rule of confidentiality.
The headmaster, should be informed about the activities of the group if he doesn't participate in the process himself. He can't be kept away from the decisions taken during the process, because he may have to play an important role in maintaining the process alive.

- to follow up the development of the group skills, and the impact of the problem solving methods.

The appropriation of the problem solving methods presuppose:
- to be convinced of their interest:

If a problem solving method has the objective to develop the creativity of the participants, it doesn't mean that the solutions proposed to resolve a problem will be efficient or accepted. We could easily and too quickly conclude that the method is inefficient and go away. The leader will take care to analyse the feelings/the impressions of the participants after the implementation of each method. The leader will also propose to have feedback

when possible about the real impact of a method (what's happened, did the person try a proposed solution? Was she happy about the obtained results? ....)
- to feel ready to lead them:
Any strategies chosen after the presentation and use of the different PSM, it's important to ask the participants to choose some of them, and lead them. At the beginning it's better to implement them in a trustful context with the supervision of the leader, and/or a co-leading of the process, before doing it on their own.

5.2. About the problem solving methods tested by the educational teams

During the action research, the participating educational teams had to test some problem solving methods and give their preferences (see table 3).

method	***interests***	***limits***
log	It's an easy and quick approach	The impact will appear after a long maturation
intervision	The approach is appreciated as a simple one ; gives an interesting overview about new solutions	Supposes a important number of participants
Mutual observation	The approach allows to mix different subjects	The presence in a class of another colleague/observer changes the context and specifically the students behaviours
video-observation	The observation of a recording is objective	It requires some technical skills to film the professional activity
Forum theatre	It allows to test the impact of a new proposal	The fictional context created by the scenario can be different from the reality
Bono's six thinking hats	It allows to analyse a problem group; it shares the process of creation to avoid confusion.	It needs flexibility and adaptability ; difficult to be used by neophytes

Table 3: *interests and limits of problem-solving methods according to teachers*

5.3. Main impacts of the introduction of problem solving methods at school

We can distinguish different types of change at the end of the action research, according to the context.

- some individual changes without appropriation of the problem solving methods: it may be possible that the main interests of the participants are more to resolve some problems and to have the possibility to speak about them (using a cathartic effect), than to discover the methods themselves. It will be a confusion between the means and the ends. It's certainly difficult to imagine that nothing changes. At least the communication between the participants increased systematically and an improved quality of listening was evident, and most importantly the participants did not feel

judged. Moreover, the fear and shame of admitting to having problems was reduced and for the first time transversal problems were analysed. They opened their ideas to discover new solutions, to analyse a problem and not only to be in a position of advisor. Participants began to see problems differently, and motivation grew because they started to '*try something new*'. They feel more relaxed and less in a state of utopia and finally they don't see themselves as being entirely responsible.

- The participants use the methods by themselves, individually in their own activities, usually with their students
  Jacqueline Salesse from saint Génis Laval :
  '*I have used Palo Alto methods in different situations with my students and the results were extraordinar ; for instance, one time, a student refused to work; he just sat in his chair. I pressed him to change behaviour, but nothing changed. I decided to apply the Palo Alto approach: I took away his desk and told him that it useless for him because he didn't want to work; the student was surprised and asked me to return his desk; I refused telling him that I didn't want him to work. He asked his neighbour to share his desk so as to work and he did it. His behaviour didn't change again'.*

  Other teachers observed that students learned to argue, to defend their opinions, to use their non verbal and verbal communication.
  In these situations, it was observed that teacher-student relation changed. The students were conscious of the teacher's wish to change, to evolve.

- The participants create a group of problem solving methods in the school
  It was certainly the utopia of the prosolva project to support the creation of autonomous educational teams using the problem solving methods by themselves. Such an aim is not easy to reach:
  '*In my school, the teachers, after one week of in-service training, have decided to create a 'problem solving' club which is responsible for implementing different problem solving methods. As director , I will do my best to make this club reality. This club will be opened to any person belonging to the educational team'. testimony of the director of the school of machinery, Plovdiv, Bulgaria*

5.4. Criteria involved in the change

Different institutional, cultural, professional, psychological criteria can be obstacles as helps to allow the school to integrate the problem solving methods; some of them have been judged as very important:

- institutional criteria:

- the director's attitude: he can refuse or welcome such an initiative; nevertheless, without his support, it seems impossible to implement such a project.
- the task of the teachers: the teachers whose lonely tasks are to teach (and their contract specifies a specific amount of hours) will not feel motivated to participate in extra-activities. On the contrary, teachers who have to stay at school to develop different activities will be more easily interested.
- the director's behaviour : if the director is looked upon as the one who manages every activity or on the contrary if the director is thought of more like a facilitator, the educational team will feel more or less ready to develop new activities.

- professional criteria:

- the planning time of the teachers which may or may not be conducive to meetings among teachers
- the curricula: they can facilitate or not interdisciplinary pedagogical or professional activities.

- psychological criteria:

- the difficulty or the freedom to express problems to your colleagues for fear of being considered incompetent
- the difficulty or the ability to accept that you have problems
- the difficulty or the ability to consider the solution to a problem possible
- the difficulty or the ability to accept some changes of behaviour.

- cultural criteria:

It seems that the persons of the educational teams can express a culture of cooperation or a culture more individualistic.

conclusion

The problem solving methods are certainly not the only approaches which allow lifelong learning, but their contribution is effective. If they are a little worrying (a small part of the educational team in each school accepted to discover them) it's certainly because they are very implicating ; if they allow a big change for the user, they create a big resistance to change too.

It would be utopian and wrong to try to make teachers and students totally autonomous with the problem solving methods use. If such methods participate to create a learning school, they usually require to be implemented by a neutral leader. They should allow to create a new type of relation between educational teams and teacher trainers, new types of support and help.

During the action research, a lot of problems that were dealt with concerned the students in difficulties (with a lack of motivation, a lack of professional project). The problem-solving methods gave a new booster to enhance solidarity, autonomy, and « responsibilisation » between teachers and students, abilities that are essential to develop a project in rural areas.

Boal A. (1979) – Theatre of the oppressed- London : Pluto

Bono (de) E. (1982) - Lateral thinking – Penguin US – Harper Collins

Bugental J.F.T. (1965) - The search for existential identity - New York: Holt, Rinehart & Winston

Cohen-Cruz J., Schutzman M. (1994) – Playing Boal – London : routlegge

Cooper J.M. (1993) – Teacher's problem solving : A casebook of award- winning teaching cases - éd : Broché , Allyn and Bacon

Watzlawick P., Weakland J.H., Fish R. (1974) – Change : Principles of problem solving formation and problem resolution – New York, Norton

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