

Cognitive education and inclusive training



Safe4All

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Index

1. What educational approach fits with an inclusive training?	2
2. Generalisation and flexibility	2
3. Conditions : beliefs, cognition and motivation, methodology	2
4. Presuming competence and an active modification-approach: the trainers belief system as starting point for inclusive training	3
5. Training for flexibility and generalisation – What? Transversal skills and growth mindset	6
6. Training for flexibility and generalisation – How? Mediation interventions	12
References	21



1. What educational approach fits with an inclusive training?

Very often, training is referring to sharing knowledge and to practice skills: this kind of instruction is *content* oriented, teaching *what* someone needs to know and rehearsing *practical* skills until they are automated. In the context of employment, this approach is often applied in combination with adaptation of the physical environment, both with the intention to prevent production errors and maximise production. This approach is the common approach, especially when an employee is functioning on a low level, or when cognitive or intellectual challenges are at stake. This *content* approach, however, ignores the real needs of these employees and their wish to experience successful work. To address these needs, a complementary, *process* oriented educational approach is necessary. The *learning content* (*what you learn*) is a necessary, but not a sufficient part of a training; in addition, the *learning process* (*how you learn* - being cognitive in nature) and *motivation* are critical issues to include for a successful learning experience. This *process oriented* approach – cognitive education - is focusing on so called *transversal or general* skills; these skills are useful in whatever context and are key for successful employment, social participation, independent living, autonomy. In this, cognitive education is an inclusive educational approach.

2. Generalisation and flexibility

Low functioning employees, in particular when cognitive needs¹ are involved, have problems in generalizing or using skills and knowledge in a flexible way. They may have acquired knowledge and be able to perform an automated action or procedure, but as soon as some, even minimal working condition changes, or when a problem or unforeseen situation happens, the level of functioning (and production) decreases often significantly; they don't know how to deal with problems, don't reflect on what they have learned or experienced earlier that may help them now, they wait for assistance, etc. This lack of flexibility, problem solving, reflection hinders independent working and successful employment. This problem is often a reason for not hiring people with cognitive needs, as they depend on others – not continuously available, on adapted tasks – single not complex tasks, and on adaptation of the environment – to prevent whatever problem. Therefore, employees should not only learn specific skills to perform tasks, but should also learn general skills to regulate task performance.

3. Conditions : beliefs, cognition and motivation, methodology

The mentioned lack of flexibility and transfer is (too) often seen as a stable feature of the cognitive functioning of people with cognitive needs, and so this cannot be changed by training. This assumption can be challenged: without claiming that 'the sky is the limit', people with cognitive needs are able to acquire transversal skills, that enable them to be flexible, solve problems, work independently,... Conditions for success, as supported by academic papers and research, can be linked to three topics:

- a. the false assumption of 'not being able' has to be replaced by a presuming competence- approach (see 4.)
- b. education or training includes cognitive and motivational goals (in addition to the content)(see 5.) and
- c. the methodology to teach these cognitive skills is adapted to the learning needs of the trainee (see 6).

¹ Cognitive needs refer to people with an intellectual disability, a learning disorder, suffering from a traumatic brain injury, ADHD, etc.



4. Presuming competence and an active modifiability-approach: the trainers belief system as starting point for inclusive training²

4.1. 'If competency is not expected, no competence will arise'. (Biklen & Burke, 2006)

A trainer will not do efforts to teach cognitive, transversal skills when he doesn't believe that his trainees are able to acquire these skills. It is clear that the learning problem of people with cognitive needs is a huge challenge for educators, teachers or trainers. The learning problem is often very present and may have a significant impact on the level of functioning.

Adapted (and different) approaches need to be acquired and deployed by the trainers. These approaches are (too often) not known nor available; and if available, they are often not used due to a high demands and expertise, the level of complexity or the need to adapt them time and again to find a match with the individual needs (Cognition & Inclusion, 2017). In addition, the outcome of the trainer's effort is unpredictable, and the trainer's self-efficacy for this competency may be low: reasons not to use these approaches.

However, the general beliefs that trainers have on intelligence and on the learning potential of people with cognitive needs, is the very starting point for doing, or for *not* doing efforts to teach skills that are rather abstract, 'high level' or expected late in a person's (cognitive) development. Personal reflection by a trainer on his job and efforts and on his beliefs often reveal doubts about the learning potential of people with cognitive needs. This potential may be presumed for concrete or practical skills, or for acquiring simple, repetitive tasks that are organised in a way mistakes will not happen; on the other hand, the potential is often not presumed for more abstract skills and (cognitive) transversal skills such as (independent) problem solving. By doing so, pessimistic beliefs – often implicitly present – are made explicit, being a starting point for changing these beliefs into optimistic assumptions, e.g. by using academic evidences. In a multi-national study, results show that people believe that individuals with cognitive disabilities are less capable of completing complex tasks such as handling an emergency situation (Siperstein et al., 2003). However, since a long time research shows that also people with cognitive needs are able to acquire and to benefit from these skills, taking into account the need for specific educational approaches. E.g. Ferretti, already in 1989, wrote 'Three decades of research (...) show that mentally retarded persons are often strategic when comprehension of the task requirements is ensured, and that generalization can be obtained (...)'

4.2. Frequently quoted models in special education, including the relevance of exploring the beliefs of the educator, teacher or trainer, are the Structural Cognitive Modifiability-theory (Feuerstein et al., 2010), and the Presuming Competence concept (Biklen & Burke, 2006). Both stress upon positive, optimistic beliefs as starting points for support, training and formal or informal education of people challenged by *whatever* disability. Both models inspire by making explicit the content of beliefs on intelligence, modifiability, learning potential, brain plasticity, intrinsic motivation, etc...

Feuerstein, already since the 1960 's, introduced the concept of cultural deprivation and embraced later the concept of ecological plasticity. With *cultural* and *ecological*, he is referring to the impact of the social environment on the development of people with a learning or intellectual disability. *Plasticity* refers to the characteristic of the brain to adapt, modify, make connections,... in response to internal and external stimuli by reorganising the structure and functions of the brain. This includes the concept of learning potential. Biklen & Burke (e.g. 2006), promoters of the presuming competence-model, fight against ableism, a deficit-based view and labels, and invites all educators to not set any restriction *from the beginning* on what can be achieved.

² Based on Feuerstein et al. (1988), Longfellow (2020), Biklen & Burke (2006), Warnez (2002), Warnez & Kopacsi (2011)



4.2.1. Reuven Feuerstein : passive acceptance versus active modification

Feuerstein refers to beliefs that may range on an ideological continuum from *active modification* to *passive acceptance*. The educator or trainer on the active modification-side of the continuum believes in someone's ability to learn, starting from the actual level of functioning and building on existing competencies while providing for needed feelings of security. The trainers objective is not simply that someone should be able to do specific tasks better, but that he should do them differently in ways that will better enable them to *approach and master other tasks of the same kind in the future* (Beker and Feuerstein, 1991). The passive acceptant-educator accepts what someone is able to do and will, if at all, do efforts to maintain what has been achieved.

Feuerstein's Structural Cognitive Modifiability-theory is anchored deeply in the active modification approach, advocating the continual mobilization of environmental resources in order to enhance not only the individual's potential but also his capacity to become modified. Educators, social workers, parents, trainers will vary greatly in their belief in the potential for human modifiability. This variance can be thought of as a position held on a bipolar continuum running between the passive-acceptant (PA) approach on the right and the active-modification (AM) approach on the left end. In reality, though, these approaches can be described in terms of a spectrum of positions, each one closer to, or more remote from one of these poles. These two views do not refer to the quantitative aspects of educational intervention. Instead, they address its qualitative aspects, that is, its nature, goals, and direction toward which interventional energies and resources are directed.

In order to determine one's position on the PA-AM continuum, two interrelated questions should be asked: "To what extent is the individual's level of functioning, or impairment, considered immutable and consequently accepted as a given?" "To what extent are the social resources, interventional processes, and educational practices geared toward meaningfully modifying the individual himself as well as shaping his environment to be more modifying?" In responding to these questions, whenever educational activities are geared toward significantly increasing the individual's modifiability and enhancing his adaptational capacities, we may consider them an active-modification (AM) approach. Whenever an individual's modifiability is not the major objective of intervention, a passive-acceptant (PA) approach is reflected. Activities of a PA nature may be highly resourceful and varied and yet considered passive because they aim at adapting the environment to the individual's present level of functioning, rather than at enriching the individual's coping behaviour for a better quality of life. There are situations, however, in which a passive-acceptant approach is not only commendable but necessary, as for instance in building special ramps for people in wheelchairs. Even in this circumstance, though, it is important that the person himself commute from one place to another without requiring the direct assistance of someone else, if at all possible. Acceptance does not refer to the emotional attitude that we may have, or develop, toward a person with a disability. It refers to the attitude we have toward that disability. Passive acceptance means to tolerate the impairment, considering it as unmodifiable. To "live with" the impairment means that an investment is made not in the individual's modification but in his surroundings. Conditions are created for him that will not require modifications in his level of functioning. Thus, low-level or inappropriate functioning becomes reinforced and perpetuated.



Passive Acceptance

- A belief that humans are essentially unmodifiable and unchangeable
- A belief that an individual's future can be predicted on the basis of present and past levels of functioning
- A tendency to use "because of . . ." statements, e.g., "Because of his genetic problems he will not be able to . . ." or "Because his father was alcoholic he will be . . ."
- A very pessimistic view

Active Modification

- A belief that human beings are flexible, open systems that have the potential to be modified
- A belief that individuals are open systems that have the potential to be modified
- A tendency to use "in spite of" statements, e.g., "In spite of his genetic problems he is motivated to change . . ." or "In spite of his mother's absence he is receptive to mediation . . ." statements
- A very optimistic view

4.2.2. Douglas Biklen: presuming competence

Presuming competence is a framework of educational engagement that invites everyone involved in education, support or training (professionals and non-professionals), to approach people as wanting to be fully included, wanting acceptance and appreciation, wanting to learn, wanting to be heard and wanting to contribute. To not presume competence is to assume that some individuals do not have the potential and cannot learn, develop, or participate in the world.

"Presuming competence is nothing less than a Hippocratic oath for educators" (Biklen & Burke, 2006): it means being open to a person's (intellectual) competence, assuming that a person (with a disability) has the capacity to think, to learn and to understand, even if evidences that such is the case are not visible. It's assuming that a person is not inherently incapable, but that he/she needs the right supports and systems to help him/her succeed. Presuming competence is not idealism. It is not about ignoring or overlooking the challenges a person faces. Presuming competence is about giving someone a chance, and helping them take that chance, in any way. Being open to individuals' competence especially is crucial to promote (transversal) skills, and so to successful contribution in society and employment.

Not assuming potential, often is assumed in persons with developmental, intellectual disabilities, and... is reinforced by outcomes of tests, definitions, diagnoses, categorizations, etc.³ Assuming incompetence happens through the process of classification: someone becomes mentally retarded on the basis of his performance on intelligence tests and adaptive behaviour scales. Labeling often occurs, and people learn to behave according to the label and the (negative) expectations of the social environment.

³ To illustrate, the way the American Psychiatric Association (APA, 2000) defines severe retardation, declares a person retarded because of difficulties in performance: "The group with Severe Mental Retardation constitutes 3%–4% of individuals with Mental Retardation. During the early childhood years, they acquire little or no communicative speech. During the school-age period, they may learn to talk and can be trained in elementary self-care skills. They profit to only a limited extent from instruction in pre-academic subjects, such as familiarity with the alphabet and simple counting, but can master skills such as learning sight reading of some "survival" words. In their adult years, they may be able to perform simple tasks in closely supervised settings. (...)"



5. Training for flexibility and generalisation - What? Transversal skills and growth mindset

A trainer, presuming competence and adhering an active modification approach, will teach the content (knowledge and procedure) that is necessary (e.g.) for a job and for doing this job in a safe way. On top, he will teach the trainee for using this content in a flexible way, to enable the trainee to use the knowledge and skills in future and (more or less) similar/different situations, and to deal with problems or unforeseen situations that invite him to adapt what he is used to do. To realise this, additional educational goals regarding cognitive skills and motivation are complementary to the content goals, and are included simultaneously.

A widely general cognitive educational framework to understand the relationship between intelligence, cognition and motivation is the *transactional perspective on human ability* as proposed by Haywood (2010). The transactional perspective rests on the three constructs: intelligence, cognitive processes, and motivation as the foundation of human ability: (a) intelligence, which is essentially biological, largely genetic in origin and relatively resistant to change; (b) cognitive processes, defined as modes of thinking, which are acquired through experience, thus modifiable also by experience; and (c) intrinsic motivation, defined as a trait reflecting the tendency to derive personal satisfaction from information processing and action, whose development depends substantially on experience. The various ways in which these three essential variables combine form a very broad range of individual differences in learning and thinking efficiency and effectiveness.

Haywood (2010) states that the *potential* ('intelligence') of each individual needs *cognitive* skills (see 5.3.) to 'make' available this potential; at the same time, as well for the development of the cognitive skills as for using these skills, *intrinsic motivation* is a necessary condition. So, to be successful, approaches that focus on cognitive skills, as is the case when a person with cognitive needs has to acquire skills for flexibility or generalisation, need not only to include goals related to modes of logical thinking such as problem solving or self-regulation; they also need to include goals aiming to develop personality traits that emphasize learning and thinking for its own sake and as its own reward, i.e. intrinsic motivation. This motivational orientation is a fundamental issue for whatever kind of autonomy. Also, in intrinsically motivated people, specific personal beliefs on their own cognitive potential are found: they show evidence of a set of optimistic beliefs regarding their intelligence and learning (see 5.1.).

5.1. Motivation - mindset

Two concepts may be helpful to understand the preferred motivational orientation we need to realize in the trainees. The first refers to a continuum from *extrinsic* motivation at the one end to *intrinsic* motivation at the other: this model is mainly linked to the outcome of tools used by social environment (e.g. the trainer) to praise and reward or disapprove and discourage *outcomes* of efforts. On the other hand, process oriented feedback on the *efforts* supports the development of intrinsic motivation: in this, efforts are done for its own sake and as its own reward. (see 6. for tools the trainer can use to create intrinsic motivation).

The second model is related to implicit philosophies or *beliefs* that someone has about his or her *personal* intelligence, adaptability, learning potential, coping style, locus of control, etc.. These beliefs have an impact on the quantity and quality of the learning or thinking efforts done by the person. These beliefs may be seen as the 'content' of intrinsic motivation from the viewpoint of the person.

For an adequate development of flexibility and generalisation, an intrinsic motivational orientation and a growth mindset show to be more powerful than the pure extrinsic reinforcement approaches. Outcomes reinforced by rewards are not long lasting (they disappear as soon as the reinforcement disappears or when a reward is not



attractive anymore); an extrinsic motivation driven support is not a good basis for doing efforts to adapt, to be flexible and to spontaneously use later what has been learned earlier.

5.2. A growth mindset – Carol Dweck

In line with Haywood's Transactional perspective, and in addition to cognitive competences (see 5.3.), a sustainable growth mindset may be seen as the other necessary condition for adequate cognitive development. One takes profit from a growth mindset, because this mindset is related to attitudes, beliefs and consequent efforts that prompt someone to take initiative, adapt, be flexible, to learn from previous experiences,...

Carol Dweck (2012, s.d.) finds two mindset profiles - fixed and growth - to be seen as the ends of a continuum. Everyone is somewhere between the two ends, and has a mindset that is more a fixed mindset or rather more a growth mindset.

In general, people with a *fixed mindset* believe that they are either born with talent or they are not, they are either naturally good at something, or they are not. They consider intelligence as a fixed trait and believe that inborn talent determines success. People with a *growth mindset* believe that talent comes through effort. They are convinced that anyone can be good at anything, and that their abilities can be developed through dedication, perseverance and the right strategy. Individuals with a fixed mindset seek to validate themselves. Individuals with a growth mindset focus on developing themselves.

A growth mindset is characterised by *openness for challenges* (novelty, complexity, difficulty is challenging and fine, while a fixed mindset looks for familiarity, ease, simplicity). With a growth mindset, people *attribute* successes to their efforts, responsibility and abilities (internal locus of control), while a fixed mindset tends to attribute successes to external factors. *Enjoying the process* of doing efforts is not a feature of a fixed mindset, as efforts are done for the reward. With a growth mindset, you believe that you are able to learn and *deal with challenges*, taking responsibility and initiative and... *accepting risk* and a feeling of not being sure... A passive attitude, waiting for instructions or help is more often found in people with a fixed mindset. *Mistakes* are considered as learning opportunities and invite for perseverance; with a fixed mindset, people give up and avoid mistakes.



<https://www.techtello.com/>



5.3. Cognition and metacognition

Learning, problem solving, thinking, generalisation, adaptation and flexibility, self-regulation, making choices,... are cognitive processes. To train for generalisation and flexibility, a trainer has to teach these skills, if not yet acquired sufficiently, and to include educational strategies (see 6.) to encourage the trainee to use these skills whenever relevant and/or necessary. In particular, this is important for trainees with cognitive needs.

These processes rely on a small set of skills often summarized as metacognitive skills: they help to think about thinking, learning, problem solving,... and give direction to these processes, referring to a transversal, general *heuristic strategy* that can be used with whatever content and for whatever aforementioned cognitive process. However, compared to an algorithmic strategy, a heuristic strategy increases the probability of arriving at the desired outcome, but doesn't guarantee the outcome. On the other hand, an algorithm is an exact list of instructions that conduct specified actions step by step and guarantees the desired outcome. E.g. to bake a cake, the recipe you find in the recipe book is an algorithm with a set of steps, to be performed one after another; do it without mistakes, and you will have a tasteful cake. But, this algorithm can't be applied when you have to e.g. assemble a bicycle bell.

In *problem solving*, the goal is to move from a problem situation (e.g. not having enough components of a bicycle bell) to a solution, overcoming obstacles along the way. In *decision making*, the goal is to select from choices or to evaluate opportunities (e.g. what kind of public transport helps me best to reach the sports club?). Also *generalisation and transfer* relies on this kind of conscious direction of mental processes, when defining how to overcome a need and making choices between alternative approaches for action, experienced and acquired in the past. Those processes of problem solving, making choices or transfer, although not completely the same, share the same set of basic metacognitive skills. These processes or skills are often presented as *the problem solving cycle*. To decide or to think of what can help you now what you learned earlier, are basically *problems* to solve. This cycle is a heuristic and so transversal, very generally applicable: it is a general strategy and practical method for problem solving and decision making. Although not guaranteeing a solution or best choice, it is, nevertheless, a sufficient and supporting approach to deal with new, complex, abstract, difficult or unforeseen situations. It is a strong tool, especially for, as it is contributing to self-regulation, taking initiative and dealing with challenges and problems – also safety related problems.

5.4. Metacognitive skills and the problem solving cycle⁴

Besides content or knowledge and practical skills, metacognitive skills are responsible for the adequacy with which people perform actions or deal with complex (cognitive) tasks, such as dealing with unforeseen situations, solving problems, making choices,... In the context of the Safety4All-project and the goal to support generalisation, metacognition is the ability to use prior knowledge to plan a strategy for approaching a task, to take the necessary steps to solve the problem, e.g. the unsafe situation that is going on, to reflect on and to evaluate the outcome, and to modify one's approach as needed. (Flavell, 1976)

With Fogerty (1994) and Sternberg (2000, 2019) we frame metacognition as a process that spans three distinct phases, all important to be successful; this *cognitive structure* covers a general problem solving strategy, with a *mental orientation* (actions and considerations done before approaching a task or problem, including problem definition and a step by step plan), a *monitored performance* (check the correct application of the plan and the progress toward the desired outcome and adapt the plan if necessary) and a moment of *evaluation/reflection* on

⁴ For didactic reasons, we present this problem solving cycle and the associated skills as a three phases structure (Warnez, 2002; Warnez & Kopacsi, 2011), including the potential to expand and refine the phases up to 7 steps (Warnez et al., 2015), and so to find an individualized approach.



the outcome and the process. The final goal is to *spontaneously* make use of this cognitive structure and related skills in a *conscious, self-regulated* way, every time things are new, difficult, challenging, complex or unsafe...

Anyhow, this structure and skills contribute to autonomy and independence. They enable clients to take initiative to deal with tasks and challenges/problems – wherever and whenever they appear -, and to deal with them in a *systematic* and *well-considered* way, i.e. in a self-regulated, mentally prepared, planned, monitored and reflective way. More concrete, these skills help to inhibit impulsivity (often seen in people with cognitive needs) and to avoid behaviour that is not task-relevant or reflect non-efficient solution strategies, such as trial and error.⁵

5.4.1 Phase 1/3 - mental orientation

This first phase of the problem solving cycle includes several contents and skills.

--> a. Being alert - Alertness refers to giving attention to what actually is happening, to find if things are ok or not. In particular, this skill refers problem sensitivity, intuitively feeling that something new, difficult, different, strange, wrong, etc. is happening. Alertness may lead to targeted actions, which starts with slowing down, avoid impulsivity. It may be clear that this alertness is key for detecting unsafe situations.

--> b. Exploring - This is an exploration of the situation, of the feeling that something is going wrong, or, that a choice has to be made. This results in a problem definition. The strange feeling, the ongoing situation, the task, the problem is examined more closely, in a rational way, if possible with definition of the conditions and reasons that created the mistake, the bad feeling, the problem or unsafe situation. After the exploration, it is clear what the task requirements are, and what good outcome has to be found.

--> c. Identifying and choosing a solution/solutions or 'good' approaches

This skill is making a choice for the most efficient and available strategy to deal with the situation. There are - often!- several ways of solving a particular problem. In case safety or integrity is challenged, the only way to deal with this situation has to be: leave the situation, run away,...

Anyhow, you make a choice for a solution, depending on the desired result and the task requirements (e.g. fast and safe), and based on previous experiences and availability.

--> d. Planning

After selecting a way to deal with the situation (strategy), a concrete step by step plan is made; at the same time one may look forward and reflect on the expected outcome. Again, in case of unsafety or danger, it is important to act fast, and do whatever guarantees safety as fast as possible (task requirement)

5.4.2. Phase 2/3 – monitoring

This phase start with performing the action and the first step of the plan that you have in mind to deal with the situation.

--> e. Applying the plan

During this phase the step-by-step-plan is performed, but - this is essential - the activity is combined with a simultaneous and continuous monitoring to see whether the plan is being followed as previously defined, and in particular to see whether the effort is leading to the desired outcome. If this is not the case, adjustments have to be made, by going back to previous phase. Doing this, is showing evidence of *flexibility*.

5.4.3. Phase 3/3 – evaluation/reflection

--> f. Check and review

⁵ Handbooks on intellectual disability include often an overview of 'cognitive needs' of low functioning adults. On https://www.slo.nl/publish/pages/4736/het_leren_van_zml.pdf you may find the next list, interesting to compare with the cognitive and metacognitive skills in this paragraph: lack of planning and use of strategies, lack of taking initiative, lack of motivation, lack of generalisation, lack of flexibility, lack of transfer, lack of self talk, lack of curiosity, slow information processing, problems with working memory, problems with complex tasks, problems with selective attention,...



At this point, after the step by step plan has been implemented, it is checked whether the goal and desired outcome has been achieved. Besides an evaluation of the outcome (right/wrong, ok/not ok, feels well/not, safe/not safe,...), this skill also includes a reflection on the way the outcome has been achieved. An outcome and a process evaluation are both part of this check and review phase.

--> g. Transfer

This skill refers to the link someone makes between the actual experience, and 'other', past and future situations. It may be clear that the time spent on each of the phases and sub-phases will be different according to the nature of the problem; if danger is at stake, it is not wise to wait and see and to hesitate to take action! Anyhow, all steps are present, in one or another way, and some steps may be more important than others. E.g. alertness may be key in case of a dangerous situation...

5.5. Metacognition and self-regulation

In addition to the metacognitive skills as presented in the previous section, *self-regulation* is a supporting metacognitive skill and at the same time an important tool for 'full' independence. Self-regulation refers to self-questioning and self-answering (*self-talk*) and to give yourself direction (*self-instructions*). It is what replaces the directions, instructions, guidelines of external sources, such as parents, trainers,... Self-instructions are *internalized* instructions from external sources.

This metacognitive activity may be seen as *talking to yourself*. The previous paragraphs 5.4.1 – 5.4.3. help us to define the content of the self-talk and what someone may say to himself during the problem solving cycle. Some examples:

- Being alert : e.g. "Oops, something doesn't feel well. Stop! Something is not right here, let me have a look at it. I smell smoke!"
- Exploring : e.g. "What's going on here? What's wrong? Why do I feel uncomfortable?"
- Identifying and choosing good solution(s) or approaches : e.g. "What's the reason for this mistake? What may help here? May something that I did in the past help me here? Is there another way to approach this? What may be the best way to deal with this problem?"
- Planning : e.g. "What to do first? And next step? And will this work?"
- Applying the plan : e.g. "How am I doing? I did the first step, now I'm going to do the second. Am I still working according my plan? Does it still feel good? Maybe I have to review my plan."
- Check and review : e.g. "Is the outcome ok? Did I reach my goal? Is this what I expected? Am I safe now? Let me look at the way I did it. Was this the best approach? What did I learn?"
- Transfer : e.g. "How can what I have done or learned now be useful later on? How can I use this in similar contexts and in other contexts? What principle or rule can I abstract from this experience?"

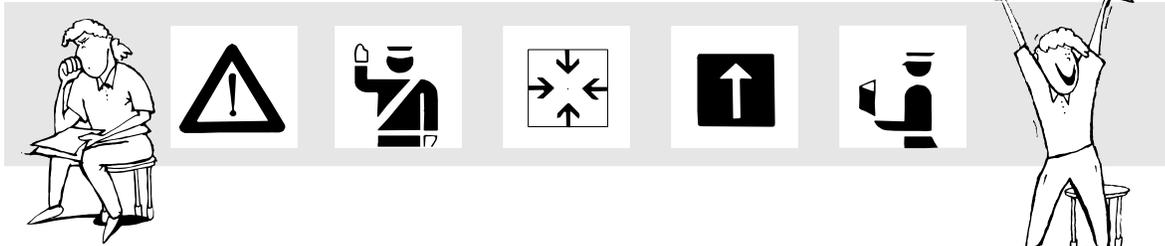
5.6. Visuals

Many metacognitive approaches implemented with young children or low functioning adults take advantage of *visual cues* to support memory, to draw attention or as an alternative for cue cards with words or concepts to guide someone through the problem solving cycle. According to Bandura (1969), a cognitive process may 'involve two representational systems - an imaginal and a verbal one' (p. 133). Images are alternatives for words and represent concepts or whatever content. They may be useful as guiding principles and so as instructions, not by talking but by visualising.



Some examples:

'Stop and think' (Kendall, 1985), adaptation (Warnez & Cracco, 1989)



'Self-Control training' - Meichenbaum (1981; 'Beertjesmethode' - Timmermans o.a. 2011)



'Eigen initiatief model' - Timmer e.a. (2003)



'Algemene vaardigheidstraining' - (vzw den achtkanter, Warnez et al., 2015)



6 Step 1: What do I have to do? Step 2: How am I going to do this? I make a plan. Step 3: I do what my plan tells me. Step 4: I check. How do I feel?

7 Red: 'Stop! Think before you start.' Orange: 'While you are working: are things going well?' Green: 'When finished: Look back!'



5.7. Content and process

It's important to understand that you cannot work on metacognitive skills in a vacuum. Metacognitive skills are always applied to a concrete context with a content, to real life situations or to real problems and challenges. The content is the problem (missing the bus, wake up to late,...), the assignment (preparing a meal or planning a day) or a global challenge (how to make well considered choices for voting during the actual elections, dealing with unsafe situations,...). The practical skills refer to what you have to do to use public transport or to prepare soup or an appetiser. The metacognitive skills and the problem solving cycle will not be helpful when there is not sufficient knowledge or skills that you need to find a specific outcome. In this, it is important to establish this content related condition before you can expect someone to implement the problem solving cycle. To reach the railway station by bus, you need a lot of thinking (planning etc.), but you also need to know what 'taking a bus' exactly means. When there is a fire, and you were alert and smelt smoke, you must know that smoke is related to fire, that fire means 'danger', and that the safety instructions of the workplace tell you to go outside. You can not expect that someone will be successful in taking the bus to the railway station, when the person has not been taught what it means to take the bus and has not yet acquired the practical skill of taking a bus.

6. Training for flexibility and generalisation – How? Mediation interventions

6.1. Introduction

How can a trainer – who shows evidences of presuming competence and an active modification approach (see 4.) and who understands what metacognitive skills are - reinforce the metacognitive competence and the growth mindset of the trainee during a training? This chapter will focus on a general process oriented training/teaching style, easy to use simultaneously with efforts to teach content e.g. on safety⁸.

The training style presented, is mainly based on the Feuerstein's Mediated Learning Experience-concept, part of the Structural Cognitive Modification-theory (Feuerstein et al., 1988, 2010) and on the tailored applications of this concept in a day care centre for adults with an intellectual disability (Mediation Interventions, Warnez, 2002) and a therapeutic centre for adults suffering from a traumatic brain injury (Warnez & Kopacsi, 2011)⁹.

Next paragraph 6.2. provide a short introduction to the M.L.E.-concept with the main educational principles. Paragraph 6.3. focuses on how to use these principles for metacognitive reflection with the trainee.

6.2. Cognitive enrichment by creating Mediated Learning Experiences

According to Feuerstein (e.g. 2010) a qualitative learning situation that contributes to cognitive competence, and so to skills that are important for problem solving, flexibility, generalisation and transfer, needs to be supported by a specific *quality of learning and teaching/training*: This quality is characterized by the use of *universal strategies*, not depending on language modality or content. Feuerstein names this quality as *mediation*, including 3 *basic mediational strategies*: mediation of Intentionality and Reciprocity, mediation of Meaning and mediation of Transcendence.

6.2.1. Mediation of Intentionality and Reciprocity

This quality of a Mediated Learning Experience refers to a trainer's *deliberate* effort to *share the (learning-) goals* he has in mind with the trainee. In addition, he will *tailor the learning situation* by providing meaningful stimuli

⁸ Specific and systematic training formats to train for self-regulation, self-talk or inhibition of impulsivity are not presented.

⁹ Both approaches have been developed in 'Den Achtkanter', now part of Groep Ubuntu (Belgium)



or contents, inviting the trainee for giving attention, focusing, altering stimulus frequency, (re-)ordering events, linking novel information to familiar contexts, etc.

These evidences of intentionality from the side of the trainer, however, are inadequate without the trainees signs of *reciprocity*, showing evidence of understanding the goal, willingness to *contribute* to the goal, responding and/or doing learning efforts, etc.

To make this more concrete, a trainer may assess the Intentionality/Reciprocity quality of the training situation that he has created by using the next (non-exhaustive) set of self-reflective question. Each question may be answered by a simple 'yes' or 'no', but especially invites the trainer to explain 'how'.

- What's the trainer's specific focus and/or learning goal?
- Is this goal situated within the Zone of Proximal Development of the trainee?
- Is the goal made explicit and shared with the trainee?
- Does the training start with some moment of mental orientation?
- Does the training include an (intermediate) evaluation and/or recapitulation? An evaluation of the outcome of the training effort? Evaluation of the process and/or effort done?
- Does the trainer use mistakes as an opportunity to learn?
- Does the trainer make 'expectations' explicit?
- Is the content related to the world and the needs of the trainee?
- Are stimuli repeated to draw the trainee's attention? Are stimuli sequenced, simplified or reinforced?
- Does the trainee respond to the offered stimuli or questions and does the trainer expect a response?
- ...

6.2.2. *Mediation of Transcendence*

Mediation of Transcendence is characterized by interactions in which the trainer goes beyond the concrete here-and-now-training situation or beyond the immediate needs of the trainee. This means, what has been learned is generalized or linked to new future (and even to past) situations. Each training situation is an opportunity to learn the trainee something he or she can use at other times and places. This strategy is the one that is often forgotten as it is believed that trainees are not able to represent future situations or to find similarities between the here-and-now-situation and the future (or past) situation.

Mediation of transcendence is closely related to the intentionality quality, as now the nature of the learning goals become more specific: generalisation or transfer can only be realised when the trainer goes beyond (= transcends) the concrete content of a lesson, and focuses on the learning, thinking, metacognitive or problem solving process that supports the way the here-and-now-situation and concrete content needs to be processed. So, intentionality - in addition to what is written in previous section - includes the intention to work on a transversal, (meta-)cognitive or motivational goals.

Referring to situations or experiences in the past and/or in the future is very illustrative for mediation of transcendence. Any reference to past situations (How did you solve the problem at that moment?) and any link that is made to later (Can you think of a time that you can use what you are learning now?) helps the trainee to disconnect from the actual situation. This universal strategy of Mediation of transcendence refers to the effort of the trainer to 'leave' the actual situation. An event can be seen as only an isolated event, but a mediational trainer will give such an event a transcendent (generalized) meaning by attempting to relate the event to previous and even future events of a similar nature, and thus to extract a generality.

For a trainer to assess the transcendence quality of the learning situation, the next (non-exhaustive) set of self-reflective questions may be helpful.



- Has been referred to past situations, challenges, successes,...?
- And to future situations?
- Are evidences of efforts to 'leave' the here-and-now-situation found?
- Is a (cognitive) principle made explicit? (see 6.3.)
- Does the trainer implements the 'bridging' technique? (see 6.3.)
- Are generalisation activities part of the training session?
- Does the trainer invites the trainee to (re-)imagine situations?
- Are there any strategies involved? (e.g. strategies to solve problems or to remember information taught, or is the training focusing on information?)
- Does the social environment know about the goals of the training?

-...

6.2.3. Mediation of Meaning

The mediation of meaning is characterized by a trainer who conveys the *affective* and *value*-oriented significance of an object, of an event and especially of the learning goal. These efforts must create energy, intrinsic motivation to do the necessary efforts to learn and contribute to the learning goal and to apply the skill or knowledge in the future.

The value-oriented significance of the content or the skills that are included in the learning goal and the learning activity, may refer to how the content or skill contributes to the trainee's competence or his successful employment or more general, to his Quality of Life. In this way, the activity becomes meaningful for the trainee, being a condition for doing efforts to learn and to use in the future what has been learned.

Besides these more objective kinds of meaning, mediation of meaning also may include more subjective meanings, like interests, aesthetics, traditions,... Also, meaning can be conveyed in a non-verbal way by expressions of evidence of value, importance, interest, beauty, excitement,...

For a trainer to assess this mediation quality of the learning situation, the next set of questions may be helpful:

- Is the objective value of what is learned made explicit?
- Is the subjective value made explicit?
- And the functional significance?
- How does the trainer motivate the trainee ?
- Is the outcome a personal meaning to the trainee?

-...

Based on these three qualities of interaction¹⁰, it is possible to define a concrete style of teaching that the trainer can acquire and that represents the three main criteria of a training that aims to contribute to the cognitive competence of the trainee, and his flexibility and ability to generalise what has been learned.

6.3. A mediational training style for metacognitive reflection

Reflection is an analysis of the (learning) performance going on. It reinforces the learning process and contributes to perform better in the future because it boosts the sense of self-efficacy, i.e. the feeling of being capable of achieving goals. As we reflect on our performance, we gain control over that performance, understanding exactly how certain outcomes came to be and what the efforts have achieved. Reflections during learning or problem solving are metacognitive in nature, and at the same time contribute to metacognitive competence, intrinsic

¹⁰ According to Feuerstein, the three universal strategies mentioned above are necessary conditions for a successful learning process. He names several other supporting strategies to be seen as situation specific interventions, referring to specific situations or related to specific conditions or challenges such as e.g. the trainee's condition. Mediation of feelings of competence, mediation of regulation and control of behaviour and mediation of sharing behaviour are the main additional supporting strategies.



motivation and a growth mindset; it is concerned not with assessment, but with self-improvement (Watanabe-Crockett, 2018). Also, reflections challenge us to seek out proven strategies and to test them for ourselves; it's not about trying hard and harder, but about working smarter. (Scott J., s.d.)

As metacognition and intrinsic motivation/growth mindset are closely linked and reinforce each other, we do not divide the instructions and suggestions for reflection into suggestions for metacognition or suggestions for a growth mindset. The mindset paradigm is - as explained earlier - a cognitive perspective. It places learning in the context of our thoughts and beliefs.

Based on the M.L.E.-strategies (see 6.2.), and counting on a basic level of understanding of metacognition skills and concepts, such as the problem solving cycle and a cognitive vocabulary, the trainer may initiate and elicit cognitive reflections in the trainees. These reflections are characterized by a firm and consequent focus on the process, not on the content. This doesn't mean that the interaction between trainee and trainer ignores content : if knowledge, understanding or practical skills are missing, the trainer has to introduce these tools first - content and process are two sides of a coin and are inextricably linked to each other. You need content (what) to think about (how).

Strategies for eliciting and initiating metacognitive reflections may be summarized in 6 suggestions:

6.3.1. *The trainer's interventions are (in particular) process oriented*

a. The way the trainer includes this process orientation, is seen in his *how or why* questions and reflections, not in *what or how much or how fast* questions. A simple example of process orientation may illustrate the difference:

"Alessandro, how many people are present in this (class)room?"

versus

"Ilviyya, how can you find out how many people are present, here in this classroom?"

b. The trainer may express his *appreciation* for what the trainee is doing, but this appreciation will focus on the process. Not :

"Oh, Fabrizio, this was fast! Good, the outcome is correct! You have 9 good answers. Good job!"

but rather :

"Zita, nice to see that you made a good plan to solve this problem. Good job, I saw you slowing down when the task became more difficult."

Appreciation is for *how* someone dealt with the task or the challenging situation. The appreciation is not a simple "Good Job, Francesca" but also includes *information* about what the trainer observed regarding the process related efforts. This supports the trainee to develop and use a *cognitive vocabulary* that is fundamental for the trainee to reflect on his or her efforts.

c. A main strategy that illustrates this process orientation, is inviting the trainee to develop a *habit of taking time to think before* performing a task (mental orientation). This mental orientation is introduced by the trainer when he invites the trainee to think about the content and the process of what is at stake.

"What are you expected to do? What do you need for this? What do you want to realize? Is this new to you? Is it easy or challenging? Did you do such a task in the past? How can you solve this problem? How did you make choices in the past? What do you have to do first, and what next? What may be difficult and at what point may you make mistakes? How will you know that you are successful?..."

The trainer asks this kind of questions to the trainee, but the trainee is expected to copy these kind of statements, and after a while to ask these questions to himself - automatically. This mechanism is extremely important as a metacognitive tool, that is, it helps to focus the trainee's attention on his own thinking processes and encourages him to engage in similar small conversations with himself.



This mental orientation self-talk contributes to the efficiency of the problem solving or decision making, and in general to autonomy, as the trainee is not depending anymore on the instructions and help of another. He has internalized this mental orientation and gives instructions to himself.

d. To the same degree, reflection *after* a learning effort, solving a problem,... is significantly contributing to the learning process. The reflection is on how the trainee did the task, what made him successful? What hindered him or caused difficulty:

“Estefania, how did you solve the problem? Was it easy? Challenging? Is the outcome ok? Did you feel well while doing the tasks? How did you deal with the mistake? What can you do next time to do it successfully?...”

It is clear that this reflection is on the learning or thinking process, on the strategies used: these strategies are general (i.e. generalizable) principles or rules, being the real content of transfer. This rule helps to know what to do in future similar situations.

e. A very strong strategy is to always use this *cognitive structure*: whatever intervention from the side of the trainer, whatever discussion or exercise can be organized in such a way that there is a moment of mental orientation before, and a moment of reflection at the end. In between, there is the monitored performance. Each lesson, interaction or training session can be divided into three parts. At the *beginning* is a planning time important to draw the attention to

“Pablo, what are we going to do today? What are we going to learn today? What did we do yesterday?”, “Zita, what we learned yesterday, how can this help us today?”

At the *end* of the session the reflection includes looking at the learning outcome, with questions referring to goals reached?, outcomes ok?, difficulties experienced and successes found, feelings about all this, what kind of effort has been done,...

The main part of the training session - in terms of time spent - will be the activities itself. *During* these activities, from time to time, an intermediate evaluation can be organized:

“Louise, are we doing well? Are we proceeding? What is difficult? Do you think you will reach your (personal) goal?”

These actions refer to monitoring. Planning time, monitoring and reflection... are the basics of the problem solving cycle. Including these three parts and creating a habit of always thinking before, checking during and reflecting after the activity contributes to efficient problem solving and well considered actions.

6.3.2. The trainer asks questions

This second suggestion is part of the previous one, but is made explicit here to stress on the importance of questioning. Questions *invite to think*, to reflect,.. Providing information is not enough to invite ‘cognitive’ behavior. It is much more ‘empowering’ to ask questions than to simply offer or tell information. Telling is ok for the mere transition of information, but is not enough to invite people to address their own potential. Besides, asking questions and questioning is an invitation to active involvement.

Limited verbal and/or communication skills are seen in many trainees. Questioning therefore is for many trainees challenging. And yet it makes sense to question the trainee, even when we do not expect a (verbal) reaction. It always invites - more or less - the trainee to use his imagination, and to develop an (internal) set of words and concepts that may help him to think about ways to process information or solve problems. Also, it is by no means wrong for the trainer to provide the answers to the questions by himself, or to invite the trainee to give a non-verbal answer (nodding the head or pointing or by whatever modality). It’s up to the trainer to expand the simple or incomplete answer and to check if he has understood what the trainee wanted to communicate. “Martin, is this what you mean?”

It is very significant to reflect, with the trainee, on how he approached a task. The trainer may ask



“Diana, how did you approach the task?” but he also can name what he observed. He may have seen the trainee working systematically, making use of a plan; or he saw the trainee comparing to look for any imperfections. These observations may be followed by reflective questions such as: “Francesca, I saw you working step by step; was this a good plan?” or “Did you work in a systematic way?”

6.3.3. Requiring justification

To invite the trainee to think, learn or solve problems with full attention and to contribute to full insight in what is making a difference for efficient learning, thinking or decision making, it is important to (almost) continuously ask the trainee for the *why*, the *reason of a response* or answer or choice. “ Louise, why do you think this is the right answer?”

Mediating trainers establish the *habit of challenging both correct and incorrect* responses. In this, challenging must be accompanied by the rule of accepting as much as possible of trainee’s responses (the “Yes, I saw this, but...” mechanism). The trainer might say, for example: “Yes, Estefania, you are right, it could be that way. You could also look at it another way, and maybe find an even better answer.”

Too often, questioning happens only when something is wrong. It may be clear that it is important to accept mistakes as a very normal phenomenon during all learning. Mistakes are nice opportunities for learning. They invite for reflection on the causes, and what can be done to avoid mistakes. However, it is important to ask questions also when something is right or correct. Habit formation in this is important. Challenging correct answers conditions the trainees against the expectation that a challenge by the trainer means that their answers are wrong. A response followed by a question does not necessarily refer to a mistake or failure. A correct challenge might be:

“Alessandro, yes, that’s right. How did you know that should be the answer?, or

“Why is it better than this one? What would be wrong with this one? Could you, Diana, show me/tell me how you thought about that and found the right one?”

Just as is the case that a trainee can learn from mistakes, the trainee can learn from reasons of success. To reflect on the answer to the question “Martin, how did you find the right answer?” contributes to understanding and comprehension. The trainee learns that his response is not based on coincidence, but the outcome of active, adequate, efficient efforts to apply good (cognitive) skills and attitudes. The trainee very often show evidences of (learned) helplessness and - too often - attribute successes to external conditions (the task to be completed was easy or the trainer helped me) and attribute failure to themselves (I’m not good at this). The suggestion to require justification of good responses, is an antidote to the (learned) helplessness by linking successes to active efforts. And... it contributes to a positive feeling of competence, intrinsic motivation and a growth mindset. When a training is happening in a group setting, positive responses, right answers and efficient approaches contribute to a positive atmosphere. Good habits, efficient and adequate behavior are observed by the other participants, and so observational learning may happen.

6.3.4. Cognitive modeling

A mediational style is supported by a trainer who *shows explicitly* (i.e. models) how he or she - with enthusiasm - solves problems, approaches tasks, deals with failure, inhibits impulsivity, talks to himself, reflects on what he is doing or did, mentally orients himself,... The trainer not only shows, i.e. non-verbally, his mode of thinking or problem solving, but also makes explicit the *self-talk* - he is asking questions or is talking out loud to himself during these actions. By doing so, the trainee sees and hears how the trainer is dealing with problems, mistakes, successes, self-reinforcement, etc.

Besides being a model for the trainee himself, the trainer, whenever possible, asks a peer such another trainee in case there is a group session going on, to show (and verbalize) how he or she is dealing with the tasks. This is an



important strategy, as everyone is - often unconsciously- more willing to learn from someone with who he can identify himself. Also, the willingness to learn from what is seen and heard, will not be very present when the model is a mastery model, i.e. someone who always performs tasks perfectly; it will be more likely that someone copies what he sees when the model is a *coping model*. A mastery model shows behavior that - according to the trainee - may be too difficult to acquire, while a coping model shows some imperfection and so, achievable behavior.

6.3.5. Promoting task-intrinsic motivation

When the interventions focus on the process that leads to a result, and not on the result itself, the trainer cannot use forms of reinforcement derived from behavioristic models (operant learning, punishing, ignoring,...). After all, the purpose of operant conditioning is to link reinforcement (e.g. reward) to desired behavior, which means the outcome. For (classical) behaviorists, everything that takes place between a stimulus (S) and a response (R) is unobservable and therefore not possible to be influenced (cfr. the Black Box-idea). Rewards, point systems, response cost systems,... (extrinsic reinforcement, as they come from outside) are in other words linked to thinking or problem solving outcomes instead of thinking processes. It is well known what are the limitations of these classical operant procedures: as soon as rewards disappear, so does the motivation to perform this 'desired' behavior, and so, also the behaviour disappears. This is because the source of the motivation lies outside the individual.

Although largely subject to purely theoretical discussions, a metacognitive approach proposes to promote task-intrinsic motivation. The source of this motivation is to be found in the task and/or in the person, such as the challenging nature of the task, the person's openness to challenge, or the feeling of competence. The examples of (task-) intrinsic rewards below show that extrinsic and intrinsic reinforcement cannot be purely separated.

a. Intra-individual evaluation and praise

Inter-individual evaluation is evaluation of progress or performances compared with the performances of others. *Intra*-individual evaluation happens when the achievements of a trainee are compared with his own previous achievements. By opting for the intra-individual evaluation, the feeling of changeability and being able to learn more or do things more independently is reinforced. A growth mindset and positive self-esteem is at stake. Comparing with others leads to competition and so to a feeling of failure when you are not the best. "Diana, you managed to take into account more elements at the same time than last time when we were practicing this."

b. Social rewards

Since e.g. materialistic or activity-related rewards draw the attention on the reward following the outcome, and not on the learning, thinking or problem-solving process preceding the outcome, social rewards such as a pat on the shoulder, a wink, etc. are chosen more often to praise the ongoing effort. Also here, to be efficient, the trainee is consequently informed about what he is rewarded for, giving particular attention to the effort and the process that is leading or has led to an outcome.

c. Self-reinforcement

Research (albeit from a cognitive-behavioral perspective) indicates that self-reinforcement (such as self-rewarding by telling yourself that *you did a good job* ("Yay! I did it!") is much more powerful than any external reinforcement. For sure, self-reinforcement must be based on proper self-evaluation, and this has to be taught.

d. Intrinsic rewards

There are few known examples of purely intrinsic kinds of reward. The most frequently mentioned is the reward where the successful performance of a task or assignment is rewarded with a more difficult or complex task.



Here the *openness to challenges* is both nurtured and addressed. Intrinsic motivation manifests itself in taking risks, accepting challenges, finding pleasure in solving problems, and so on.

“Ilviyya, you were successful in traveling by bus to your sister; you had to take one bus to arrive at your destination. I am pretty sure that you will be successful also when you travel to your friend Alessandro, although you will need to change the bus once.”

6.3.6. Support transfer and generalisation

This suggestion refers to one of the main strategies that defines a mediational intervention, i.e. transcendence. New experiences, principles or skills are *linked* to contexts different from the learning context (other environment, different level of novelty, etc.). It is important to support the trainee during his attempts to apply skills in different situations, especially by creating a safe environment, to create ‘try outs’ within the zone of proximal development and by giving as much as possible feedback and inviting for reflection. “Let’s try, Francesca, we both know you can do it, and no problem if things may not go well, we are here to find out how to deal with it,...”, “Pablo, you have learned how to prepare for shopping during the training, and now you want to go to the bakery and the pharmacy. Let’s think together how... etc...”, Any *reference to past situations* (“Zita, is this new for you? How did you deal with this last week? When can you use what you are learning now?”) and any link that is *made to later* (“Can you think of a time that you can use what you are learning now?”) helps the trainee to disconnect from the actual situation. The general intellectual and verbal level will, for sure, have an impact: for one trainee, it will be the trainer who will have to verbalize the link with the past or the future, instead of the trainee; for another person, it may be that the trainer can expect that the trainee can give examples of situations or contexts where what is learned can be applied. Also the level of abstraction (the more or less the principle or the cognitive skill is generalizable or transferable) or the complexity may have an impact on what is possible for the trainee. It is clearly easier and more concrete to ask a trainee ‘Louise, when is it important to slow down?’ compared to ‘When is it important to adapt your behaviour?’. Or, asking for a situation in the past - one that the trainee already and truly has experienced - will be more easy to remember and (re-)imagine compared to a future hypothetical situation that the trainee not yet has experienced.

Many cognitive psychologists suggest to *prepare* for transfer at the time of the training, by inviting the trainee to *imagine situations* or times where what has been learned may be applied. The trainer creates or elicits ‘imaginary bridges’¹¹. This is not easy, and it may take a time, but it is found that also trainees with cognitive needs can develop this way of thinking about and imagine future contexts. Too often, professionals assume that the trainees are not able to do this... although, they do believe that these people are able to dream and fantasize. As an illustration, and not as a list of statements that has to be memorized - and so, with some hesitation... -, the following list is a sample of statements often heard while a trainer inviting for reflections:

“Francesca, what do you need to do next?”

“Pablo, tell me how you did that.”

“Estefania, what do you think would happen if ___?”

“Louise, when have you done something like this before?”

“Fabrizio, how do you feel if ___?”

“Zita, yes, that’s right, but how did you know it was right?”

“Diana, when is another time you need to ___?”

“Martin, stop and look carefully at what you’re doing.”

¹¹ This suggestion refers to a technique developed by R. Feuerstein, and is called Bridging.



“Ilviyya, what do you think the problem is?”

“Juan, can you think of another way we could do this?”

“Adriana, why is this one better than that one?”

“Johan, where have you done that before to help you solve this problem?”

“Paolo, let's make a plan so we don't miss anything.”

“Allessio, how can you find out?”

“Giovanni, how is ___ different (like) ___?”

The aforementioned suggestions and the examples of metacognitive questions are very focusing on the cognitive process. At the same time, they invite to reflect on feelings, motivation and personal beliefs. In addition, examples of questions, more specifically focused on the mindset, may be :

“Zita, what was difficult, easy for you?”

“Louise, what was your main challenge during the session?”

“Juan, what moment where you most proud of your efforts?”

“Pablo, what needs improvement?”

“Diana, at the beginning, where you sure you could do it?”

“Petra, how did it feel when it was hard at the time that.... “

“Martin, what can you learn from this?”

“Ilviyya, what steps can you take to help you succeed?”

“Josh, what did you try hard at today? How did you persist when it was hard? And what was helpful not to give up? Did you change your mind after doing this?”

“Francesca, what were some of the most interesting discoveries you made while working on this project?”

“Fabrizio, what are your greatest strengths, and what are the biggest areas for improvement?”



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