HERO

HERITAGE ECOLOGICAL RESTORATION
FOR INCLUSION OPPORTUNITIES

Co-funded by
the European Union

Developing inclusive training opportunities in heritage sites restoration

A trainer toolbox

Hands-on workshop for the traditional Balkan technique of cobblestone, Epirus, Greece 'KalderimiX2' (Photo credit: Athena Apostolou | Blk © 2019)

TABLE OF CONTENTS

INTRODUCTION

Training local craftspeople in traditional building techniques with volcanic materials in Santorini-Therasia, Aegean, Greece, 'Under the Landscape' (Photo credit: Ioanna Ntoutsi | Blk © 2021)

HERO - Heritage Ecological Restoration for inclusion Opportunities - aims at improving training of trainers in the field of built heritage restoration, and is dedicated to the inclusion of vulnerable people and the implementation of environmental sustainable practices. The project is the result of a transnational cooperation between ACTA VISTA and BAO FORMATION (France), BOULOUKI - Itinerant Workshop on Traditional Building Techniques (Greece), DRAGODID (Croatia) and POUR LA SOLIDARITÉ (Belgium), 5 organisations interested in the alliance between heritage restoration, training and employment. The project is funded by Erasmus+ programme (Strategic partnership/ Key action 2) for the time period December 2021 to September 2024.

HERO project aspires to map innovative European initiatives working on this unique combination of heritage, training and environmental aspects; to propose educational material on inclusion and the environment for trainers; and ultimately to promote new solutions towards policy makers.

→ **The present handbook is a pedagogical toolkit focused on adapting the pedagogy of trainers to vulnerable people.**

Heritage as a lever for inclusion and training in Europe

The HERO project necessitates to use, comply with and co-estimate diverse EU policies and frameworks , in order to holistically approach the issues addressed. The project's objective stands at the cross point of Social, Cultural and Environmental policies, directives, plan of actions and frameworks.

HERO is fully relevant within the five Pillars of the "**European Framework for Action on Cultural Heritage**"[1] and their specific clusters of actions to address the following objectives and challenges:

→ **Unemployment with back to work solution and experimentation** (pillars 1 - 2);

→ **Lack of skilled workers** with vocational training in heritage and environmentally oriented trades (pillar 2);

→ **Endangered intangible heritage** protection with sites' restoration and management (pillar 3);

→ **Need for ecological shift** on heritage restoration and modern building sector (pilar 2);

→ **Lack of resources** in our fields with the capitalisation of experiences and production of open operational tools (pillar 4) a common need of social cohesion with a pluri-disciplinary and cross national European project (pillar 5).

This will also rely on the implementation of actions drawn by the "**European Pillar of Social Rights**", such as the European Skills Agenda and its flagship initiative the "Pact for skills".

In a Recommendation adopted in 2021, the European Commission calls on Member States to "set specific targets for upskilling or reskilling cultural heritage professionals".

In addition to this and "building up on the Blueprint Alliance for cultural heritage" (CHARTER), the cultural and creative industries, categorised among the 14 eco-systems identified by the "European single market strategy", currently building a large-scale partnership for skills development that should be incorporated to the "**European Pact for Skills**".

The HERO project goes a step forward and recommends that those skills are examined in a holistic way so that trainers working with vulnerable people are provided with adequate pedagogical skills that will ensure a better professional and social inclusion.

Finally, 2023 has been declared as the **European Year of Skills** by the European Commission. This year the EU will build on many of the ongoing initiatives such as the above cited Pact for Skills which has pledged to help upskill up to 6 million people. A special focus will be given to activate more people for the labour market, in particular women and young people, especially those not in education, employment or training.

[1] The 5 Pillars are: 1. Improving participation and access for all; 2. Developing smart solutions for a cohesive and sustainable future; 3. Safeguarding endangered heritage; 4. Mobilising knowledge and research; 5. Reinforcing international cooperation

Heritage restoration as a lever for vulnerable people training

Heritage is key in promoting social inclusion and giving a sense of pride to the person working on an important site, a historical structure, an artefact – heritage should be recognised as a common good beneficial for society's well-being and development, as well as a person's self-confidence, and education. The sense of pride specifically is key in the integration and learning process, along with the sense of belonging and working within the framework of a common heritage.

Heritage restoration is a field of activity that may be accessible to people who are not used to classical or traditional pedagogical approaches, who encounter language difficulties or are more keen and capable of working with their hands and using technical skills. We believe that heritage restoration is perfectly suited for learning-by-doing pedagogy and pedagogy through gestures.

The emerging need to adapt the heritage trainers' pedagogy is unfolded in three directions:

→ **Increasing the accessibility of working in the Cultural Heritage preservation** for people who encounter economic and social difficulties, enhancing, thus, the inclusiveness of the sector

→ **Introducing heritage restoration and historical building techniques** to a broader audience as an agent for labour market integration and vocational (up or reskilling)

→ **Fostering a hands-on and learning by doing approach** in our educational formats.

A prerequisite towards the above direction is understanding the crucial role of trainers, their daily practices and obstacles, their challenging practice of training vulnerable groups of people and combining it with ensuring their socio-professional integration.

Historical crafts and heritage restoration skills may assist towards the creation of professional and training opportunities, through the training and upskilling of people from various vulnerable social groups:

→ **Women and men that face mostly economic difficulties**, in accessing labour market such as long-term unemployed, people who have no certified qualifications

→ **Refugees and migrants,** generally people who, also, face the reality of being expatriated

→ **People who face mobility/health issues or other physical or mental special needs**

→ **People who face other socio-cognitive difficulties** - such as housing, linguistics, addiction, gender or age discrimination etc.

→ **NEETs** (not in education, employment or training).

The HERO project is particularly interested in the training of these so-called "vulnerable" groups.

Within the above framework, trainers' technical and pedagogical skills should be augmented and enhanced in order to address specific educational and social needs and increase the motivation on engaging with heritage crafts and skills sector.

Trainers may vary depending on the diverse educational formats that have been identified in **previous stage of HERO project**, in Europe and the Mediterranean. Within the context of this training toolbox, trainers may be defined as:

→ **Professional craftspeople, masons, technicians, specialised workers**, that act as instructors and/or supervisors during restoration projects, workshops on historical building skills, or more sustainable modern building projects (e.g. Acta Vista, Bao formation)

→ **Heritage professionals, architects, engineers or field archaeologists,** who work as site managers and/or coordinate heritage-related building (or other) projects planning or already implementing educational processes

→ **Adult trainers and educators of various backgrounds** (from art historians and pedagogists to anthropologists and social workers) that work in community-based restoration projects or heritage training organisations likely to collaborate with technical personnel.

Methodology

In order to be anchored in the field and the daily reality of the trainers, a questionnaire was shared to 13 trainers, from the 3 partner organisations Boulouki (Greece), Dragodid (Croatia) and BAO Formation (France). This questionnaire was focused on the inclusion of vulnerable people in professional heritage restoration training and how to deal with this challenge from a trainer point of view.

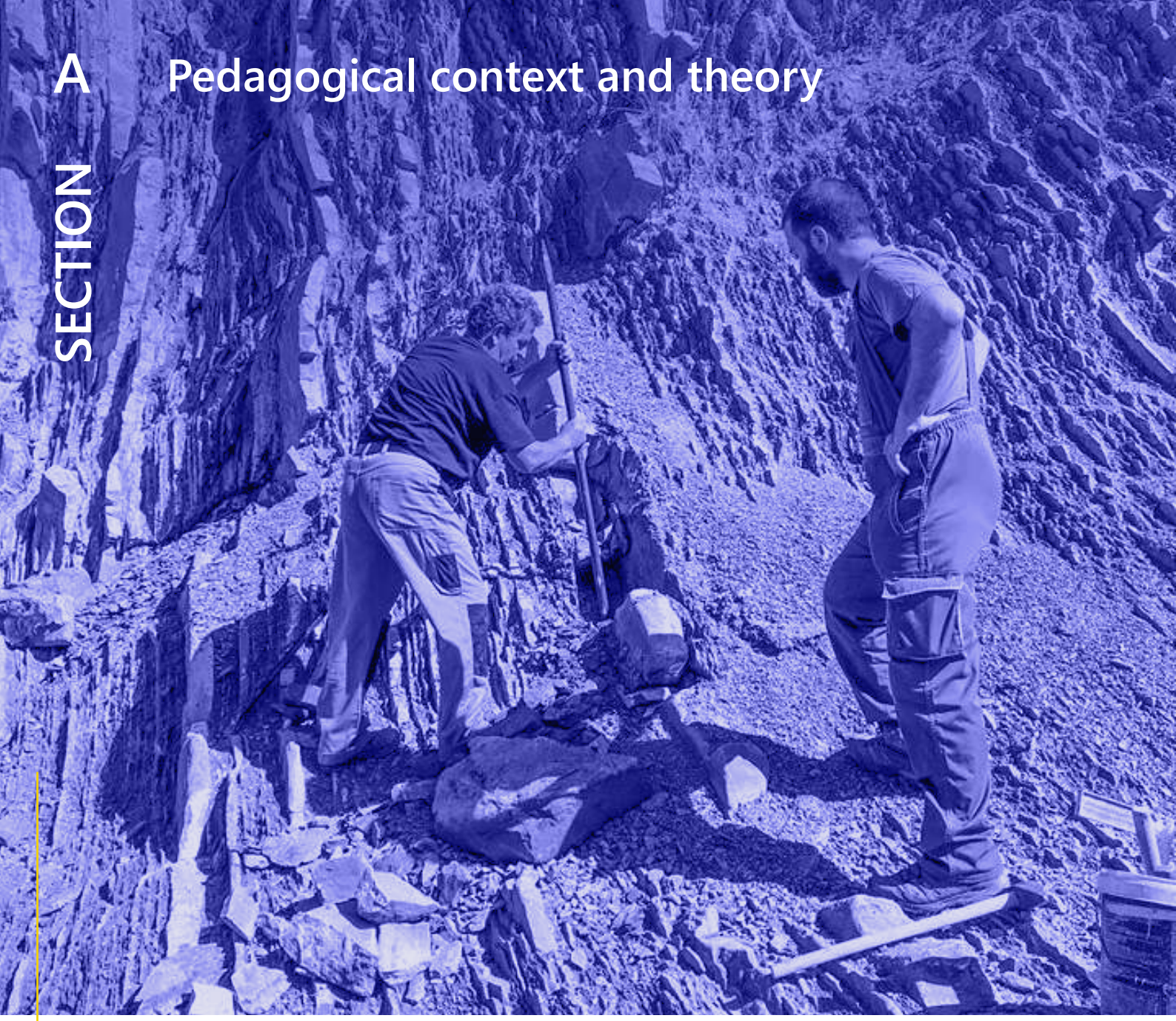
Answers from the questionnaires enabled us to identify which obstacles were the most recurrent on a daily basis and collect solutions that are/can be implemented by the trainers, i.e. extract some good practices to form the core of our toolbox.

The main difficulty encountered while working on this toolbox is the diversity of **existing initiatives** in the field of heritage training and restoration in Europe: different economic and financial models, different types of monuments (listed heritage, vernacular heritage), and above all, different trainees (employees, volunteers, vocational training apprentices, etc.), thus different profiles of trainers adapted to each training context.

This toolbox aims to have a positive impact on enhancing the training skills of different types of trainers, despite the different pedagogical contexts, the scale of activities, the duration and resources available.

Two participants during a hands-on workshop on traditional building techniques 'KalderimiX2' (Photo credit: Athena Apostolou | Blk © 2019)

A SECTION Pedagogical context and theory



Demonstration of traditional stone quarrying, 'KalderimiX2' (Photo credit: Athena Apostolou | Blk © 2019)

The pedagogical approach presented in this manual is directly related to the training context of vulnerable people on heritage restoration work sites. This context leads us to make adapted pedagogical choices and to mobilise practices that will promote the acquisition of technical and behavioural skills for audiences with learning difficulties.

The main pedagogical choice is the learning by doing training, as a vector of transmission and learning of traditional know-how. This approach is inspired by the ancestral tradition of companionship and relies on training courses that alternate theoretical and technical training on educational platforms with on-the-job training sequences.

In order to be implemented, this pedagogical approach is based on the principles detailed below and for which we propose in the appendix the link with learning concepts and theories that are references in the field.

Trainers with a double competence

A good technical expert does not necessarily make a good trainer. Training is much more than a simple transfer of knowledge. It is also and above all processes, methods, tools and attitudes that enable the learner to better reach the targeted skills.

In order to be able to deliver learning through gesture, the trainer must be both:

→ **"Technical expert"**, in mastering the knowledge and know-how of trades (mason, carpenter, metalworker etc.), which they must transmit to the learners

→ **"Pedagogue",** by being able to build and lead an adapted pedagogical proposal

It is with these two "roles" that the trainer will have to compose and build his own posture, somewhere between "the one who knows" and "the one who accompanies through the learning process".

Prioritise the encounter with reality

Training through action aims at making the learner capable of carrying out concrete tasks. To do this, it is necessary to acquire mainly technical and behavioural skills. Even if the theoretical aspects must not be neglected, it is indeed on the "realisation" aspect that the teaching will focus.

To allow this, it is essential to organise teaching sequences during which the learner will face real situations. The option proposed here is to mix simulations on pedagogical workshops, during which the learner will be able to confront situations representing the real world, and then real production situations on site, during which the learner will be able to implement his knowledge in construction and transform it into skills.

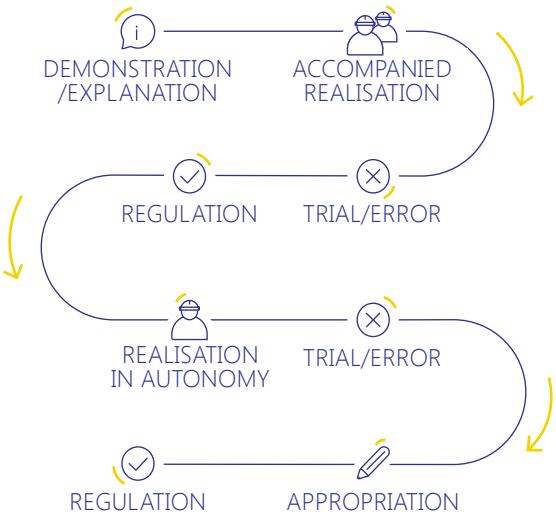
Experienced mason showing stone extraction and processing, 'KalderimiX2' (Photo credit: Pietro Radin | Blk © 2019)

The error as a pedagogical tool

As the learner is the actor of his/her own learning, it is important to allow each of them to activate their learning processes. One of these processes is learning through error.

In this context, the trainer should use the error as an opportunity to identify a skill not yet mastered by the learner and to bring him a regulation.

Training by gesture will ease the implementation of pedagogical loops such as:



The regulation provided by the trainer will allow the learner to correct his or her error and correctly perform the assigned task. However, this does not mean that the learner will not make a mistake the next time, in a similar situation. The issue is to know if the learner is simply reproducing a gesture or if, as an autonomous subject, he/she has acquired the skills and is able to mobilise them, with full awareness, in the new situations he/she encounters.

A progressive and individualised approach

Each of us is different, in the way we think, function, learn and work. The way we are is the result of a complex combination of elements that refer to our biological and psychic development, but also to our life experience, our past experiences, our cultural frame of reference, etc.

The trainer needs to be aware of this so as to adapt tools & pedagogy to each learner progresses.

This will indeed require the trainer to consider the learner as a complex individual and a subject as a whole, with his or her experience and influences. It will also require them to adopt a "meta" vision of their teaching sequences, in order to be aware of "what is at stake" and to take away from it the information that will enable them to develop their actions for greater effectiveness. Finally, this will also require the trainer to have a range of pedagogical tools that will enable him/her to make this adaptation.

Trainer and trainee during a heritage restoration project in Marseille, France (Photo credit : Acta Vista / Bao Formation)

An evaluation system as a learning tool

In order to allow for the assessment of the pedagogical progress and the adaptation of the methods used, evaluation is an indispensable device. Often seen as a "sanction", positive or negative, of learning, evaluation is above all a steering tool for the trainer.

Evaluation is an integral part of the educational process and a tool for learning.

Generally speaking, it is agreed that there are three main models of educational evaluation:

→ **Predictive assessment:** This is the measurement of the learner's level before entering the course. It means to make a diagnosis, to check if the prerequisites for the integration in a training are matched. The trainer will also use it to evaluate the level of a learner, in order to adapt his/her action to the educational progression.

→ **Formative evaluation:** It takes place during the course of the training, in order to evaluate what is working or not for the learners, the degree of acquisition of skills with regard to the objectives that have been set, etc.

→ **Summative evaluation:** It measures what has been learnt at the end of the training, in order to certify that the training objectives have been reached.

To this, we could add a fourth evaluation category: the formative evaluation. The learner, accompanied by the trainer, evaluates his or her results, as well as his or her actions, and takes a critical look at them. The moment of evaluation then becomes a pedagogical sequence allowing the trainer to guide the learner in a reflective analysis of his/her practices and to bring him/her to consolidate his/her knowledge, to identify his/her mistakes and to bring a response through his/her own process of reflection and learning.

Encourage reflective analysis

As previously mentioned the trainer will be able to evaluate the learner's progress through different means of evaluation or role-playing. These moments will then support the identification of errors and their regulation.

But beyond the regulation, it will be interesting to support learners in the analysis of their own practices, to empower them into acquiring relevant knowledges.

To do this, it can be interesting to organise practice analysis sessions, where, guided by the trainer, the learner can take a reflective look at his or her production. By focusing on listening and asking questions, the trainer will lead the learner into a reflective loop that will follow the steps :

- ***"Can you describe the tasks you performed to achieve this result?"***
  → Awareness of the gestures performed, as well as their verbalisation
- ***"What do you think of the result? Is it in line with what was expected?"***
  → Analysis of the learne on his/her achievement
- ***"What are you satisfied with in your work? What do you find particularly successful?"***
  → Identification and capitalisation on "good practices"
- ***"What are you less satisfied with in your work? In your opinion, what could have been done better?"***
  → Critical self reflection
- ***"If the situation arises again, what would you do to obtain a better result?"***
  → Projection

This process, repeated at different stages of the training course, will allow the learner to anchor his or her knowledge and put him or her in a process of improving practices and continuously producing knowledge.

Accompanying towards autonomy

Through the implementation of the above-mentioned pedagogical devices, the aim is to make the learner autonomous at several levels.

First of all, the objective is to make the learner autonomous in his or her learning path. For example, this will be possible by providing educational resources that the learner will have to consult alone, or in a group of learners. Autonomy can also be stimulated by supervised pedagogical situations during which the learner can practise, test things and gain confidence.

At the end of the training, the objective can be that the learner acquires skills that he/she can then use to carry out a task or a series of tasks independently.

Another objective may be that the learner is able to mobilise his or her skills, consciously and independently, in order to carry out complex tasks and/or tasks not encountered during the training course. The learner is then able to go beyond the reproduction of gestures, and to create his/her own practice in front of a new situation.

This notion of autonomy no longer places the learner as a simple "agent" (the one who receives instruction), but allows him or her to be considered as the one who can become the "actor" the learning process, or even the "author".

To conclude this section, we must remember that the principles presented here are in no way to be considered as dogmas to which the trainer must imperatively submit. There is no definitive choice to be made between approaches. It is by considering all the options, by activating them with regard to a given situation, by creating links between them, that the trainer will be able to have an approach adapted to the situation and making it possible to individualise learning.

The trainer who wishes to know more about the concepts and theories that are the basis of what is proposed here, will find a more detailed article in the appendix. The founding principles of our approach (systemic and complex thinking), the main currents of learning theories (behaviourism, cognitivism, constructivism, socio-constructivism and connectivism), as well as reflections and tools on various subjects (autonomy, adult education, the pedagogical relationship, evaluation, pedagogical progression) are presented.

Armed with these concepts, it is now up to the trainer to invent his or her own pedagogical proposal and create his or her own "toolbox".

Trainer and trainees working on historic masonry during a heritage restoration project in Marseille, France (photo credit : Acta Vista / Bao Formation)

SECTION B

Peripheral obstacles to training

Participants during a drystone educational workshop in Croatia (Photo credit : Dragodid)

While working with vulnerable people, it is necessary to take into account what will be called "peripheral obstacles to training". Peripheral obstacles are defined as external challenges that affect the unfolding of a training process. It can be related to living conditions, availability constraints, family issues, etc. Even though peripheral obstacles are not intrinsic to the training cycle, they have a substantial impact on it and thus necessitate to be addressed.

When considering the trainee, the weight of peripheral obstacles over a regular follow-up of the training should not be underestimated. As Maslow's theory about the hierarchy of needs states, a rational individual will not be willing to commit to anything else until their physiological needs are not fulfilled yet.

Regarding the trainer, in order to be able to successfully train his/her trainees, he/she must not only be aware of the urge of solving those issues, but also have clear guidelines about how to deal with it. There is a need to precisely define the trainers' role in order for them to be able to focus on obstacles they are meant to solve. The trainer must be able to identify which situations he/she is not qualified for and reorient the trainees concerned towards other organisations/qualified people. Also, the present handbook aims at better defining the role of the trainer.

Type of peripheral obstacles

Throughout their daily experience, trainers have identified seven main peripheral obstacles to be addressed, sorted by order of importance :

According to the trainers' survey, the challenges listed in the following charts are obstacles that impact the trainings the most. According to the results, both financial situation and availability are issues for the trainers, and must be addressed properly.

	Definition	*Examples*
Availabity	*Compatibility between the learner's personal pace of life and the pace of the planned training*	*Childcare, travel between home and training venue, etc.*
Financial situation	*Financial difficulties (debts) that may hinder the follow-up of the training*	*Someone who leaves systematically to fetch alimentary help*
Mobility	*Difficulties with daily mobility*	*Lack of public transport, driving license, etc.*
Family situation	*Close and distant relatives, dependent children, marital status...*	*School hours that are not compatiblewith working hours, a trainee that leaves for days to vist his/her family that is abroad*
Housing	*Unsatisfactory housing/accommodation conditions*	*Homeless, in emergency accommodation, substandard housing, etc.*
Administration situation	*Legal situation within the country of residence*	*Situations about paperwork/residence permit*
Health	*Diseases, alcohol/drug addiction issues*	*Trainees that are still drunk or high on the workshop*

Solutions and means to address peripheral obstacles

1 How to be an inclusive training organisation ?

Among those obstacles, some can be solved or at least their weight can be lightened within the organisation by setting up practical inclusive solutions.

Providing an income

The organisation can deal with both financial and housing issues by providing an income to the trainees. Giving an income to each of the trainees is the easiest way of dealing with both financial and housing issues. This income-giving model can be combined with a productive model, where the organisation creates market-outputs, therefore generating profit.

ACTA VISTA (France) has chosen to implement this kind of support to give trainees the best conditions possible to follow the training.

By signing a contract with ACTA VISTA, trainees receive the minimum legal wage for at least 6 months. This cost is supported by the French State, as ACTA VISTA employs through training contracts. Perceiving an income is an important value for the trainees as many of them have never been employed, or worked in a legal frame. Thanks to their wage, they can access workers rights. Trainers have also noticed that being granted a remuneration gives the trainees motivation and meaning to their work. This income can also be a way of solving issues like taking driving lessons, finding a decent housing solution, access to further training and unemployment allowances, opening a bank account, etc.

Providing an accommodation

Covering accommodation and food for trainees, as well as equipment and tools, is also a step towards inclusive and accessible training.

Boulouki (Greece) has opted for this solution which has proven its revelancy, above all for small groups of trainees. Furthermore, this solution has the advantage of fully erasing the housing issue.

Considering the difficulties to find housing for the duration of small-scale construction projects, i.e. 1 month, the team cooperates with local agents and owners to provide accommodation to the masons that arrive from different residency areas. The team advocates within the local communities where it works in order to have assistance on housing by the local public authorities, municipalities, etc. and to achieve reasonable prices to afford this benefit.

This is something crucial to take into consideration, even at an urban level, due to the wider housing crisis that has occurred in Europe.

Providing external solutions

As for the other peripheral obstacles, as much as a training organisation aims at being inclusive, it should above all be able to reorient the trainees towards external assistance solutions. In this case, the organisation is being inclusive by leading the trainees towards the solutions that are best suited for their situation.

2 How to take pedagogy into account?

The trainer can implement workshop-sized solutions which goal is not to directly address peripheral obstacles but to take those obstacles into account, while establishing a benevolent atmosphere where the trainee will feel supported. This way, the trainer will focus on training-related solutions.

Making small groups

Within the team, team support and awareness towards one another is a strong lever. By making small groups within the trainees' team whose members are interdependent, the trainer will favour peer support. To achieve this mutual awareness between the trainees, the trainer can make them explain the workshop, or things they master better to each other.

→ **Self-explanations within the groups**

Being empathetic

From the trainer's part, empathy and understanding are essential to setting the trainee in a favourable mood to solve his/her issues. Even though the trainer may not be a psychologist, he/she should ask the trainees about their issues out of the workshop and be empathetic about it by showing the trainees understanding and support. By setting a welcoming interview and regular points, the trainer shows the trainees he/she cares about the situation and supports them, but will not feel forced to act.

→ **Set a welcoming interview and regular points with each trainee**

A trainee practising stone processing in an educational workshop in Konitsa, 'Stone Art' (Photo credit: Valentina Vagena| Blk © 2023)

Being flexible

Flexibility has also proved to have a positive outcome on the trainee's peripheral issues. By taking into account the trainee's situation, he/she is aware othat the trainer can adapt his/her strictness to each personal situation. For instance, when a trainee is a few minutes late and the trainer knows he/she has mobility issues, he/ she can favour regularity over sharp punctuality and do not sanction a delay he would have sanctioned otherwise.

→ **Adapt the rules to each trainee's situations**

SECTION C

Obstacles during training

Experienced mason selecting local stones with a trainee, 'KalderimiX2' (Photo Credit: Athena Apostolou | Blk © 2019)

When working with vulnerable people, different elements can be taken into consideration to properly address the situation of each trainee. At the reverse, each trainee should also see workplace rules bein individualised to match his/her capacities and set progressive objectives.

Trainees may not be able to fully understand and comply with the workplace culture, rules and informal codes. Trainers should then be proactive in making trainees fully aware of the code of conduct to be adopted. Nevertheless, there is a level of balance to be found between strict respect of the rules as a skill expected on labour market, and fair adjustments to be made to take into account trainees' specific situation. The following section aims at delivering the key of comprehension and elements to be considered in this balance.

Work code

In most of the countries exists a variety of workplace regulations which apply equally to the employer and the employee, in order to ensure at least:

→ **Health and safety of workers**, as well as of other people

→ **Fair division of work**, by balancing the workload with work efficiency.

Apart from that general legal framework, each employment branch or company has their specific work codes. The majority of companies have their own regulations, whose violation would result in the worker being penalised. However, such formal regulations don't make up the totality of work codes. There are always informal codes, where it is expected that the employee will behave in a certain way, appropriate to the workplace culture in that company.

So, the behaviour in the workplace is a result of combining:

Legally defined obligations

Company regulations

Social rules of behaviour

It is important for the trainees to be aware and respectful of work codes, so they would be prepared for the requirements of another workplace, as well as for the process of training itself. Training for the job is also a form of work, whose goal isn't necessarily to build something, but to successfully transfer knowledge. Whatever impedes work, will most likely also impede training. Education is therefore not less serious than the real work situation, and the trainee who isn't capable of behaving according to the rules, will very likely also be an undisciplined worker.

Some examples of improper behaviour include failures to respect:

Schedule
Being late, stopping work without being allowed

Working environment
Intoxication, ignoring the tasks and instructions, obstructing teammates

Safety
Careless use of tools and materials, not using the required safety equipment, ignoring the necessary safety procedures

The rules can not completely replace the required experience and skill of the trainer in reading the group dynamics of the training process. In other words, the trainer should be more concerned with the spirit of the rule, than with the letter of the rule.

Elder craftspeople demonstrating traditional logging during an educational activity in Epirus Greece, 'Vovousa Festival : From the forest to the sawmills and carpentry workshops' (Photo credit: George Detsis | Vovousa Festival © 2019)

The basic good practices in dealing with the word code infractions can be classified as:

Direct practices, requesting certain behaviours:

→ **Explanation:** specifying and describing the desirable behaviours (how to behave in which situation), as well as explaining their goal (why to behave like that); it may be helpful to illustrate the consequences of breaking the rules – especially for the safety rules (for example, the impact of the hammer falling from the scaffolding).

→ **Accentuation:** repeating the explanation, if the irregularities in behaviour are noticed; explain again to those individuals behaving incorrectly, or to everyone if those irregularities are widespread.

→ **Reaction:** slowly approaching the sanction for the undesirable behaviour; bear in mind that the reaction must not be humiliating for the trainee:

Warning
When the behaviour can't be justified by the ignorance of the rules, the trainee should be warned that continuing to behave in such a way will result in sanctions.

Requesting the justification
If such behaviour is repeated, but the consequences can still be tolerated, ask the trainee to justify that behaviour, in order to force a moment of self-reflection.

Applying the sanction
If the undesirable behaviour repeats too often, or is otherwise intolerable, the trainer should apply the sanction envisioned by the rules of the educational institution, or, if it is the infraction of the informal work codes, the customary sanction, or the one that the trainer considers appropriate, should apply; it should be time-limited (for example, the temporary suspension of some privilege, additional work) and not humiliating.

Indirect practices, creating a work atmosphere conducive to following rules – a sort of peer pressure:

→ **Team spirit:** creating a feeling of togetherness or group identity, creates the feeling of belonging and the responsibility towards the other trainees; it could be achieved by regular group briefings and debriefings, group warm-up exercises, collectively organising (ordering, buying, cooking) food for lunch, etc.

→ **Feeling of importance:** the trainees should feel that their behaviour is significant and has impact on, and importance for, the others; it should stimulate them to be responsible; it could be achieved by creating the feeling of equality by working together with the trainer or more experienced trainees, by stimulating the correct behaviour with tactful praise and small compliments on their effort, etc.

→ **Exemplary behaviour:** pay visible attention to the exemplary behaviour, in order to motivate the other trainees; for example, point out such behaviour during the explanation or accentuation of desirable behaviour, have exemplary trainees explain or demonstrate things, award them with symbolic prizes (occasional free time, more attractive tasks, treats during the pause).

Obstacles during training

In explaining the importance of certain behaviour or the generally importance of adhering to rules, trainers can base their arguments on certain values, which illustrate to the trainee the benefits of adherence:

Safety
Following the rules protects not only the trainee, but their colleagues and friends too, as well as the innocent bystanders

Efficiency
The rules are created to help the trainees finish their training more easily and not obstruct the others in their training; they are important and beneficial for everyone

Coordination
The training is a group activity, so all the trainees should act in coordination; individual aberrations make that activity more difficult – for instance, not respecting the working times, lagging in the training process through inattention, behaving disruptively, not doing the required tasks; bear in mind that the individual approaches to learning should be respected, insofar they do not harm the group coordination

Seriousness and commitment
The trainee should be prepared for work (willing, cooperative, sober) and attentive (follow the explanations, instructions and what the other are doing); in that way the trainee will get more out of training and internalise the serious attitude towards work, which will be of help in finding employment

Responsibility
The ability to understand and accept the rules, shows a reliable worker

Trainer and trainees taking dimensions to carve a stone in Marseille, France (Photo credit : Acta Vista / Bao Formation)

Trainees collectively carrying stones during a restoration project, 'Under the Landscape' (Photo credit: Yorgos Kyvernitis | Blk © 2021)

Basic cognitive skills

In order to better understand the impact of the lack of basic mathematical knowledge, we can already start by describing what is meant by defining the basic cognitive skills and knowledge applied to the practice of traditional masonry:

- ***Knowing how to count:***
  addition - subtraction - division
  (e.g. preparation of mixtures for lime plasters)
- ***To be at ease with units of measurement:***
  → *Concepts of length and the use of a metre*
  → *Concepts of mass, volume and the possible correspondences by the use of the material at disposal (bags, shovel, buckets)*
- ***Concepts of geometry***
  (geometric figures, angles, etc.)
- ***Representation in space to read a plan***
  (understand a 2D plan with the different views and project oneself on a 3D vision)

To build a wall, make a paving, cut a stone, prepare a coating or any other application inherent to the daily practice of the mason's trade of the old building, this knowledge and their uses are essential.

As the trainees are adults, it is necessary to take into consideration the skills already acquired and transferable by the trainees throughout their training, whether it is academic, professional, or in the uses of daily life.

Indeed, although the list of skills and the pedagogical tools is defined to meet the expectations of the training, each course must be individualised since each learner has its own specificities in terms of course, learning methods, etc.

A training course is marked by several key moments:

Training course

1. ***The positioning test***
   To verify the pre-acquired skills and prerequisites of the trainees
2. ***In-training evaluations***
   These allow the formalisation of the learners' skills development and can be of several kinds (we will discuss this subject in section D)
3. ***The final evaluation and the training exit***
   Must confirm the acquired competences that the learners can justify

During the positioning test, the trainer must be able to assess the pre-acquired skills as well as the knowledge gaps of the learners. This test is precious because it will allow the trainer and the learner to co-construct the individualised course.

In the points below, for each of the obstacles identified as preponderant in training time, we have designed tools that will allow you to facilitate knowledge transmission.

1 Basic mathematical skills

Practice and use of the 3 basic operations

- ***The use of money:***
  - → *"If I want to buy 1kg of apples for 4€ and I have 10€ on me, how much should the shopkeeper give me back?"*
  - → *"If I want to buy 2 kg, do I have enough money?"*

This exercise can be done with marbles, pebbles or other small objects, in order to help the trainees' ability to count.

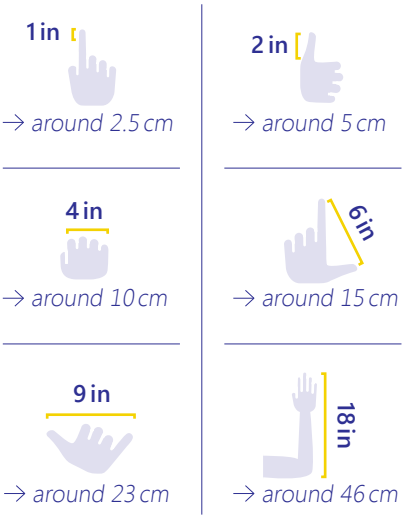
Units of measure and their uses

The trainee must integrate the concepts of length and mass measurements. The trainer must therefore ensure and facilitate the understanding of the notion of what 1 m and 1 kg represent.

- ***Measurements: using the human body and surrounding elements***

  Use your surroundings and "familiar" elements:
  - → *How tall are you?*
  - → *How far are we from the technical platform?*

- ***Other measurement systems and site applications:***



1 step → *between 50 and 80 cm*

- ***Providing learners with teaching supports such as a unit conversion chart is also important for them to understand well. In addition, this information will be better understood if the learner can visualise the concept.***
  - → *1 m = 100 cm = 1000 mm with a yardstick next to it for direct visualisation*
  - → *1 kg = 1000 grams with a one kilo weight to get the feel*

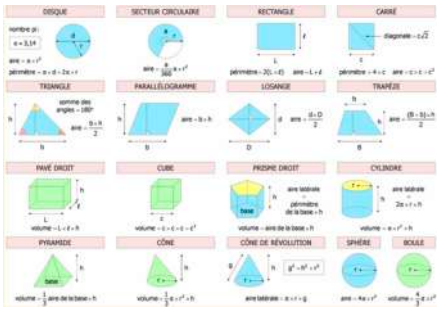
- ***Masses and volumes:***

  In the same way as for length measurements, help yourself with the surrounding elements and the intrinsic characteristics of the people in training:
  - → *What is your weight?*
  - → *How much does a bag of lime weigh?*

- ***Some of the computer tools in the appendix can be used during the theoretical sessions.***
  - → *Online calculator for mortar and plaster dosage :*

- ***The trainer can also post this type of support in his technical platform. The permanent posting of certain supports allows an anchoring in the learner. The trainer can also use them on an ad hoc basis and on demand throughout the training.***
  - → *Correspondence table liters/volumes*

m^3			dm^3			cm^3		
			hL	daL	L	dL	cL	mL



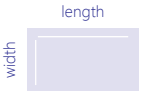
2 Geometry

Among the cases identified, some learners do not know or do not have the basic notions related to simple geometric figures such as the square, the rectangle, the round involving the lack of knowledge of the concept of angles and radius for example.

Providing the trainer with a note-book in which the basic geometric shapes are referenced and named can already be of great help.

As the training progresses, the trainer will be able to complete the information with the concepts of angle, surface and volume calculation.

One of the almost daily uses of the mason's trade concerns the drawing of a right angle, for which the trainers can use the 3/4/5 method.



Rectangle

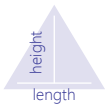
Surface or Area S (m^2)
= length (m) x width (m)

Square

Surface or Area S (m^2)
= length x length (m)

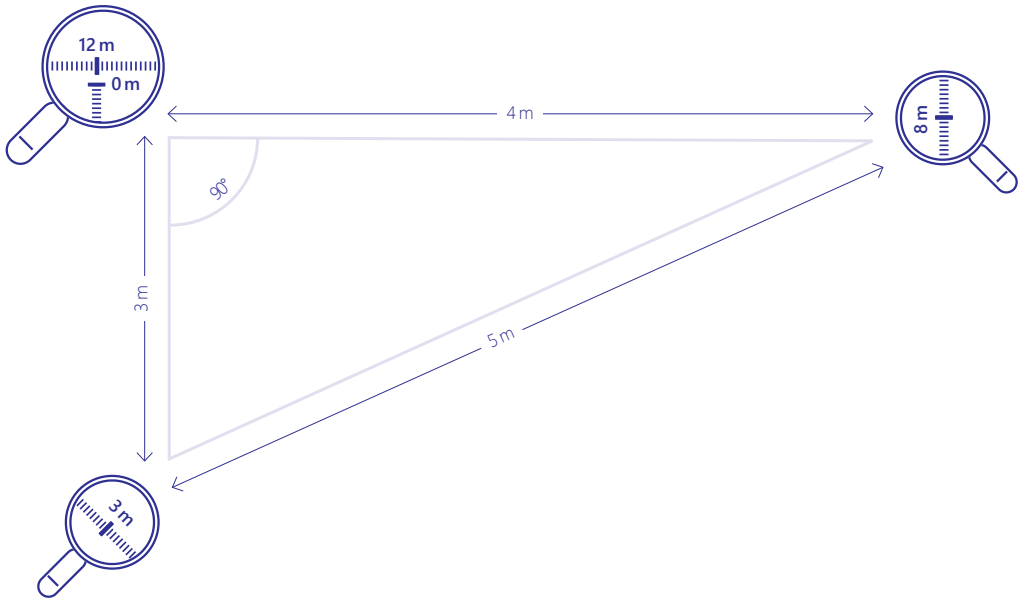
Circle

Surface or Area S (m^2)
= π (3,14) x radius^2 (m)



Triangle

Surface or Area S (m^2)
= (height x length) / 2 (m)



3 Space representation and reading drawings

One of the difficulties that must also be addressed as soon as possible is the ability of learners to read a plan.

In order to carry out an exercise of cutting/shaping a stone or building a cobblestone pavement or even more complex geometries of structures, the apprentices must learn how to read a plan which requires the application of several skills including the ones seen above:

→ Understanding **the geometric figure**

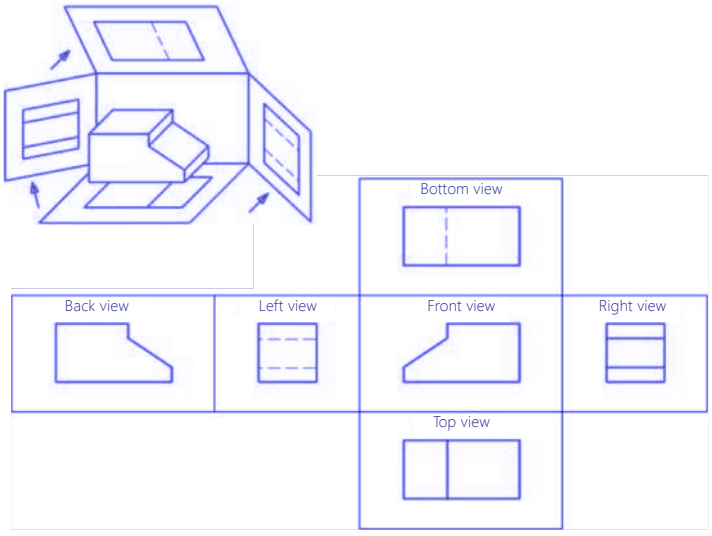
→ Understanding and assigning **the scale** and the actual size of the different elements of the given plan

But also the following skills:

→ Understanding of **the different views** and the information they contain intrinsically

→ **Representation in space**

On these 2 points, tools can facilitate the transmission of knowledge by the trainer.



You can start by defining what the left, right, top and bottom views are by using the principle of the "projection cube".

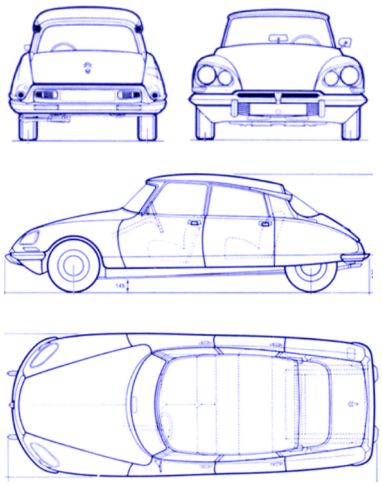
→ The **right view** is located to the left of the front view

→ The **left view** is located to the right of the front view

→ The **top view** is located below the front view

→ The **bottom view** is located above the front view

In order to be more visual for the learners, you can do this exercise based on elements of everyday life like the drawing of a human body or a car:



In the same way, the exercise can be done with the human body, accompanied by direct questions to the learner:

→ *Where is your left?*

→ *Where is your right?*

→ *What is in front, behind, on top, underneath?*

The trainer can also prepare small scale models on his technical platform in order to explain to the learners the order and stages that they need to follow for the implementation of the exercise. This operation is even more effective if the trainer can also watch a timelapse video, which for example can pause at specific points, in order to better understand the construction of the model.

Thanks to these tools (reduced scale models and video), the trainer can, at any time, go back and forth between what the learner is doing and the right thing to do.

To summarise, the trainer's toolbox for this part of spatial visualisation and plan reading is composed of:

→ **The projection** cube explaining the front, left, right, top, bottom views

→ **The visualisation** of this same cube with familiar drawings (car, human body) accompanied by direct questions to the learner: where is your left, right etc.

→ **The implementation** of small-scale training models to facilitate the understanding of the construction to be made

→ **A timelapse video** allowing the trainer and/or the learner (depending on the means available) to freeze-frame and highlight critical points of a construction or specific techniques produced at a particular moment

As always, the trainer should try to maintain balance between giving the maximum feedback and letting the apprentice experiment and learn from his/her mistakes.

Trainees learning the traditional craft of cobblestone building, 'Under the Landscape' (Photo credit: Yorgos Kyvernitis | Blk © 2021)

4 Language

Miscommunications happen on a daily basis - sometimes it's difficult finding the right words even while speaking the same language and often we're sure that we understood what's needed of us, only to find out later that we had completely missed the point. Not speaking the same language is a real life challenge in the trainer-trainee relationship that leads to frustration and feelings of inadequacy. On the work site, trainees who don't fully understand the trainer's instructions are exposing themselves to potential security dangers and can't fulfil the given tasks, ultimately they aren't learning - they're simply going through the motions.

Explaining by doing and using illustrations are the most efficient methods a trainer can use while dealing with issues that language barriers create on the work site.

→ *Trainee doesn't understand which tool should be used for a certain task and trainer's repetition of the same word doesn't help, only builds up frustration and noise.*

A good solution would be a gallery of 15-20 most used tools on the wall (drawings, photographs etc.) with names of the tools in a few languages so that everybody on the work site can see which tool the trainer is referring to. Also, if put on a frequent place on the work site, it can encourage all the trainers and trainees to learn words for the tools in different languages.

→ *Trainee can't finish the exercise because s/he doesn't comprehend the techniques needed for it.*

A good solution includes the trainer slowly and repeatedly teaching by showing the technique, supervising the trainee and correcting their mistakes right away, again, explaining by doing.

Other methods of good practice include group work; trainees who are fluent in both languages can explain to other trainees what the trainer is saying. All can learn some commonly used words in order to avoid daily misunderstandings.

A trainee practising stone chiselling during an educational workshop in Zagori, Epirus, Greece, 'Reappearances' (Photo credit: Eleni Mitropoulou | Blk © 2020)

Personal development and empowerment

Professional inclusion and training is a process of learning technical skills, but also adaptation to different working backgrounds, communication with new colleagues - and very important - a process of empowerment and personal development which derives from it.

In order to train people wholesomely to become successful builders, the trainers must keep in mind the importance of empowerment and personal development. It will be relevant once the trainees set out and start working for some types of organisations or, hopefully, establish their own organisation.

The problems trainees encounter while their training is in process are **lack of autonomy**, **lack of confidence**, and **disturbance in team spirit**. These problems have repercussions visible in trainees' behaviour. Trainees are **uninterested, tired, unmotivated**, and **lost**. Therefore, the role of the trainer is to establish certain methods so the goal of trainees' empowerment and personal development is achieved.

There are several methods which can be used by trainers. They are divided into two groups:

→ **Individual approach**

→ **Collective approach**

Before explaining different approaches to use during the workshops and training, the introduction to hard skills should take place. This one is a combination of individual and collective approach.

→ **Before the start of the workshop**, the trainer should do an interview with the trainee, emphasising the importance of hard skills and finding possible obstacles the trainee could have, regarding language barrier, motivation, lack of experience, etc. Afterwards, the trainer asks the trainee to do a test model in a given time. This makes it possible to make an evaluation of the work done in 3 steps:

1. ***Step by step analysis with the trainer***
2. ***Peer-to-peer analysis with the other trainees***
3. ***Exchange of practice between trainer and trainees***

The evaluation should be done in the way that it points out the problematic aspects of one's work, but also to emphasise its strong points.

→ "Feedback sandwich" is a good method of evaluation while keeping in mind the personal development and empowerment of the trainee. It is a method of giving constructive feedback which starts by praising the trainee on what he/she did well and what are the strong points of the work. Afterwards, the person evaluating the process should give criticism to the piece of work very elaborately and precisely. At the end, it is good to remind the trainee of the strong points, give thanks, offer support in the areas for improvement and leave on a positive note.

During the workshop certain methods can be used to create an environment for the trainees' personal development and empowerment.

1 Individual approach

Trainer should be perceptive enough to sense a moment in which the trainee needs support. At that moment, the trainer should try to talk out the problem with the trainee. For example, a trainer could see that the trainee lacks confidence or motivation and during the talk find a reason and a possible solution for it. This talk can be done during the workshop or in a separate appointment, depending on the magnitude of the problem the trainee is encountering.

Trainer could have a consultation appointment during the week when trainees could come if needed for individual consultation with no pressure. These consultations could be used to point out again what are the objectives of the training, and how the trainee's project matches with the training he/she is in. Trainees could also show how wide are professional opportunities in the sector to enhance the motivation of the trainees.

Each person has different abilities and different backgrounds, which need to be emphasised while thinking about the individual approach. If the trainee is having trouble with the work efficiency and precision because of their personal development issues, trainer and trainee could co-determine small objectives to have a gradual progression, i.e., going step by step. Setting different objectives for each person will enable them to set small and big objectives.

2 Collective approach

Creating and maintaining the team spirit means creating the environment of mutual support, enabling trainees to personally develop through communication and collaboration with their colleagues. These are some methods of enhancing the team spirit.

- **Collective warm-up in the morning**
- **Collective lunch time**
- **Friendly competitions during certain assignments**
- **Creating a time during the workshop when each trainee explains certain processes in the worksite, goals for the day or evaluate each other's work**

After the workshop or after some period of work, small rewards could be given individually, or collectively to motivate trainees. For example, choosing the trainee of the month/day/week, or the team of the month/day/week.

Young artists experimenting with sculptures made of molds of traditional Aegean mortars, 'Under the Landscape' (Photo credit: Yorgos Kyvernitis | Blk © 2021)

World cultural heritage site map pinned in the workshop (Photo credit : Acta Vita / Bao)

Motivation linked to heritage restoration

Trainers should be able to understand that trainees' knowledge and motivation about heritage is diverse. They should also be aware that there are various reasons for this condition. It is possible that trainees are already aware, knowledgeable, even passionate about history, heritage and environmental issues. Likewise, it is possible that experiencing heritage is not common to them, they are ignorant, or not curious about it, even less of its modern value or environmental aspects. Trainees might come from different cultural backgrounds; they might come from the local area but they can also be migrants. They might have different educational backgrounds, or no educational background. They might be youngsters or seniors. They might even face problems related to their wellbeing such as the ones mentioned above (financial, health, and other difficulties).

It is the trainers' responsibility to help trainees understand the significance of the heritage site where they are working and be aware of the different characteristics, particularities and stories about it. Why?

- **To enrich their work experience**
- **To create a sense of importance and pride in their work**
- **To offer a better understanding of the culture, heritage and environment of the area, where they come from or where they have to come to work**
- **To help them feel more integrated in their professional environment or local community**
- **To provoke reflection and questions about stereotypes and fixed beliefs**
- **To underline universal values such as freedom, justice and peace**
- **This can be done through heritage interpretation**

This can be done through heritage interpretation.

While interpretation is commonly associated with visitors management, it can also be the methodology through which a trainer could present the heritage site - the workspace -, explain its importance, stimulate the curiosity of the trainees and even raise their passion in heritage overall, local, national and international.

There is an abundance of relevant litteracy but for the scope of the present publication, we are making a reference to Interpret Europe, the European Association for Heritage Interpretation which offers rich material on why and how to use interpretation to reveal the significance of a heritage site/ expression to non-experts.

Essentially, interpretation is an educational process which helps one understand a heritage site and create a connection to it. Through interpretation, "we engage and empower people to interpret on their own by: offering paths to deeper meaning; turning phenomena into experiences; provoking resonance and participation; fostering stewardship for all heritage."

To briefly illustrate this process, we hereby suggest the approach and tools of members of the consortium in this direction:

- **Have two-way communication with trainees and give them the time to relate to the heritage site for which they work, by presenting a monument/ a heritage site/ a cultural expression (even a family heritage element, such as their grandmother's favourite dish!) that they find significant or are proud of. The trainer can even try to draw similarities with the heritage site - workspace (building techniques, use of materials, stories, feelings, etc.).**
- **Provoke their imagination, thoughts and feelings by using supporting media, including maps, films, pictures, music, personal stories, etc.**
- **Reveal information in an experiential manner, create opportunities to have shared experiences with locals who relate with the heritage, like guided site tours, audiovisual material screening on heritage sites of the working area and informal talks over dinner.**

CONCLUSION

Trainees, a local mason and a participant repairing traditional waterproofing plasters in an old cistern, 'Under the Landscape' (Photo credit: Yorgos Kyvernitis | Blk © 2021)

After examining various methods of inclusive training in the field of heritage and building restoration for vulnerable people, it is clear that gesture-based training is an effective approach to help people acquire practical skills. This learning method emphasises on-the-job experience and skill acquisition through practice, rather than theory or reading alone.

Gesture-based training allows learners to focus on the task at hand and engage in active learning, which enhances their confidence and self-esteem. Trainers can also take into account barriers to learning to adapt their teaching to the individual needs of each learner, making training more accessible and effective.

In addition, the participation of vulnerable people in the restoration of heritage sites can have a positive impact on their sense of pride. By offering them the opportunity to contribute to the restoration and preservation of local heritage, they can feel a sense of belonging and connection to their community. This can be particularly important for people who have encountered employment obstacles, as it can help them feel valued and respected.

In addition to the benefits for individuals, training individuals who are distant from employment in building trades can also have broader positive impacts for communities. By creating local job opportunities and preserving local heritage, these initiatives can contribute to strengthening local economies and fostering a sense of pride and identity. On the other hand, it is important to note that building trades, particularly those related to heritage restoration, suffer from a shortage of skilled labor. Training individuals who are distant from employment in these trades can help fill this gap and meet the needs of the sector. For those pursuing these trades, this is a genuine option for accessing employment.

In conclusion, gesture-based training is a powerful method to help those who are distant from employment acquire practical skills in the field of heritage and building restoration. By offering practical learning experiences and involving vulnerable individuals in the restoration of heritage sites, we can help foster a sense of pride and connection to our shared history and culture. This action will strengthen local communities and territorial belonging. This training is even more important as building trades suffer from a shortage of skilled labor, and training these individuals can help fill this gap and meet the needs of the sector.

ANNEX

Context and pedagogical approach

The pedagogy outlined in this manual is directly related to the training context under study, i.e. the training of vulnerable people in the sector of heritage restoration.

This context requires tailored pedagogical choices and educational tools, according to trainees' needs and capabilities, in order to help the latter develop technical and behavioural skills. The approach adopted here is **learning by doing**, as a means of transmitting and teaching heritage building skills. This approach is inspired by the centuries-old tradition of **companionship** and is based on training courses that alternate theoretical and technical training on educational platforms with on-the-job training sequences.

In its implementation, this pedagogical approach is based on the following principles:

- ***Trainers with dual skills:***
  - → *"Technical experts" who have mastered the knowledge and skills of the trade (bricklaying, carpentry, metalwork, etc.), which they are responsible for passing on to learners*
  - → *"Pedagogues", able to build and lead an adapted pedagogical approach*
- ***Favouring real-world context**, by putting students in real-life situations on teaching platforms and on site*
- ***Learning by doing**, using pedagogical cycles of the following type: demonstration/ explanation - accompanied work - trial and error - feedback - independent work - trial and error - feedback - assimilation*
- ***A progressive and individualised approach**, with a pedagogical framework and tools that allow an individually adapted learning process*
- ***An assessment system as a measurement tool,** in order to allow the evaluation of educational progress and the adaptation of the methods applied*
- ***An assessment system as a learning tool**, to allow exchange and feedback between trainer and learner*
- ***Encourage reflective analysis**, through sequences of analysis of practical experience aimed at enabling the learner to: understand the procedures carried out, to verbalise them, to analyse them, to capitalise on "good practices", to identify which practices need to be changed, to develop his or her own solutions which will, in turn, be tested and analysed*
- ***Assisting in achieving autonomy**, by implementing teaching methods that enable learners to become actors, and even creators, in their own learning process*

This approach, whose real-life application has already proven its effectiveness, is based on a foundation of concepts and theories of learning which are considered benchmarks in the field.

Some of these theories are briefly presented in the following section and will allow the trainer, if he or she so wishes, to deepen his or her research and develop his or her thinking.

Pedagogical approach and theoretical foundations

1 Founding references

To begin with, our approach is based on some "main principles", which go far beyond the framework of pedagogy and instruction. Indeed, outside of the teaching theories that will be discussed later, the approach championed here is first and foremost a "philosophical" choice, a way of "seeing the world". It is mainly based on two 20th century schools of thought, namely:

→ The systemic approach (The Palo Alto school) [2]

The works of the Palo Alto School demonstrate that the world is made up of multiple relationships and everything is interconnected. The individual, the company or any other subject is part of a global system, itself comprising other subsystems, the whole being in an interdependent, permanent and changing relationship.

From this notion we can see that a system can only be understood as a whole and not in a fragmented way disconnected from its environment. Moreover, this system itself has an identity, properties, values and a trajectory that may differ from what each of its constituent parts has, that is to say, a whole that is not the simple sum of its parts, but a whole that is a system with its own identity and functioning (holism)[3].

What this means for teaching:

According to the systemic approach, the individual (the learner) must be considered as a whole, taking into account his or her links with the system in which he or she evolves. In other words, the learner is not just an individual who has to acquire knowledge during a teaching session. He or she is an individual with a life made up of interactions and experiences which influence who he or she is and therefore his or her ability to learn. For the trainer, this raises the question of how to take into account the relevant obstacles (peripheral and direct) to learning.

Holism postulates that a group of learners will develop its own identity and 'force', which will be unique and different from the sum of the 'forces' deployed by the individuals who make up the group. This is a dimension that the trainer should not neglect during implementation in order to maintain the dynamics of his or her group of learners and the individuals within it.

→ Complexity and complex thinking (Edgar Morin) [4]

Developed by Edgar Morin, complex thinking is defined as the ability to consider the system in all its complexity, welcoming its paradoxes and taking into account the heterogeneity of those who compose it. It means not excluding anything, but integrating everything, including that which seems dissonant or even contradictory[5].

It also means considering the randomness, the uncertainties, the 'noise', transforming it from a dissonance or an error to be eliminated into data that allows the system to be questioned, opening up a space for reflection, in search of a new path. It means accepting imprecision, inadequacy, vagueness and unclear areas. It is the ability to work without knowing everything and with the awareness and acceptance that everything will never be known. Complexity 'is uncertainty within richly organised systems' (Morin, 2005).

Complex thinking also means recognising disorder (entropy) as an expression of the living, as it triggers a process of adaptation of the system (negentropy) to a changing environment ("the laws of organisation of the living are not of equilibrium, but of disequilibrium" (Morin, 2005)).

What this means for teaching:

Complex thinking asks of the trainer that he/she should not reduce his/her understanding of things, nor his/her way of acting. Rather, everything, even the seemingly paradoxical, should be considered as a possible option for educational intervention. And that faced with a complex and constantly changing situation, the trainer will have to mobilise different approaches and tools, test them, question their impact and adapt his or her practice. Like the learner, the trainer is also in a permanent learning process, where he or she will encounter grey areas, test out methods, make mistakes and thus develop his or her skills in a sort of "creative disorder".

2 The main currents in learning theory

The aim in this section is to present a brief introduction to the main currents which constitute the basis of the theoretical framework of trainers.

This brief presentation is not intended to lead the reader to believe that there are good and bad ways of training. Rather, each of these approaches has its own benefits and limitations, and they are all considered to be useful to the trainer, enabling him or her to create his or her own pedagogical "toolkit".

→ Learning is passing on: behaviourism

Behaviourism is a concept that focuses on the idea that behaviour is learned through interaction with the environment. Behaviourism defines learning as a lasting change in behaviour resulting from the consequence of a particular training.

Burrhus Skinner[6] developed the concept of "operant conditioning" ("behaviour can be structured by the appropriate use of appropriate conditioning").

Skinner states that learning can be achieved through the use of rewards called "positive reinforcers" (e.g. good grades in students) and punishments called "negative reinforcers" (e.g. bad grades in students).

In this sense, the individual adopts a behaviour that allows him or her to avoid negative reinforcement and to increase the chance of obtaining positive reinforcement.

In its application, this model is based on the following principles:

- *The material to be taught is broken down into a series of short elements to allow for the fastest possible reinforcement*
- *The content starts from the simplest level and the level of difficulty increases gradually to promote error-free learning*
- *The content is presented in a linear fashion, but everyone is free to work through it at his or her own pace, thus individualising teaching*
- *Positive reinforcement (through encouragement, etc.) is favoured and should be given as soon as possible*

→ Learning is processing information: cognitivism

Cognitivism focuses on the internal processes of the learner and the connections that take place during learning.

Cognitivism holds that the 'black box' of the mind must be opened and understood. In other words, the learner is a processor of information and knowledge is a pattern of mental constructs.

Learners are active participants in the learning process. Similarly, they use various strategies to process and construct their personal understanding of the content. Learners are no longer just recipients who are filled with knowledge by teachers, but they are active participants in learning.

This is a dimension that the trainer will be concerned to stimulate, in particular by organising the learner's schedule in a way that allows the learner to activate his or her own cognitive resources. The trainer can use this process to facilitate the learner's educational progression.

→ Learning is building: constructivism

For Jean Piaget[7], learning is the construction of knowledge in the course of one's own biological development. Each subject acquires mental tools that enable him to understand the world in which he or she evolves and to appropriate it. It is because the subject is active that he or she acquires knowledge.

Necessarily, the acquisition of knowledge implies the activity of learners through the manipulation of ideas and concepts. The individual becomes an active protagonist of the cognition process.

The constructivist model considers "learning" as the result of a construction of knowledge. In learning, it is therefore necessary to place oneself in active situations of trial and error in order to encounter and solve problematic situations.

A trainer and a trainee cooperating during heritage restoration works (Photo credit : Acta Vista / Bao Formation)

→ **Learning is exchange: social constructivism**

According to this theory, developed mainly by Vygotsky, learning is seen as the result of activities linked to exchanges between teacher/learner and learner/learner.

Learning is no longer considered merely as what the teacher imparts and what the learners do, but learning is also the interactivity between learners themselves, as well as between teacher and learners.

In order to acquire knowledge, it is then necessary for learners to carry out tasks at a higher level than what they are currently capable of. Through imitation, in a collaborative activity, under the guidance of teachers, the learner is able to achieve much more than he or she is able to do independently.

Connectivism is a recent theory of learning developed by George Siemens and Stephen Downes[8] based on the use of new technologies.

In short, in today's complex, interconnected, fast-moving world, with unlimited access to information and knowledge, "know how" and "know what" are complemented by "know where" (i.e. knowing where to find knowledge when needed), and "learning to learn" become as important as learning itself.

Through this approach, one can identify "new" principles affecting the learning experience:

- *Learning is a process linking specialised nodes or sources of information*
- *Learning can be found in (non-human) devices*
- *Maintaining and sustaining connections is necessary to facilitate continuous learning and access to up-to-date information*
- *Making connections between fields, ideas and concepts becomes a basic learning skill*
- *Analysing information becomes a learning process in itself. Knowing how to check the authenticity of information and deciding how much weight to give it becomes a skill*
- *While connectivism assumes that one can learn "alone", by being connected to nodes and sources of information, it does not exclude the trainer. Indeed, the trainer can rely on these learning practices and include them in his or her pedagogy: creating blogs for the class, using collaborative platforms, sharing his or her own resources, proposing workshops to verify information, etc.*

Young trainees learning to levelling the drystone pathway in an educational workshop in Konitsa, Epirus, Greece, 'Stone Art' (Photo credit: Valentina Vagena| Blk © 2023)

3 The learning process under scrutiny

These theories relate to general concepts with which the various protagonists of the teaching sessions will have to deal with. This is where the learning process will come into play, with subjects adopting different stances and using a wide range of possible tools.

→ The learner and autonomy

The work of Jacques Ardoino[9] highlights the different "stances" that learners can adopt. In a complex and changing environment, education is bound to evolve and its meaning may be called into question. The learner's autonomy then becomes an asset in his or her ability to decide and act in a specific situation.

Ardoino identifies three types of learner:

- *The "agent" is the one who acts, applies the rules, without disputing or questioning them. He or she is totally oriented towards the accomplishment of the task assigned to him or her and the objective that has been set.*
- *The "actor" performs his or her role within the framework given to him or her and according to the procedures imparted. On the other hand, he or she will do things "his or her own way". Even if he or she acts on the way things are done, he or she does not become a creator, the author of something new.*
- *The "author" is the one who "authorises him or herself", i.e. who has the intention and the capacity to place him or herself at the origin of his or her acts. He or she thus claims the legitimacy to decide certain things for him or herself.*

Whilst a progression from less to more autonomy can be identified from these three positions, it would be simplistic to consider the roles as fixed and unchangeable. In any given situation, each learner can adopt one or other of the roles and alternate them according to different parameters, such as his or her mastery of the subject, environment, current state of mind, etc.

This being the case, guiding the learner towards autonomy remains a major objective for the trainer.

→ The particularities of adult education

Andragogy is the practice of adult education. It refers to the set of techniques for imparting knowledge, educating and training apprentices and workers. This concept was mainly developed by Malcolm Knowles[10]. Andragogy is premised on the fact that adult learning has its own characteristics:

Andragogy is premised on the fact that adult learning has its own characteristics:

- *Adults do not have the same capacity to memorise information*
- *Adults do not accept ready-made ideas, they have to be convinced*
- *Learning challenges pre-established certainties, this can be a difficult experience.*
- *Adults come with a history, with his or her own experiences which can be built upon*
- *Adults have a more developed critical mind*

In response to these observations, andragogy provides a model enabling the trainer to deploy an adapted and relevant pedagogy. The trainer can then apply several mechanisms:

- *Supporting motivation through want and interest (desire)*
- *Adults focus on the concrete (what is it for?)*
- *Considering experience (barrier or resource)*
- *The need for autonomy (reflexivity)*
- *Taking into account the heterogeneity of the adult group (interpersonal differences)*
- *The training must be based on real-life elements to elicit the active participation of the adult learner*

→ The educational relationship

In his model of pedagogical conception, Jean Houssaye[11] defines any pedagogical act as *'the space between three vertices of a pedagogical triangle: the teacher, the learner and subject matter'.*

This model tends to illustrate how the relationship between the subject matter (the content of the training), the teacher and the learner is organised: the "learner" learns the "subject matter", the "teacher" teaches the subject matter, the "teacher" teaches the learner.

Jean Houssaye points out that, as a general rule, a pedagogical situation favours the relationship of two out of three elements of the pedagogical triangle, in which case the third element is "dead". For example, traditional teaching will tend to privilege "subject matter" to the detriment of the pedagogical relationship ("teaching") with the learner. Conversely, a highly developed pedagogical relationship ("teaching") will sometimes tend to neglect the teaching of content ("subject matter").

The Jean HOUSSAYE triangle
It is by considering these different relationships that the trainer will be able to implement the necessary steps to stimulate or activate the relevant behaviour: "teaching behaviour" (transmitting knowledge), "training behaviour" (building a relationship of exchange), "learning behaviour" (providing the learner with sources of knowledge), etc.

As before, none of these should be considered more effective than the others and all are necessary for a balanced pedagogical relationship.

→ Assessment as a learning tool

Although it is often forgotten, **assessment is an integral part of the educational process and a learning tool.**

It is generally agreed that there are three main models of educational assessment:

Predictive assessment
This is the evaluation of the learner's level before entering training. It means conducting a diagnosis to check whether the necessary prerequisites for joining a course are present. The trainer will also use it to assess the level of a learner, in order to adapt his or her work to the intended educational progression.

Formative assessment
This takes place during the course of the training, in order to assess what is working or not for the learners, the degree of acquisition of skills as regards the objectives set, etc.

Summative assessment
This measures learning outcomes at the end of the course, in order to certify that the course objectives have been achieved.

To this we could add a fourth category of assessment: formative assessment.

The learner, accompanied by the trainer, evaluates his or her results, as well as his or her performance, and takes a critical look at them. The moment of assessment then becomes a pedagogical process enabling the trainer to guide the learner in a reflective analysis of his or her practices and to lead the learner to consolidate what he or she has learned, to identify his or her mistakes and to respond to them through his or her own reflection and learning process.

→ **Educational progress**

In his or her relationship with the learner, the trainer will be concerned to monitor the learner's educational progress. This is the learner's ability to acquire the knowledge covered by the training. Some of this knowledge is more complex and needs to be progressively built up. This must also take into account the learner's own pace of acquisition.

Bloom's[12] Taxonomy is a model for defining the level of skill acquisition and for the trainer to adapt his or her teaching approach.

It organises the information in a hierarchical fashion, from the simple restitution of facts to the complex manipulation of concepts. By dividing the progression into graduated sequences, we are using an objective-based teaching approach, where we build on what is easy to grasp and then move on to more elaborate mental constructions.

The trainer will then ensure pedagogical alignment, allowing the coherence of the structure of a teaching session or course between the objectives to be achieved and the activities put in place in order to reach these objectives.

To conclude this theoretical section, it should be remembered that the models presented here are in no way to be considered as dogma to which the trainer must imperatively submit. As complex thinking teaches us, there is no definitive choice to be made between one approach or another. It is by considering all the options, by applying them to a given situation, by creating links between them, that the trainer will be able to develop an approach that is adapted to the situation and makes it possible to individualise learning.
Armed with these concepts, it is now up to the trainer to devise his or her own pedagogical approach and create his or her own " toolkit ".

[2] The Palo Alto School: Founded in 1952 by the anthropologist Gregory Bateson, this research centre located in Palo Alto, California, aimed to study the "paradox of abstraction in communication". Their work laid the foundations for a new way of thinking about the world. This was made possible by the transition from a mechanistic vision, where things are identified, compartmentalised and governed by determinism and causality, to a vision of the world where things are open, interconnected and give access to an infinite field of possible combinations.

[3] Holism is: "The tendency in nature to constitute wholes that are greater than the sum of their parts, through creative evolution. (Smuts, 1926). The system is open and interacting, but it also has a 'force' of its own.

[4] Edgar Morin is a French sociologist and philosopher (1921). A sociologist of complex thought, he defines his way of thinking as "constructivist". He is also known for his political commitment to communism and later socialism.

[5] Complex thinking leads us to consider opposites and oppositions in order to integrate their paradoxes into a way of thinking that embraces the system, the situation, the subject, the object, in all its complexity ("The 'either/or' is replaced by both an 'either/nor' and an 'and/and'") (Morin, E. (2005). Introduction to complex thinking. Paris: Editions du Seuil)

[6] Burrhus Frederic Skinner (1904-1990) was an American psychologist and thinker. An influential figure in behaviourism, he was strongly influenced by the work of Ivan Pavlov and the behaviourist John Watson.

[7] Jean Piaget (1896-1980) was a Swiss biologist, psychologist, logician and epistemologist known for his work in developmental psychology and in epistemology through what he called genetic epistemology. His work sheds light on 'intelligence', understood as a specific form of adaptation of living beings to their environment, on the stages of its evolution in children and his theory of learning. This insight has had a significant influence on pedagogy and educational methods.

[8] George Siemens (Canadian learning theorist) and Stephen Downes (Canadian computer scientist) have developed a theory of learning called connectivism which uses the network principle as the focus of learning, focusing more on making connections between knowledge.

[9] Jacques Ardoino (1927-2015) was a French pedagogue and professor of education at the University of Paris 8. He is the author of books on education and was one of the first to theorise the role of the professional coach.

[10] Malcolm Knowles (1913-1997) was a pioneer in adult education. He developed an adult education model that takes into account the specific characteristics of the adult in the learning process. This approach is part of the current of contemporary humanism which developed in reaction to the behaviourism which prevailed during the first half of the 20th century. Malcolm Knowles, Carl Rogers, and Abraham Maslow are the forerunners of this trend, which advocates learning in an autonomous way with an essential consideration of affective and cognitive needs.

[11] Jean Houssaye is a professor of educational sciences at the University of Rouen. He has formalised the famous "pedagogical triangle" (subject matter / teacher / learners) and published an authoritative summary of the subject "La pédagogie: une encyclopédie pour aujourd'hui".

[12] Benjamin Bloom (1913-1999) was an American educational psychologist. He was also a teacher, researcher, literary editor and examiner. He is best known for his important contributions to the classification of educational objectives and for his Bloom's Taxonomy, which is useful for assessing learning progress.

Annex 4 à compléter

1 Founding references

To begin with, our approach is based on some "main principles", which go far beyond the framework of pedagogy and instruction. Indeed, outside of the teaching theories that will be discussed later, the approach championed here is first and foremost a "philosophical" choice, a way of "seeing the world". It is mainly based on two 20th century schools of thought, namely:

→ **The systemic approach** (The Palo Alto school) [2]

The works of the Palo Alto School demonstrate that the world is made up of multiple relationships and everything is interconnected. The individual, the company or any other subject is part of a global system, itself comprising other subsystems, the whole being in an interdependent, permanent and changing relationship.

From this notion we can see that a system can only be understood as a whole and not in a fragmented way disconnected from its environment. Moreover, this system itself has an identity, properties, values and a trajectory that may differ from what each of its constituent parts has, that is to say, a whole that is not the simple sum of its parts, but a whole that is a system with its own identity and functioning (holism)[3].

What this means for teaching:

According to the systemic approach, the individual (the learner) must be considered as a whole, taking into account his or her links with the system in which he or she evolves. In other words, the learner is not just an individual who has to acquire knowledge during a teaching session. He or she is an individual with a life made up of interactions and experiences which influence who he or she is and therefore his or her ability to learn. For the trainer, this raises the question of how to take into account the relevant obstacles (peripheral and direct) to learning.

Holism postulates that a group of learners will develop its own identity and 'force', which will be unique and different from the sum of the 'forces' deployed by the individuals who make up the group. This is a dimension that the trainer should not neglect during implementation in order to maintain the dynamics of his or her group of learners and the individuals within it.

→ **Complexity and complex thinking** (Edgar Morin) [4]

Developed by Edgar Morin, complex thinking is defined as the ability to consider the system in all its complexity, welcoming its paradoxes and taking into account the heterogeneity of those who compose it. It means not excluding anything, but integrating everything, including that which seems dissonant or even contradictory[5].

It also means considering the randomness, the uncertainties, the 'noise', transforming it from a dissonance or an error to be eliminated into data that allows the system to be questioned, opening up a space for reflection, in search of a new path. It means accepting imprecision, inadequacy, vagueness and unclear areas. It is the ability to work without knowing everything and with the awareness and acceptance that everything will never be known. Complexity 'is uncertainty within richly organised systems' (Morin, 2005).

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