



Meta-Skills for AE

Metacognitive Competence Framework



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CONTRIBUTORS

UNIVERSITATEA STEFAN CEL MARE (Romania)

KENTRO EREUNAS KAI ANAPTYXIS IERAS MHTROPOLIS SYROU (Greece)

DANMAR COMPUTERS SP ZOO (Poland)

E&D KNOWLEDGE CONSULTING, LDA (Portugal)

CESIE (Italy)

Asociatia de Dezvoltare Economico-Sociala (Romania)

Cuiablue OÜ (Estonia)

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Executive summary

The *Metacognitive Competence Framework* defines the key components of competencies needed by adult learners to effectively integrate metacognition into their individual learning context, as well as to provide and validate an EU reference framework for developing and evaluating metacognitive competences. The framework is aimed at adult learners but will also be relevant and of interest to pre-service / in-service teachers and trainers and educators, as well as educational and lifelong learning policy makers, relating to the technological upskilling and capacity building of adult education.

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1. INTRODUCTION

1.1 RESEARCH BACKGROUND

The world is rapidly changing and success or, sometimes, survival depends on individuals' ability to act fast and adapt easily, to learn continuously, be it in school or on their own, to be resilient and autonomous and to manage diverse career paths. The European Commission has developed and published the *Key Competences for Lifelong Learning* that was drafted in 2018 and updated in 2019. The document highlights the importance of increasing the level of eight key competences in terms of Knowledge, Skills and Attitudes, among which we find Learning to learn competence.

The same source shows that teaching and learning should adopt competence-oriented approaches which is opposed to knowledge-based training that predominates in most traditional current educations: "Competence oriented education, training and lifelong learning refers to a teaching and learning approach that aims at developing key competences including relevant knowledge, skills and attitudes."

At the same time, the *Key Competences for Lifelong Learning* acknowledges the fact that "our education and training systems do not deliver for everyone, and we risk leaving people behind" which is reflected by the early age and the number of school droppers. Within *Key Competences for Lifelong Learning*, 'Learning to Learn' is covered in 6% of the curriculum at Primary 1 and 2, less than 5% in Primary years 3 to 5, and not at all for secondary school education which implies that adult learners who left school early or fared poorly in school have very poor if not at all metacognitive skills.

The *Metacognitive Competence Framework* (MCF) aims at establishing the skills, attitudes, and behaviours that adult learners need to gain so that their learning become successful and that trainers need to deploy so that their performance and results improve significantly.

"Learning throughout life, including at an older age, is what will make the difference. Yet less than two in five adults participate in learning every year. This is not enough to relaunch our economy and reap all the benefits of the green and digital transitions. Each person in the EU should be empowered and rewarded to up- and reskill." [Communication 30June v2.pdf](#)

Learning is no longer supposed to happen only to young people, but it has become a must and a responsibility for all ages groups throughout their lives. On one side, learning at young ages usually happens in controlled environments, which is represented by formal education, while adults have greater autonomy and often learn autonomously. On the other side, learning processes happen differently to young people than to adults, which must be approached accordingly by applying

appropriate strategies and principles. Learning strategies are taught to young people by teachers and parents who also monitor results and accomplishments, while adults rarely have assistance of a trainer who, in their turn, might not be able to

“The word "competence" means a mixture of knowledge, skills, and attitudes. If you perform well in a particular situation, you are considered to be an “official”. Being competent means not only knowing something or having an idea about certain issues, but also putting information into practice in a certain context and situation. [...] Young people who are educated must have these key competencies to prepare for adult life, while older adults and adults must continuously improve their knowledge within the scope of Lifelong Learning.” Key Competences for LifeLong Learning | EPALE (europa.eu)

One of these 8 competences is *Learning to Learn* which is the scope of metacognition. The development of a metacognitive competency framework is an effective method to assess, maintain, and monitor learners' metacognitive knowledge, as well as their skills, attitudes, and progress towards them. Met-AE aims to build on the framework provided in the *Key Competences for Lifelong Learning* (European Commission, 2018) which is largely aimed at the school education sector, therefore does not take into consideration the different needs and challenges of adult learners, nor does it explicitly cover the full range of metacognitive skills required by adult learners.

The *Key Competences for Lifelong Learning* references many of the overarching and general core skills and competences related to metacognition on the whole. The *Metacognitive Competence Framework* refers to this existing competence framework, but it is specifically targeted towards the application and proactive awareness of these skills among European adult learners.

The *Metacognitive Competence Framework* facilitates and improves the recognition of metacognitive competence as a critical component of the lifelong learning able to ensure equal opportunities, access to the labour market, and inclusion. The framework supports the development and understanding of metacognitive competences across Europe and inspires practice, regardless the field of study or training. Metacognitive skills are of outmost importance nowadays since they empower adults to have a better life quality and more chances to become successful in their careers.

1.2 AIM & ADDRESSABILITY

The *Metacognitive Competence Framework* defines the key components of competencies needed by adult learners to effectively integrate metacognition into their individual learning context, as well as to provide and validate an EU reference framework for developing and evaluating metacognitive competences. The framework is aimed at adult learners but will also be relevant and of interest to pre-service / in-service teachers and trainers and educators, as well as educational and lifelong learning policy makers, relating to the technological upskilling and capacity building of adult education.

The Met-AE Metacognitive Competence Framework is aimed at:

1. creating awareness and raise interest around a structured, flexible metacognitive approach as a potential solution to the difficulties faced by some learners during the digital transformation of adult education;
2. introducing a review of the initiatives and resources at national level in partners' countries (Romania, Estonia, Portugal, Poland, Greece, and Italy), as well as an outline of best practices in the same countries;
3. proposing definitions of the metacognitive knowledge, skills and attitude required to adopt a metacognitive in self-directed learning;
4. identifying specific metacognitive competencies, in the form of sets of self-reflective topics;
5. proposing progression levels that will implicitly identify relevant training paths for both adult learners and adult educators.

1.3 STRUCTURE

The Metacognitive Competence Framework is structured as follows:

1. **Introduction** - presents the European context addressing competencies, the objectives, and the structure of available resources.
2. **Methodology and Descriptors** - outlines the strategy used to collect data that backgrounds the metacognitive competences, skills and attitudes included in the framework. This section provides a Map of Metacognitive Proficiency Levels showing competence areas and description of learning outcomes for relevant competences. It indicates proficiency levels from Novice to Proficient and allows self-assessment, which creates a coherent metacognition skills pathway and guides the learner's development over time.
3. **Benefits of Metacognitive Skills** – addresses both adult learners and trainers and offers recommendations aimed to guide and support trainers to become more effective in assisting their learners and to empower them to perform better in medium and long term.
4. **Review of European Policies** - addresses the adoption and effectiveness of metacognition and wider adult self-directed learning strategies, and how these translate/filter down to learners and educators at the national level context project partner countries.
5. **Conclusions and Recommendations** – sums up the main information of the framework and formulates suggestions for the assessment and improvement of metacognitive competences.

2. METHODOLOGY AND DESCRIPTORS

2.1 METHODOLOGY

During the initial planning phases of Met-AE project, the need analysis for the *Metacognitive Competence Framework* showed that there is currently no single metacognitive competence framework specifically aimed at vulnerable and NEET adult learners that could be used by adult trainers or adult learners to support their teaching or learning efforts. Consequently, to be able to develop a relevant competence framework, the partnership decided to bring together principles of adult learning / teaching, information and research published on cognitive teaching and learning as well as a review of relevant resources available in partners' countries.

Each partner selected a Reference Group of experts of regional adult educations (staff and centre managers). The members of these reference groups were invited to contribute with best practices and to provide feedback to a questionnaire (see Annex 1) addressing relevant issues to produce the framework. Furthermore, each partner identified, mapped, and analysed existing reference documents in their countries, which provided relevant input regarding the adoption and effectiveness of metacognition and wider adult self-directed learning strategies, and how these translate/filter down to learners and educators at the national level context in each of the project partner countries. Experienced organizations in adult education from Portugal, Greece, Romania, Italy, Poland, and Estonia have undertaken a comprehensive review of literature, reports and national educational guidance and curricula documentation to understand how metacognitive competences are referenced and implemented within each of these contexts using a dedicated template to allow thorough analysis. This research activity also included interviews with key stakeholders, end users and policy maker experts, which was one of the key factors in gathering qualitative input for the production of this framework.

The preparation of the MCF drew reference from several different competence framework structures and selected the features and practical functionality of the most suitable frameworks to define both competence frameworks. The *Metacognitive Competence Framework* drew heavily from EU reference documents such as the *Key Competences for Lifelong Learning*, as it looks to align itself as an annex to that (which will also support long-term exploitation and sustainability), as an additional, target group specific competence framework, and the *EntreComp* that was launched in 2016 by the European Commission. A third framework that was considered in the design of MCF is *LifeComp - The European Framework for Personal, Social and Learning to Learn Key Competence* (EU, 2020) that has nine competences with three descriptors each. The framework is conceptual and non-prescriptive. *LifeComp* can be used as a basis for the development of curricula and learning activities fostering personal, and social development, and learning to learn.

The *Metacognitive Competence Framework* was first tested by the members of the national Reference Groups from six European countries, and improved by partners based on the feedback received. Next, the MCF was tested again together with the *Metacognitive Supporter e-Course* and the *Metacognitive Learner Interactive e-Course* to gather quantitative and qualitative feedback from both target groups using a combination of focus groups, in person and online questionnaires that contained a combination of detailed quality indicators to be used for this output (to include relevance, ease of use, design).

The framework is designed in an accessible way for the specific stakeholders to facilitate its use and integration, which maximizes its exploitation, thus leading to longer term impact and contributing to its sustainability. The MCF is also available in Portuguese, Italian, Estonian, Greek, Polish and Romanian and can be downloaded as OER from the Met-AE website <https://metaskills.erasmus.site/>

2.2 METACOGNITION: DEFINITION AND COMPONENTS

Metacognition is understood as the management of learning or thinking about thinking resulting in reflection and meaningful learning. Metacognition is the ability to reflect on the thought processes that allow us to interpret reality. It is also the ability to control, monitor, evaluate and regulate them to the extent that they interfere with cognition. Hence the construction of the word (*meta* is a Greek prefix referring to something that is beyond).

What we understand today as metacognition has its origins in the ideas of John H. Flavell. Multiple theories have emerged that seek to explain the unfolding of these processes. To better understand this, we need to state two ideas that govern the process:

- Metacognitive knowledge: refers to what people know about their own cognitive processes. For example, their knowledge about their abilities to perform certain tasks. It also involves knowledge of strategies designed to improve those skills.
- Metacognitive regulation: involves the actions that people take with respect to these cognitive processes and strategies. It is related to monitoring and involves discriminating outcomes. For example, realizing that a particular strategy used to improve a skill (or weakness) is not effective.

The self-regulated learning processes require a high level of awareness of the tasks that are being performed and the most appropriate strategies to voluntarily control these processes. Flavell's original theory held that metacognition emerged as a natural mechanism for dealing with errors. By actively reflecting on them, learners can be more effective.

What is now known as metacognitive development was first introduced by Lev Vygotsky who proposed the idea of the *Zone of Proximal Development* which lies between what a learner can achieve alone and what a learner can achieve with guidance. It obligatorily involves the transfer of responsibility for monitoring progress, setting goals, planning activities and allocating attention from the teacher to the learner who is empowered to self-regulate their learning processes.

Metacognition includes all processes that learners use when they plan, monitor, evaluate and make changes to their own learning behaviours. Research unanimously indicates that metacognition has two dimensions: the metacognitive knowledge that indicates what learners know about learning in terms of own cognitive abilities, particular tasks and knowledge of available and relevant strategies, and the metacognitive regulation which indicates what learners do about learning, in terms of monitoring and control of their own cognitive processes.

2.3 METACOGNITIVE COMPETENCE AREAS

To become better and more independent learners, adults need skills that can be grouped under three competence areas which also indicate the progression towards reaching the desired level of metacognitive proficiency. The development of metacognitive skills or the learner's "thinking about own thinking" implies self-awareness and empowers the learners, thus making them more capable of self-improvement. Metacognitive strategies can be learned, practiced, and transformed into habits in order to improve learning, studying, and thinking skills.

Different theories have established different phases, but to achieve Metacognitive Competence Framework, we will consider **Planning, Monitoring & Evaluation**, and **Reflection** which we will define as key areas of metacognitive competence that combine to strengthen what experts call metacognition. Accordingly, we will refer to four types of learners: **Tacit, Aware, Strategic** and **Reflective**.

2.3.1 COMPREHENSION (PLANNING) AREA

Metacognition starts with questions that the adult learner has to address themselves about what they know, about what they want to know and about what they have learned, which is aimed at helping them to organize information before, during and after learning sessions. This will also help the adult learner to engage in new topics, activate their prior knowledge and monitor their learning. Learners need to think about what they already know that could help them respond to the learning objective.

2.3.2 MEMORY (MONITORING & EVALUATION) AREA

During this phase, learners implement their plan and monitor their progress towards reaching specific learning goals. Adults make connections between novel information and previous experience to build complex information. Furthermore, based on the results of their conscious efforts, learners might decide to make changes to the strategies they are using if these are not working. This phase provides a good opportunity to learners to understand what they are interested in and what they already know, which is critical to shape their future learning activities. Finally, learners should evaluate the efficiency of their strategy and their results to see how they are progressing with their learning and assess what areas they need to focus on.

2.3.3 APPLICATION (REFLECTION) AREA

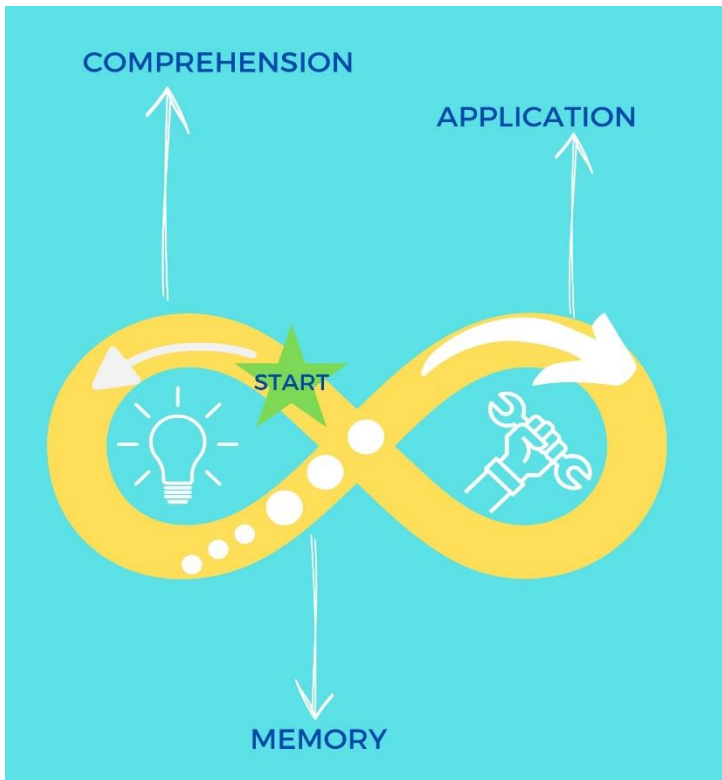


Figure 1. Metacognitive Learning Loop

This phase empowers learners to evaluate their performance in relation to a specific task and think about what they might do differently to improve their performance in future tasks. Adult learners need skills for applying knowledge or skills to real life situations and for reflecting on topics they are learning. Reflection on their learning process and how effectively they discovered what they wanted to know, on the strategies they planned and used, on things that went bad, on what should be kept and what should be changed, and improvements.

2.4 METACOGNITIVE COMPETENCE DESCRIPTORS

The main areas of metacognitive competences have associated descriptors that are fundamental for the design of the present framework. Metacognitive competence descriptors are specific descriptions of the skills and abilities that individuals use to monitor, control, and reflect on their own learning and thinking processes. By developing these metacognitive competence descriptors, individuals can become more aware of their own learning and thinking processes and improve their ability to regulate and control them. Here are the metacognitive competence descriptors that have been showcased by the desk research carried out in six European countries:

2.4.1 COMPREHENSION (PLANNING) AREA

2.4.1.1 Planning: Setting goals, identifying tasks, creating timelines, and organizing resources to achieve a desired outcome. The adult learner must take breaks from a task to actively examine their own behaviour as part of self-questioning, which makes them aware of their own shortcomings and paves the way for development. It is important to practice self-questioning both during and after finishing the work. When the task or activity begins, adult learners need to choose their strategies, make a list of various possible thought processes, remind themselves not to make the same mistakes again, and set up some tools, such as visual organizers, to keep their thoughts organized.

2.4.1.2 Evaluation: Assessing the effectiveness and quality of one's own work and learning strategies and making judgments about the adequacy of one's performances is an important part of metacognition and self-regulated learning. Here are some steps that can be taken to assess the effectiveness and quality of one's own work and learning strategies:

Set clear goals and standards: Before beginning any learning activity or task, set clear goals and standards for success. This can help you to focus your efforts and evaluate your progress more effectively.

Monitor progress: Keep track of your progress as you work on a task or learn new information. Use self-monitoring strategies, such as self-questioning or self-reflection, to evaluate your understanding and identify areas where you may need additional support or practice.

Seek feedback: Seek feedback from others, such as peers, instructors, or mentors. This can provide valuable insights into your performance and help you to identify areas where you may need to improve.

Reflect on your learning strategies: Reflect on the learning strategies you have used and evaluate their effectiveness. Consider whether you could have used different strategies or whether you need to modify your current strategies to better support your learning.

Make adjustments: Based on your self-evaluation and feedback from others, make adjustments to your learning strategies and work processes as needed. This may involve modifying your approach, seeking additional support or resources, or refining your goals and standards.

By assessing the effectiveness and quality of own work and learning strategies, adults can improve self-regulated learning skills and develop the knowledge and abilities needed to be successful in a variety of contexts.

2.4.1.3 Reflection: Thinking critically about one's own learning and thinking processes, analysing one's strengths and weaknesses, and identifying areas for improvement.

Reflection is the process of pausing to consider a task, thinking of improvements, trying the activity again, and then returning to reflection. Only when an adult learner deliberately considers what their thought processes were and how to enhance them moving forward is reflection considered metacognitive.

Although there are many different reflection models, most reflective cycles include at least the following stages: task planning, task attempt, task assessment, list of what went well and what might be better, planning the next task, strengthening one's own deficiencies, new trial, reflection, etc. Instead of merely reflecting after an activity, an adult learner who is excellent at reflection may also reflect while performing a task and make corrections there.

By organizing their thoughts, making connections between ideas, thinking more thoroughly about a subject, and picturing procedures and processes, graphic organizers assist adult learners in

intentionally improving their mental processes. Spider diagrams, flow charts, and mind maps are a few examples of visual organizers.

2.4.1.4 Regulation: Learning regulation refers to the process by which learners actively monitor, control, and regulate their own learning. It involves a range of cognitive, metacognitive, and motivational strategies that learners use to manage their own learning and improve their learning outcomes. Learning regulation involves several key processes, including:

Setting goals: Learners set specific, measurable, and achievable goals that help to guide their learning.

Planning: Learners develop a plan for achieving their goals, including strategies for organizing information, managing time, and monitoring progress.

Monitoring: Learners monitor their own learning progress, evaluating their understanding and identifying areas where they need further study or practice.

Adjusting: Based on their self-evaluation, learners make adjustments to their learning strategies, revising their goals, plans, and study habits as needed.

Boosting Motivation: Learners use a range of strategies to motivate themselves to learn, including setting challenges, seeking feedback, and using positive self-talk.

Learning regulation is an important aspect of self-directed learning, which is becoming increasingly important in today's knowledge-based society. By taking an active role in their own learning, learners are able to develop the skills and knowledge they need to be successful in a variety of contexts and to adapt to new and changing situations.

2.4.2 MEMORY (MONITORING & EVALUATION) AREA

2.4.2.1 Monitoring: Observing, checking, and evaluating one's own learning and thinking processes in real-time. Monitoring of autonomous learning involves tracking and evaluating one's own learning progress and performance in order to identify areas of strength and weakness, adjust learning strategies as needed, and ultimately achieve one's learning goals. Here are some of the key elements involved in monitoring of autonomous learning:

Goal-setting: Autonomous learners set clear and specific learning goals for themselves, which serve as benchmarks for monitoring progress.

Self-assessment: Autonomous learners regularly evaluate their own performance against their learning goals, using a variety of tools such as self-reflection, self-assessment quizzes, and progress checklists.

Feedback-seeking: Autonomous learners seek out feedback from others, such as instructors, peers, or mentors, in order to gain an outside perspective on their learning progress and identify areas for improvement.

Evaluation of learning strategies: Autonomous learners evaluate the effectiveness of their own learning strategies, adjusting and refining them as needed to optimize their learning outcomes.

Self-regulation: Autonomous learners regulate their own learning processes, setting priorities, allocating time and resources, and managing their own motivation and engagement.

By engaging in these monitoring activities, autonomous learners can take ownership of their own learning, identify areas for improvement, and develop effective learning strategies that enable them to achieve their learning goals.

2.4.2.2 Awareness: Recognizing one's own cognitive and affective states and using this knowledge to guide learning and problem-solving. Understanding one's own strengths and flaws is essential to metacognition. You can only better yourself by taking a close look at yourself and honestly identifying your deficiencies. Use a SWOT map to identify own strengths and weaknesses by focusing on their, possibilities they may have to practice their metacognitive abilities, and possibilities that might prohibit them from enhancing their metacognitive abilities.

It is also referred to as **Awareness of Strengths and Weaknesses or Self-control Skills or Awareness of Learning Styles**.

Adults learn in a variety of ways, and becoming aware of one's own learning preferences is a critical metacognitive ability. Visual learners adore pictures, graphics, TV documentaries, and graphs, among other common learning techniques. Auditory learners will rather listen than watch or read. Kinesthetic learners prefer hands-on learning over reading or hearing. Adults who are skilled in logic and mathematics are good at using reasoning to discover solutions.

Intrapersonal learners are content to learn in solitude and silence, while interpersonal learners like learning through social engagement and have strong emotional intelligence.

Adult learners can use various strategies to improve their information retention by involving patterns and associations to remember, by adding context to a fact to help recalling it. There are several strategies that adult learners can use to improve their memory, such as:

Chunking: This involves breaking down information into smaller, more manageable chunks. For example, instead of trying to remember a long string of numbers, you might break them down into groups of two or three.

Association: Creating associations between new information and information you already know can help to improve memory. For example, you might associate a new word with a visual image or with a personal experience.

Visualization: Visualizing information can help to make it more memorable. For example, you might create a mental image of a concept or idea or draw a diagram to help visualize a complex process.

Mnemonics: Mnemonic devices are memory aids that help to associate new information with something more familiar. For example, you might use a mnemonic to remember a list of items by creating an acronym that spells out a word or phrase.

By using these strategies and incorporating them into their study habits, adult learners can improve their memory and enhance their overall learning outcomes. Adult learners are better equipped to control their talents and improve their deficiencies by developing understanding of how their brains absorb information.

2.4.2.3 Cognitive Flexibility: Being able to adjust one's own thinking strategies and adapt to new or changing information. Adult learners must be able to create task-based or generic regulatory checklists that properly organize and arrange information. Before a job starts, a task-based regulatory checklist is often developed. The list includes the mental processes necessary to complete the work, the higher order thinking results that may be seen in relation to the activity, and the checkpoints that allow for reflection on one's thinking. The general regulation checklist offers strategies for regulation that can be applied to any typical task, including prompts to pause and reflect in practice at regular intervals, reminders to consider the strategies learners are using and whether they are appropriate for the task, self-questioning prompts to remind learners to question their decisions, and questionnaires to help learners concentrate on their progress. It is also referred to as **Information Organization**.

2.4.2.4 Self-motivation: Taking initiative to engage in learning, persisting through challenges, and staying motivated to achieve goals. It is also referred to as **Self-direction**. Compared to younger students, adults are significantly more motivated and self-directed, and they study because they want to or because it benefits them. Adults must understand the advantages, worth, and goal of learning. Adult learners are considerably more likely to interact with the material if the value of it is made plain to them. This form of learning is best done online, where learners may pursue flexible learning paths and access knowledge that is specifically suited to their requirements.

2.4.3 APPLICATION (REFLECTION) AREA

2.4.3.1 Transfer: Applying knowledge and skills learned in one context to new situations or problems. The transfer of knowledge is important for learning because it allows learners to apply what they have learned in one context to new situations and contexts. This means that learners are not just memorizing information but are developing the skills and knowledge that they can use in a variety of different settings.

When learners are able to transfer knowledge, they are better able to see the relevance and applicability of what they have learned. This can increase their motivation and engagement in the learning process. Additionally, the ability to transfer knowledge is a key skill in many professions, as it allows individuals to adapt to new and changing situations and to solve complex problems.

There are several factors that can facilitate or hinder the transfer of knowledge. For example, transfer is more likely to occur when learners are able to recognize the similarities between the

original learning context and the new context. Additionally, transfer is more likely to occur when learners are given opportunities to practice applying their knowledge in different contexts and to receive feedback on their performance.

2.4.3.2 Strategic Thinking: Analysing and identifying the problem, selecting a strategy to solve the problem, and evaluating the success of the strategy. Strategic thinking is a cognitive skill that involves analysing complex problems, identifying potential solutions, and selecting the most effective course of action to achieve a specific goal or outcome. It involves thinking critically and creatively to develop a plan of action that maximizes the chances of success.

Strategic thinking is often associated with the realm of, where it is used to develop business plans, formulate competitive strategies, and allocate resources effectively. However, strategic thinking is also relevant in many contexts, such as education, government, business and management, and personal decision-making. Some of the key characteristics of strategic thinking include:

Analytical thinking: Breaking down complex problems into smaller components and analysing each part to gain a deeper understanding of the issue.

Creativity: Generating new and innovative ideas and considering multiple options and perspectives.

Long-term focus: Considering the potential outcomes of different strategies over a longer period of time, rather than focusing solely on short-term gains.

Flexibility: Being willing to adjust plans and strategies as needed in response to changing circumstances or new information.

Risk assessment: Identifying and evaluating potential risks and uncertainties associated with different strategies.

Collaboration: Working effectively with others to develop and implement strategies.

Implementation planning: Developing detailed plans for executing a strategy and monitoring progress towards goals.

Strategic thinking involves the ability to think critically, creatively, and strategically in order to achieve a specific goal or outcome. It requires a combination of analytical skills, creativity, flexibility, and collaboration, and is an essential skill for success in many fields.

2.4.3.3 Agency: Human agency is the capacity to influence one's life, and there are several ways to categorize it. Individual decision and the power to affect one's circumstances and opportunities in life are examples of individual agency. Individual decision and the power to affect one's circumstances and opportunities in life are examples of individual agency. The ability to exert control over one's ideas, attitudes, and behaviours is known as human agency. It is an innate human ability to make decisions (i.e., establish objectives) and carry out those decisions is essentially a

result of the interaction between brain activity and sociocultural circumstances (Bandura, 2001 AU117). Human agency requires:

Task management plays a critical role in self-directed adult learning as it helps learners organize and prioritize their learning activities, manage their time effectively, and monitor their progress towards their learning goals.

When engaging in self-directed learning, adult learners take responsibility for planning, implementing, and evaluating their own learning activities. Effective task management skills enable learners to set achievable goals, break them down into smaller tasks, and allocate their time and resources efficiently. By creating a clear plan of action, learners can stay focused and motivated, which helps them to overcome obstacles and stay on track towards achieving their desired outcomes.

Effective task management also involves setting realistic timelines and deadlines for completing tasks, and regularly monitoring progress towards achieving learning goals. This allows learners to adjust their approach if necessary and stay accountable to themselves.

Task management is essential for self-directed adult learners to effectively manage their learning and achieve their desired outcomes.

Problem solving plays a crucial role in self-directed adult learning as it enables learners to identify gaps in their knowledge and skills, set goals, and develop strategies to achieve them. When learners encounter problems, they are prompted to seek out information and resources to find solutions, which can deepen their understanding of a topic and lead to new insights and learning.

Moreover, problem-solving helps adult learners to develop critical thinking skills, such as analysis, synthesis, and evaluation. These skills enable learners to process and evaluate information, identify patterns and relationships, and make informed decisions based on evidence and logic. In turn, this enhances their ability to learn independently and become more self-directed in their learning.

By engaging in problem-solving activities, adult learners also gain experience in dealing with complex and challenging situations, which can increase their confidence and motivation to learn. Additionally, problem-solving can help learners to connect their learning to real-world situations, making it more relevant and applicable to their personal and professional lives.

Problem-solving is a vital component of self-directed adult learning as it fosters critical thinking, enhances motivation, and helps learners to develop the skills and knowledge needed to achieve their goals.

Decision making plays a critical role in self-directed adult learning as it is the process by which learners identify their learning needs, set goals, plan and implement learning activities, and evaluate their progress. Self-directed adult learners need to make decisions about what they want to learn, how they want to learn it, and when and where they want to learn.

Effective decision making is essential for self-directed adult learners because they are responsible for their own learning, and they need to be able to choose the most appropriate strategies to achieve their learning goals. The ability to make sound decisions can help learners stay motivated and engaged in the learning process, as well as improve their learning outcomes.

In addition, self-directed adult learners must be able to evaluate the outcomes of their decisions and adjust their learning strategies accordingly. This process requires reflection and self-awareness, which are essential components of self-directed learning.

Decision making is a crucial component of self-directed adult learning, as it enables learners to take control of their learning and achieve their desired learning outcomes.

2.4.3.4 Adaptability & Communication

Adaptability plays a crucial role in self-directed adult learning. Self-directed learning is a process in which adults take responsibility for their own learning, setting their own goals, identifying their own learning needs, and selecting appropriate learning strategies. Adaptability is the ability to adjust to new situations, learn from new experiences, and respond effectively to changes.

In the context of self-directed learning, adaptability is important for several reasons. Firstly, adaptability enables adults to identify and respond to their changing learning needs. As adults continue to learn and grow, their interests and goals may shift, and their learning needs may change. Adaptability helps them to recognize these changes and adjust their learning strategies accordingly.

Secondly, adaptability is important for adults who face obstacles or challenges in their learning journey. When faced with difficult or unexpected situations, adults who are adaptable can find creative solutions and new ways of learning. They are better equipped to overcome obstacles and continue making progress toward their learning goals.

Thirdly, adaptability is important in a rapidly changing world, where new technologies and new ways of learning are constantly emerging. Adults who are adaptable can learn new technologies and adapt to new ways of learning more easily, allowing them to keep up with the changing demands of the workplace and society.

Adaptability is a key factor in self-directed adult learning. By being adaptable, adults can take ownership of their learning journey, overcome obstacles, and continue to grow and develop throughout their lives.

Communication plays a crucial role in self-directed adult learning. When adults engage in self-directed learning, they take responsibility for their own learning, setting their own goals, and determining their own path of learning. Effective communication helps them to achieve their learning objectives by facilitating the exchange of information, ideas, and feedback with others.

One of the key benefits of communication in self-directed adult learning is that it provides opportunities for individuals to gain new insights and perspectives. By engaging in conversations

with peers, mentors, and experts, adults can expand their knowledge, challenge their assumptions, and learn from diverse viewpoints. This can lead to a deeper understanding of the subject matter and a more holistic approach to learning.

Moreover, communication helps adults to identify and clarify their learning needs and goals. By communicating with others, individuals can receive feedback on their progress, gain new ideas and strategies, and identify areas for improvement. This can help them to refine their learning objectives and make more informed decisions about how to achieve them.

Additionally, communication can provide a sense of support and accountability. When individuals share their learning goals and progress with others, they are more likely to feel motivated and committed to their learning journey. This can lead to a greater sense of accountability, as individuals are more likely to follow through on their commitments when they know others are watching.

Effective communication is essential for self-directed adult learning. It provides opportunities for individuals to gain new insights and perspectives, identify and clarify their learning needs and goals, and gain support and accountability throughout their learning journey.

3. BENEFITS OF METACOGNITIVE SKILLS

3.1 ADULT LEARNERS

According to Zimmerman (1986), “self-regulation is the degree that a learner is metacognitively, motivationally, and behaviourally active in his learning process”. It is believed that the major cause of less successful learners in learning is the poor degree of self-regulation. Adult learners who apply metacognitive strategies are more autonomous and self-motivated (Masoodi, 2019). Overall, metacognitive learning has major positive effects on the quality of the adults’ life, by enhancing the quality of lifelong learning. Adults can build upon previous ideas and apply new concepts to already existing knowledge. It improves learners’ comprehension of acquiring new information, consequently they can develop a deeper understanding of new learning materials.

Metacognitive skills allow adults to learn effectively, thus they are able to develop problem-solving skills they can apply under challenging tasks. Adults become more confident in approaching tasks as they get a deeper understanding of new topics and learn new skills.

Metacognitive skills contribute to the formation of different concepts (think abstract) such as easily perceiving and interpreting information that could boost creativity and lead to innovation.

Skilled metacognitive adults learn new things faster. Through the experience of learning, the adult will be able to recycle and use the same learning methods that worked previously. This will help them learn new things a lot faster as they already know what works for them when it comes to obtaining new knowledge.

Improved metacognitive skills have significant benefits for adult learners, including:

Improved Learning Outcomes: Metacognition can help adult learners become more effective learners by giving them a greater understanding of their own learning processes. By reflecting on their own learning strategies and monitoring their progress, adult learners can identify areas for improvement and make adjustments that can lead to better learning outcomes.

Increased Self-Awareness: Metacognition can also help adult learners become more self-aware by encouraging them to reflect on their own thoughts, feelings, and behaviours. This increased self-awareness can lead to greater self-confidence, improved decision-making, and a greater sense of control over one's own life.

Enhanced Problem-Solving: Metacognition can also help adult learners become more effective problem-solvers. By reflecting on their own thinking processes, learners can identify the strategies they use most effectively and apply them to new challenges.

Improved Decision-Making: Metacognition can also help adult learners make better decisions by encouraging them to think critically and reflect on the consequences of their choices.

Increased Motivation: Metacognition can be a powerful motivator for adult learners. By setting goals, monitoring progress, and reflecting on successes and failures, learners can gain a greater sense of accomplishment and motivation to continue learning.

Metacognitive skills are a valuable tool for adult learners, helping them become more effective, self-aware, and motivated learners, and better problem-solvers and decision-makers.

3.2 ADULT EDUCATORS

Unlike child learning, which is directed toward generic, lifetime information, adult learning concentrates on knowledge that is immediately applicable and builds on prior experiences. Metacognition refers to the process of thinking about one's own thinking. It involves being aware of and understanding one's own cognitive processes, including the strategies one uses to learn and solve problems.

Metacognition is closely linked to adult learning theories, particularly those that emphasize the importance of learners taking an active role in their own learning. Here are some ways in which metacognition is connected to adult learning theories:

1. Andragogy is a theory of adult learning that emphasizes the importance of self-directed learning. Metacognition aligns with this theory because it encourages learners to take control of their own learning processes, to set their own goals and to develop their own strategies for learning.
2. Experiential learning theory emphasizes the importance of learning through experience. Metacognition is an important component of experiential learning because it helps learners reflect on their experiences and extract meaning from them.
3. Transformative learning theory suggests that adults can change their worldview through the process of reflection and critical thinking. Metacognition is a crucial aspect of this process, as it encourages learners to examine their own assumptions, beliefs, and biases, and to consider alternative perspectives.
4. Social learning theory emphasizes the importance of learning through interaction with others. Metacognition can be used in social learning settings to help learners reflect on their own contributions to group activities, to monitor their own learning progress and to identify areas for improvement.

Largely, metacognition is a key component of many adult learning theories, as it encourages learners to take an active role in their own learning, to reflect on their experiences, and to engage in critical thinking and self-evaluation.

Adult educators need to consider the following principles when building curriculum and expectations for adult learners:

Adults are self-directing: Self-directed learning comes effortlessly to adult learners who are more likely to organize, carry out, and assess their educational experiences on their own. Adult learners develop goals, identify their training or educational needs, and put a strategy in place to improve their own learning when undergoing instruction.

Adults learn by doing: Adults prefer to actively engage in actions connected to their learning rather than just reading or hearing about topics. Real-world examples and project-based learning work very well with them since this type of learning looks valuable for them and gives them a clear understanding of what they can accomplish with their knowledge.

Adults desire relevance: Adult learners are more prone to participate in learning that directly impacts their life. Any training should meet some of their real needs and look significant.

Adults utilize experience: The most efficient learning occurs when adults make meaning of the events that shaped them, therefore hands-on training could be helpful for adult learners. They have a stronger understanding of what they are learning and become more enthusiastic about how it might be applied to their interests and professions by participating in relevant activities.

Adults process with their senses: Adult learners do not feel at ease in a lecture-style setting. It is critical to completely engage their senses during learning since older learners' brains are less malleable. Learning activities must involve individual, group, visual components, reading/writing, kinesthetic, visual, auditory.

Adults appreciate repetition: Adult learners need repetition to learn. Self-efficacy will increase if they can practice new abilities in a safe setting before applying them in the real world. Their chances of mastering a topic or talent increase with the amount of practice they can get.

Adults guide their own development: Adult learners may assess their fundamental ideas and assumptions through critical thinking and questioning, and they can also learn from what they discover about themselves in the process.

Adults succeed with goal setting: Learning will go more effortlessly for individuals who have a personal goal in mind. Adult learners require objectives because they have greater control over their education than younger peers.

Adults learn differently than children: To create meaningful learning for grown-ups can be achieved through various approaches. Adult learners make use of their past experiences in life and their

information of a subject. Adult instruction must be problem-centred to have a more noteworthy impact on real-world circumstances or current occasions.

Adults require ownership: Grown-up learners put more importance on natural inspiration and individual possession of their learning, with a more complex order of demands. By praising their achievements and empowering higher self-esteem and confidence, they will become more motivated.

Metacognitive competences refer to the skills and abilities that individuals use to monitor, control, and reflect on their own learning and thinking processes. Some of the key metacognitive competences include:

Planning: the ability to set goals, plan strategies, and organize resources for a task.

Monitoring: the ability to monitor one's own learning progress and performance, and to identify when and where difficulties arise.

Evaluation: the ability to assess the quality of one's own work and to make judgments about the effectiveness of learning strategies.

Reflection: the ability to reflect on one's own learning and to identify strengths and weaknesses in one's approach to learning.

Regulation: the ability to adjust one's own learning strategies and behaviour in response to feedback or changing circumstances.

Awareness: the ability to recognize one's own cognitive and affective states, and to use this knowledge to guide learning and problem-solving.

Transfer: the ability to apply knowledge and skills learned in one context to new situations or problems.

By developing these metacognitive competences, individuals can become more effective learners and problem-solvers, better able to adapt to changing circumstances and to succeed in complex and challenging tasks.

In order to improve their own instruction and the learning outcomes of their students, adult educators can benefit from using metacognitive skills in a number of ways:

Improved Self-Regulation: Metacognitive awareness can help adult educators regulate their own learning and teaching processes. By understanding their own strengths and weaknesses, adult educators can tailor their instructional approaches to better meet the needs of their students.

Enhanced Learning Outcomes: Metacognition can help adult educators create more effective learning experiences for their students. By teaching students to be more aware of their own learning

processes, educators can help them develop more effective strategies for acquiring and retaining new knowledge.

More Effective Problem-Solving: Metacognition can also help adult educators become better problem-solvers. By analysing their own thinking processes, educators can identify the strategies they use most effectively and apply them to new challenges.

Improved Student Engagement: Adult educators who use metacognition in their teaching can help their students become more engaged in the learning process. By teaching students to think about their own learning, educators can help them develop a sense of ownership over their education, which can lead to greater motivation and persistence.

4. REVIEW OF EUROPEAN POLICIES

The Review of European policies section is aimed to address the adoption and effectiveness of metacognition and wider adult self-directed learning strategies, and how these translate/filter down to learners and educators at the national level context in each of the project partner countries. The consortium members from Romania, Greece, Poland, Italy, Portugal and Estonia undertook a comprehensive review of literature, reports and national educational guidance and curricula documentation for each of the partner countries, to understand the extent and relevance of metacognitive competences, how they are referenced and implemented within national contexts. This research activity also included interviews with key stakeholders, end users and policy maker experts during meetings that were held at the beginning of the project, which helped University Stefan cel Mare to prepare the template that was used by partners to collect qualitative data.

Partners conducted desk research in their countries and selected the most relevant sources and resources published in their countries that were found to be of importance and relevance for the project's development of the Metacognitive Competence Framework. To conduct the desk research, the following categories have been considered:

- | | |
|--|--|
| <input type="checkbox"/> Academic study / report / paper | <input type="checkbox"/> <i>Learning to learn</i> training |
| <input type="checkbox"/> Metacognition related study programme (HEI) | <input type="checkbox"/> Scientific publication |
| <input type="checkbox"/> Tool to identify/validate learning skills | <input type="checkbox"/> Cognitive / Metacognitive training tool |
| <input type="checkbox"/> Competence framework | <input type="checkbox"/> Other (please briefly describe) |

More than 20 resources have been considered for this purpose, out of which 15 academic studies/reports and papers, which indicates that even though metacognition receives deserved attention, practical tools and initiatives addressing it are still scarce and do not provide consistent support neither for educations, nor for adult learners. The analysis of the input from six European countries shows poor awareness of metacognition in most countries and accounts for the relevance of the Met-AE results. Furthermore, most resources tackle metacognition for schoolteachers or learners, while the adult trainers or learners are still poorly addressed.

The pool of resources that partners identified regarding the adoption and effectiveness of metacognition and adult self-directed learning strategies have played important role in the shaping the theoretical part of the Metacognitive Competence Framework, providing solid indications that address especially the following:

- Identification of adult learners' training needs and challenges and of good practices of *Learning to learn* training for adults

- Provision of input on metacognitive knowledge, skills, and attitudes
- Provision of support to adult trainers, of metacognitive competence-oriented approach and of content and instructional design for adult training
- Provision of guidance regarding the curricular design for adult learners and of updates on tools / techniques to monitor and assess adult learners' Learning to learn knowledge, skills, and attitudes.

The resources that have been analysed brought in a deeper and more relevant understanding of the approaches to metacognition and the training available in various contexts, especially in pre-university and tertiary educations. The investigations revealed the extent to which metacognitive competences receive the due attention in six European countries in terms of the self-awareness of their benefits for the learner's learning path and the development of and needed competences.

It is to be mentioned that resources addressing

- Needs and challenges of vulnerable and NEET adult learners
- Competence frameworks relevant to metacognitive competency framework
- Quality elements of adult training
- Technical requirements for adult teaching and learning environments

are few or missing, which further supporting the theoretical design the Metacognitive Competence Framework, by providing a basis of knowledge and comprehension to the relation between the cognitive training approach, the development of autonomy and self-awareness and their benefits to learning paths. Also, chapter 4 (especially 4.4 + Annex E) could be exploited due to the fact that it provides a proposed training methodology of cognitive and metacognitive evaluation relevant (to both learners and educators) to achieving determined behavioural stages, in accordance with Edward de Bono's Six Thinking Hats theory framework.

4.1 ROMANIA

Learning styles and metacognition (Academic study / report / paper)

The study discusses the concepts of cognitive style, learning style and metacognition and highlights the relationships between them. Learning style emerges as a process that brings into play several elements that make up the learning situation, elements related to both the person and the task. Learning style is closely related to the learner's self-concept, metacognitive knowledge and strategies that allow monitoring and regulating the learning activity. The study highlights the importance of knowing the learning style of both the learner and the teacher. The learner will clarify his/her learning preferences, become aware of his/her qualities, gaps, learning needs and choose the learning environment that is most advantageous to him/her. The learning style should be part of the content of teacher training. Teachers should design teaching approaches that take into account pupils' learning styles.

Metacognition and Transdisciplinarity Research Centre (M&T) of Ovidius University of Constanta (Metacognition related study programme (HEI))

The Metacognition and Transdisciplinarity Research Centre was established in 2011 by HS no.165 / 28.10.2011. Starting from the idea that the current scientific discourse calls for the fusion of methodologies, concepts, skills, and contents, beyond the reductionism of each discipline, at the border between disciplines, under the sign of Basarab Nicolescu, Stephane Lupasco, Mircea Eliade et al., we understand that disciplinarity, pluridisciplinarity, interdisciplinarity and transdisciplinarity are the four arrows of one and the same bow: that of knowledge. Our belief is that literature, in dialogue with the visual arts, philosophy, linguistics, psychology, history, ethnology, etc., extracts wisdom, moral responsibility, reveals dynamic mental structures, reveals the synergy of the cognitive fields of a time, in an attempt to find solutions for existence. The Centre has several research directions and one of them addresses (Meta)cognitivism and the humanities. The following research themes are included in this direction:

- Understanding and interpreting literature as (meta)cognitive experiences: (meta)cognitive algorithms
- Cognitivism and hermeneutics: immanence and transcendence of the text
- Cognitive scenarios in the teaching of Romanian language and literature

Metacognition – the GPS of Learning (Academic Blog)

In recent years, a major area of research in the United States and Britain is metacognition, which is just a big word for something most of us do every day without even noticing: we think about our own thoughts. Metacognition, however, is not just "thinking on top of thinking" but also monitoring one's learning and, most importantly, changing one's approach to a task as a result of monitoring. Metacognitive strategies fall into three categories: planning, monitoring, and evaluating one's thinking. A good metaphor for this is GPS. It, with the help of various apps, plans our route, controls, and monitors the journey, recalculates a new route when an error occurs and guides the driver to the final destination. It shows the shortest routes, signals closed roads, calculates distances and the time needed to reach the destination.

Given the ever-pressing likelihood that hybrid scenario learning will be part of the near future (again), the paper analyses what teachers / trainers can do to help students to cope with the demands of independent learning, and to take a mature view of their own learning and develop an understanding of what is required to succeed. The Internet is a medium that has allowed access to a lot of immediate information, but it has also led to distraction. Considering that the way we process information is affected, the material investigates the strategies needed by learners.

4.2 GREECE

The role of metacognitive skills in the learning process (Academic study / report / paper)

The lecture refers to the role of metacognitive skills in the learning process through a literature review. First, the definition of metacognition is given, followed by the enumeration of the main components that make it up. Also, the relationship of metacognition with the learning process is mentioned as particularly important for the cognitive development of students and for more effective learning. Finally, the need to teach metacognitive skills in the school context is emphasized as well as the resulting benefits in terms of student performance. The lecture identifies opportunities to gain metacognitive practical skills and utilize metacognitive strategies.

Metacognitive Abilities (*Learning to learn* training)

The purpose of the thematic object is the clarification of metacognitive abilities and their aspects, as well as their main forms (metacognitive experiences-metacognitive knowledge-metacognitive skills or strategies). Also, their connection with the learning process in the context of learning strategies will be sought. In addition, the relationship between metacognitive abilities and self-regulated learning will be presented, with special emphasis on the field of lifelong learning and continuing education. Finally, we will focus on factors that influence the implementation of metacognitive strategies, as well as active techniques for developing and evaluating metacognitive skills. The whole e-learning module is a good example of knowledge for metacognitive abilities and their aspects. The 3rd & 4th chapters are about Metacognitive Skills and Learning Strategies and Self-regulated Learning.

Metacognitive strategies in the teaching of Greek as a second/foreign language. The case of the Greek communities in Kiev and Mariupol, Ukraine (Academic study / report / paper)

The purpose of this thesis is to investigate the views of adult educators who teach Greek as a Second/Foreign Language in the Greek communities of Kiev and Mariupol in Ukraine in the design and implementation in their teaching of metacognitive strategies. The material fits with the objectives of the Met-AE project regarding the importance of metacognitive theory, recognize the effectiveness of metacognitive strategies in terms of promoting learning and conquering lifelong learning, incorporate and utilize metacognitive strategies, through opportunities offered by new technologies and the modern communication model of learning while applying a significant

Metacognition and learning autonomy in the preparation of assignments (Academic study / report / paper)

The paper focuses on the correlation between the preparation of written assignments, the exercise of metacognitive thinking and action and the pursuit of learner autonomy. The paper made effort to trace the perceptions of postgraduate students at Hellenic Open University regarding their role and metacognitive strategies of planning, monitoring and control applied in the preparation of assignments. Results from six interviews demonstrate that there is need for expansion and extension of the limits of their metacognitive action in the learning context of distance education. Essential would be the contribution of tutor to the direction of orientation and engagement of students in activities that develop and promote metacognitive reflection and meditation.

4.3 POLAND

Notes on metacognition, meta-knowledge and meta competence (Academic study / report / paper)

The aim of this paper is to give an overview of the most important approaches to the concepts of metacognition, metaknowledge and meta competence. A growing body of research on these concepts highlights the significance and benefits of acquiring metacognitive knowledge and competence, especially in education and learning. Though scholarly opinion is still divided as to their exact functions and definitions, it is generally acknowledged that these multifaceted concepts are closely connected with higher order skills that result in a form of executive control involving self-monitoring, self-assessment and self-regulation. These skills are now extremely important in view of the fact that, according to some reports, education has failed to prepare students for the challenges of the 21st century. The author also presents his approach to the construct of (meta)knowledge and (meta)competence, focusing on the role of language as the main contributing factor in the process of knowledge acquisition.

The above material connects with the objective of the project that is to improve mentoring and guidance skills in educators as a service to ensure that adult learners have relevant learning capacity throughout life with their metacognitive skills as it discusses different aspects of competence demands within educators community.

Lifelong learning as meta competence (Academic study / report / paper)

Since the 1990s, the concept of lifelong learning has been a political and educational programme and a postulated and increasingly implemented educational practice. The basis of this practice is the ability of individuals to learn on a permanent basis, which is furthermore a prerequisite for the learning of social groups and organisations. In the context of lifelong learning policy, learning becomes a mother-competence, i.e. the basis for other competences, which means the continuous deepening of knowledge about learning, the development of learning to learn skills and an attitude of readiness for lifelong learning. From this point of view the following parts in the article are highlighted: areas of informal learning of lifelong competences, motivation and reflexivity as conditions for lifelong learning, (self-) biographical learning, self-study as a lifelong learning strategy and evaluation of lifelong learning competences.

The resource can serve as support to provide effective outreach, guidance and motivation strategies to adult learners.

Memory and attention. Training of cognitive abilities (Video)

The lecture provides an introduction to psychological methods of memory support. The starting point is a brief discussion of the basic types of memory and the path of information from its perception through memorization to recall. On this basis, the speaker presents in detail the 10 principles of memory support, with a special focus on attention, which is essential for memory

improvement. He then discusses memory support methods based on these principles: memory guides, computer programmes, online applications and memory training. The speaker pays particular attention to memory training as a specific form of group memory support. The lecture identifies opportunities to gain practical skills in memory and attention training and to become qualified as a memory trainer.

Metacognitive aspects of skill acquisition (Academic study / report / paper)

The thesis focuses on metacognitive aspects of skill learning. It aims to describe and discuss mainstream research on metacognition stemming from cognitive psychology approach to memory processes. The material concentrates on metacognitive aspects of learning as seen through cognitive psychology and metacognition and learning in the context of everyday life.

4.4 ITALY

Metacognition and school of childhood (Academic study / report / paper)

The article presents a reflection on the various opportunities offered by the educational activities of the kindergarten to promote learning from a metacognitive perspective and to develop metacognitive attitudes that constitute a valid premise for academic success and holistic development of the personality. Studies on metacognition allow for a deeper understanding of both the development of thinking and the factors that can influence academic success. Training cognitively mature pupils is a challenge that the school has to respond to since kindergarten. Traditional didactics can be revised to help pupils develop metacognitive knowledge and processes. Metacognitive competence already starts from childhood, an age in which some critical issues in learning can be identified. It is also possible to plan a path of knowledge of the mind and its functioning, made through psychomotor and symbolization games, orientation, exploration and manipulation activities suitable for children aged three to six.

As the expected impact of the project is a deeper awareness of key metacognitive competences, understanding of metacognitive regulation and increased awareness of types of metacognitive learners, understanding of the limitations and appropriateness of metacognition, these type of publications helps Met-AE in better understanding and presenting the metacognitive competences and skills as well as giving an official statement useful for the project partnership.

Such publication could be very useful for the Metacognitive Competence Framework helping the project result in being an effective method to assess, maintain, and monitor learners' metacognitive knowledge, skills and attitudes and progress towards them thanks to a better understanding of metacognitive skills and their application in education.

Studies on Metacognition: Applications (Academic study / report / paper)

The publication discourse develops by outlining a generic framework on the paradigms relating to the intellectual capacity, evidencing how, in many theoretical productions, intelligence is represented by paradigms which indicate at least one level which supervises the actions of the subject. One of the current applications related to metacognition is the relationship with intelligence.

The publication focusses on the recent model of the four components of intelligence (Cornoldi), in which metacognition assumes one of the four main areas. The publication concludes both with current studies on metacognition and with rehabilitative, educational and preventive implications.

This type of resource and publication fit very well with the objectives of Met-AE as it is important to use a very solid and comprehensive theoretical base to support the approach used by the project to metacognition. Especially when dealing with adult training institutions and adult trainers, is important to use exceptional studies and resources that will justify not only the project methodologies and objectives, but also the existence itself of the project as an initiative to be implemented for adult educators and learners.

A fantastic element that could be exploited extremely well for the project and for the Metacognitive Competence Framework is the part where the publication focus on the researches that in recent years showed what relationships may exist between the concept of metacognition and other psychological constructs. In particular, it has been observed, through the analysis of the linear regression between two variables, that the relationship between self-efficacy and performance is not mediated by metacognition. That is, an individual who strongly believes in his own specific potential, even with low metacognitive levels, can succeed in a task. Other analysis of the same work have shown that the relationship between metacognition and performance is strongly mediated by the sense of self-efficacy. This suggests that students, both with good metacognitive strategies and with strong beliefs in their abilities, tend to perform a task more successfully.

Metacognitive Reflection in Online Learning Environments and Self-Regulation in University Courses (Academic study / report / paper)

The metacognitive processes of critical thinking, regulation and guiding of cognitive mechanisms are fundamental in promoting self-regulated learning, which, in turn, is crucial for academic success. ICT offers significant possibilities for supporting these capacities. The publication describes two different experiences in which tools for metacognitive reflection have been implemented in online environments in order to sustain self-regulation in university study. In both cases the students participated in online units \u2013 one on educational psychology, the other on study methodology \u2013 followed by discussions for stimulating metacognitive reflection. In both experiences, the proposed tools promoted advanced epistemic activation and better awareness of personal self-regulation skills in study processes.

This resource is a fantastic fit for the Met-AE project as it states and discuss the benefit of using metacognitive approaches and methodologies supported by an online tool for student. As Met-AE

tries to create online training, this is a very important supportive publication. The publication discusses two different online experience and states that were both very positive promoting advanced epistemic activation and better awareness of personal self-regulation skills in study processes

The publication presents a very comprehensive and interesting section in which discuss the design of tools of metacognitive reflection in environments online to promote self-regulation. This section could be very useful for Met-AE and could be exploited in order to create a very successful and improved online environment for the use of metacognitive methodologies in learning activities.

4.5 PORTUGAL

Study methodology for higher education students through a training program of cognitive and metacognitive competences (Academic study / report / paper)

The study focus on the role Cognitive Training Programmes play as active contributors towards the development of cognitive and Metacognitive competences and to the academic achievement and learning processes. The study also aimed to understand the production of self-regulation and self-questioning of HE pupils, in a transition to autonomy through different teaching and learning styles.

The resource fits with the objectives of the Met-AE project regarding the study's approach of resorting to cognitive training to develop, among others, Metacognitive competences in a context (Higher education) that is also prone to integrate adult learners. Especially, when it comes to understanding that this set of competences holds relevant and important benefits to the learner's learning path regarding self-awareness to development and competence improvement. The study base on training certain "intellectual processes" with students, proper of the performance of certain context tasks. In this case, the author used a Studies Programme to train competences. The monitorization of their progress and the instilling of a motivation basis that can provide support and adaptability capacity are also elements both present in the study and in the project objectives.

Chapters 1.2; 2 and 3 could be useful in supporting the theoretical design the Metacognitive Competence Framework, by providing a basis of knowledge and comprehension to the relation between the cognitive training approach, the development of autonomy and self-awareness and their benefits to learning paths. Also, chapter 4 (especially 4.4 + Annex E) could be exploited since it provides a proposed training methodology of cognitive and metacognitive evaluation relevant (to both learners and educators) to achieving determined behavioural stages, in accordance with Edward de Bono's Six Thinking Hats theory framework.

Curricular Units Psychology of Learning and Psychology of Development and Learning (Metacognition related study programme (HEI))

The provided resources constitute a description of two curricular units that integrate Higher Education courses administrated at Universidade de Évora and Universidade de Coimbra in Portugal, respectively. The descriptions provide, among other elements, the planning of content to be administered, bibliographic resources that support it, as well as learning achievements.

Met-AE objectives of increasing a deeper awareness to one's learning path and to motivate towards its monitorization are met through the resources, having in concern that the description of the courses highlight, from a theoretical point of view, the development of competences that ease learning processes and the importance that psychological dynamics play in personal development, teaching management and learning capacity and organization.

Although a very brief access to the full content of the programme, the accessible elements are relevant on themselves and to the objectives of the project in the sense that they provide an insight to different approaches of learning management and psychological competences relevant to learning processes that can be exploited to contribute to the Metacognitive Competence Framework.

Metacognitive challenges to support self-reflection of students in online Software Engineering Education (Academic study / report / paper)

The resource is a scientific paper that describes a project elaborated and conducted with 32 24 to 60 years old students enrolled in an Universidade Aberta's software engineering online course. As that this area of education requires students to develop high levels of technical knowledge and advance cognitive skills, the authors adopted Metacognitive Challenges to promote self-reflection on learning.

The paper provides an established insight to the impact that Metacognitive behaviours and practices have on acknowledging student's learning path and on their success, through digital learning contexts, which meets the Met-AE project's objectives. The adaptability to a learning context where autonomy, self-regulation, organization and control of the learning process is an important and relevant core aspect of both the resource and the project.

The entire document is relevant to be exploited in terms of its contributions to the Metacognitive Competence Framework in the sense that it provides examples of applied Metacognitive Challenges and the importance they revealed towards execution of educative tasks. Also, since participating students are adult learners with different qualification backgrounds, the methods, such as formative feedback, can be exploited in the same settings.

Metacognitive Awareness Inventory (MAI): Adaptation and Validation of the Portuguese Version (Scientific publication)

The resource is a published paper about the adaptation of the Metacognitive Awareness Inventory (MAI), a framework of 52 items specific to assess the level of cognitive awareness of young people and adults involved in learning processes initially developed by Schraw and Dennison (1994). The

publication concerns the statistic validation of the MAI adapted and translated to the Portuguese language so it could be applied amongst Portuguese population.

The MAI presents the items or statements around two main cognitive elements: knowledge and regulation of cognition, according to what is described in the link below. Since Metacognitive theories assumes a connection between these two elements, the items and learners' answers to the MAI should support and evidence this connection also. In this sense, the resource as a Portuguese adaptation and the MAI itself present a metrics tool to support metacognition measurements specific to adult populations. The Met-AE project meets the objectives of the resource in the sense that it also aims to provide and validate a practical framework for the scope of adult learning specifically.

<https://cpb-us-e1.wpmucdn.com/blog.uta.edu/dist/1/4994/files/2021/06/Metacognitive-Awareness-Inventory-MAI.pdf> (author not identified)

First and foremost, the Metacognitive Awareness Inventory, which is central to the resource, although not provided in it, can be exploited to contribute to the design of the Framework, since it is based on a set of statements related to metacognitive practices. Although the statistical validation may not be of great relevance to the production of the result, it provides comprehension on validation of the MAI in case of adoption, either partially or integral. Both Introduction, Method and Discussion parts of the publication are also relevant in terms of theoretic and data analysis.

4.6 ESTONIA

Official sources statements and regulations in adult learning in Estonia: Government of Estonia, European Union, UCCE, UNESCO, etc. (Academic study / report / paper)

There is little or even no mention at all to the importance of media competences and literacy for adult education in Estonian official reports or documents. Additionally, there are two aspects to highlight in those same reports. The first one is that a big part of the non-formal education for adults depends on the European Union. The mid-term evaluation of the Estonian Internal Strategy (2018) looked at several measures to link education and the labour market. Although participation in non-formal studies has grown significantly according to the Estonian labour force survey and the largest share of studies is financed by employers and people themselves, the public financing of non-formal education for adults is largely dependent on the EU Structural Funds. There is no alternative financing scheme in the event of a reduction in the financing from the EU Structural Funds.

Another important remark is that after the pandemic crisis, a mindset change seems to have occurred: "The urgent need to support e-learning as a matter of urgency gave an important boost to cooperation between different sectors and actors. The experience gained has brought together people and organizations from the private, public, and third sectors, and created the preconditions for stronger cooperation in the future. Information was gathered quickly, and different e-

environments and solutions were created and developed to support learning and youth work in virtual environments or to help enrich the school holidays. In cooperation, the project “a PC for every school child” was initiated, educational solutions for e-home learning were integrated, online seminars and weekly live-school lessons were organized, Facebook advisory groups were launched, students were invited to participate in the programme Substantial holiday, and a website õpimekodus (we learn at home) was created to support adult training” (Estonian Ministry of Education and Research, 2023). This perspective tour seems to be a permanent change, as the Estonian Education and Research Ministry, and even the government, keep revindicating the “distance learning” option as a right for all their citizens.

Tallinn University Dissertations on Social Sciences, “Professional Development Opportunities of Estonian Adult Educators” by Mari Karm

+ Adult Skills: their use and usefulness in Estonia. “Summaries of thematic reports on the PIAAC study”, Ministry of Education and Research of the Republic of Estonia

Usually, people go to a specialized course for trainers (andragogy, adult education studies) after acquiring some experience as an educator. Practicing educators tend to feel that they need to learn more about the job. Since the interviewed educators started their work without special preparation, they felt insecure and doubted whether they did things right. Regarding these courses the interviewees emphasize the theoretical aspect, the opportunity to get a theoretical explanation to their practice (meta-theories), reasons for doing this one way or another.

Overall, it can be claimed that as far as information-processing skills are concerned, entrepreneurs are in no way different from employees. Rather, entrepreneurs are distinguished by their characteristic way of thinking: compared to employees, entrepreneurs are more likely to gather new information, process it and connect it to the knowledge they already have i.e. to exhibit metacognitive skills. The more frequent connection of new ideas with actual situations and the fitting together of different ideas mark out entrepreneurs in Estonia and many other countries.

Existing good practices, tools and methods used for improving the digital competences of adult educators/trainers (Summary of Estonian sources)

It offers good practices identified in Estonia and, as the continuum teacher training, the focus on language training, or the government support, while contributing with technical aspects currently in use in Estonia. Many of the official training providers, as universities, have digital learning platform adapted to the students. That teachers and educators develop skills in managing and daily using those learning channels would also be positive for their students. A possible future implementation of those platforms in Adult Education could not be that far away.

Another good practice of the Estonian educational system is their emphasis in language learning. They assume that they live in a multilingual society and, even when supporting and promoting their national language, they allow other languages to prosper and even facilitate that that happens. This is especially important because, as we all know, the language learning and teaching world has

incredibly evolved in the last few years. Today more than ever the digital learning of languages is a world fact and many of those resources could easily be applied in the Adult Education. Finally, the government of Estonia has some official resources to create and disseminate digital learning materials. The **E-Koolikott** ("E-Schoolbag") is a page for finding, creating and publishing digital learning materials. The E-Koolikott provides study materials for preschools, general education schools and vocational schools. There are also study materials to diversify vocational education and youth work. E-koolikott is intended for free use. The **Sisuloome** ("content creation") page can be used to create content for digitally interactive study materials. Teachers can use the H5P templates there to create, share and reuse learning resources.

5. CONCLUSIONS AND RECOMMENDATIONS

Metacognition is more complex than thinking about one's thinking, In fact, actively monitoring one's own learning and making changes to one's own learning behaviours and strategies based on this monitoring are far more important in metacognition.

The development of the learners' metacognitive skills does not exclude the contribution of the trainer, even if it focuses on allowing the learner to take control of their own learning. The trainer's role is to monitor metacognitive strategies, approve or intervene and encourage the learner.

Trainers are the first to set out the culture of learning by creating a supportive learning environment that promotes metacognitive practices that will become an essential part of the learning process.

Regardless of the status, both learners and trainers should check the inclusion of clear learning objectives to enable their planning and achievement through the identification of strategies they already know that could be applied in this new situation. Effective learners commonly use metacognitive strategies whenever they learn. However, they may fail to recognize which strategy is the most effective for a particular learning situation.

As a result of the research carried out by partners in Romania, Greece, Estonia, Poland, Portugal and Italy, the following training modules will be developed to support adult learners and trainers to increase awareness of the importance and role of metacognitive competences, as well as to train and refine relevant metacognitive skills.

METACOGNITION TRAINING MODULES FOR LEARNERS

1 (Introduction) How to maximise this e-Course (by Cuiablue)

1. Identifying your own capacities (by CESIE)
2. Finding and maintaining your focus (by E&D)
3. Motivating yourself to learn digitally (by DANMAR)
4. Dealing with complex issues on your own (by Cuiablue)
5. Learning and working autonomously (by E&D)
6. Self-assessment tools and techniques (by CESIE)
7. Managing your learning (by USV)

8. Engineering your reverse career path (by Cuiablue)
9. Mental wellbeing during digital learning (by DANMAR)
10. Seeking intervention and support (by KEA)
11. Communicating constructively and collaborate (by ADES)
12. Building your self-tolerance and create confidence (by ADES)
13. Transitioning from the classroom to self-directed learning (by KEA)
14. Finding new learning opportunities (by USV)

METACOGNITION TRAINING MODULES FOR EDUCATORS AND TRAINERS

1. What is Metacognition? (Fundamentals and Context of Metacognition) (by CESIE)
2. Benefits of Metacognition (by USV)
3. Metacognitive Knowledge (by DANMAR)
4. Metacognitive Regulation (by Cuiablue)
5. Metacognitive Phases: Planning, Monitoring, Evaluation and Reflection (by KEA)
6. Types of Learners: Tacit, Aware, Strategic and Reflective Learners (by ADES)
7. Limitations and Appropriateness of Metacognition (by E&D)

The contents will be developed by experienced adult educators providing training to vulnerable and low-skilled adult learners and qualifications to adult trainers. The topics of the modules have been carefully selected to cover the full range of skills following the progression through the competence levels, as shown in the present metacognitive competence framework. The metacognitive training modules are aimed to support learners to adopt reflective and metacognitive approach to their learning and trainers to perform better and be able to provide more efficient assistance and support to their learners. The modules for learners will, thus, ensure smooth but effective growth of learning processes, leading to improved progress monitoring and evaluation of existing skills and opportunities for improvement, where needed. The topics selected for the modules for trainers improve their mentoring and guidance skills in educators as a service to ensure that adult learners have relevant learning capacity throughout life with their metacognitive skills. This project results provide resources, training and support to provide effective outreach, guidance and motivation strategies to adult learners.

Each of the 14 metacognition training modules for learners is aimed to provide training of a combination of 2-4 relevant skills that are needed by adult learners in order to make progress and become more metacognitive proficient. The metacognitive competence framework allows adult learners to self-check their status and address specifically the skills they need.

METACOGNITION TRAINING MODULES

1. Identifying your own capacities
2. Finding and maintaining your focus
3. Motivating yourself to learn digitally
4. Dealing with complex issues on your own
5. Learning and working autonomously
6. Self-assessment tools and techniques
7. Managing your learning
8. Engineering your reverse career path
9. Mental wellbeing during digital learning
10. Seeking intervention and support
11. Communicating constructively and collaboratively
12. Building your self-tolerance and create confidence
13. Transitioning from the classroom to self-directed learning
14. Finding new learning opportunities

METACOGNITIVE COMPETENCES

Planning + Reflection
Evaluation + Strategic thinking
Cognitive flexibility + Self-motivation
Cognitive flexibility + Agency
Regulation + Self-motivation
Evaluation + Awareness
Reflection + Monitoring
Transfer + Strategic thinking
Awareness + Adaptability
Monitoring + Direction
Cognitive flexibility + Communication
Regulation + Awareness
Planning + Adaptability
Transfer + Agency

REFERENCES

- Costa, A., J. Bellanca & R. Fogarty (1992) (Eds.) *If Minds Matter: A Forward to the Future* (Vol. I). Palatine: Skylight Publications.
- Fogarty, R. (1994). *How to teach for metacognitive reflection*. Palatine, IL: IRI/Skylight Publishing.
- Harvey, S and Goudvis, A. (2007). *Strategies that Work: Teaching Comprehension for Understanding and Engagement* (pp 25-26). Stenhouse Publishers, Maine, and Pembroke Publishers Ltd, Ontario.
- Jansiewicz, E.M. (2008). *The relationship between executive functions and metacognitive strategy learning and application*. Dissertation, Georgia State University. Retrieved from: http://scholarworks.gsu.edu/psych_diss/42
- Mevarech, Z. and B. Kramarski (2014), *Critical Maths for Innovative Societies: The Role of Metacognitive Pedagogies*, OECD Publishing. Retrieved from:
<http://dx.doi.org/10.1787/9789264223561-en>
- Nelson, T. O. and L. Narens (1990). *Metamemory: A theoretical framework and new findings*. *Psychology of Learning and Motivation*, 26, 125-173.
- Palinscar, A. & Brown, A. (1984). *Reciprocal teaching of comprehension-fostering and comprehension monitoring activities*. *Cognition and Instruction*, 1 (2), p. 117-175.
- Veenman, M.V. J., & Spaans, M. A. (2005). *Relation between intellectual and metacognitive skills: Age and task differences*. *Learning and Individual Differences*, 15, 159-176.
- Whitebread, D. & Pino Pasternak, D. (2010) *Metacognition, self-regulation & meta-knowing*. In Littleton, K., Wood, C. & Kleine Staarman, J. (eds) *International Handbook of Psychology in Education*. Bingley, UK: Emerald.
- Brown, A. L. (1987). *Metacognition, executive control, self-regulation and other more mysterious mechanisms*. In F. E. Weinert, & R. H. Kluwe (Eds.), *Metacognition, motivation and understanding* (pp. 65–116). Hillsdale, NJ: Erlbaum.
- Hattie, J. (2009). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. Abingdon, UK: Routledge.
- Kolencik, P. L. and Hillwig, S. A. (2011). *Encouraging Metacognition – Supporting Learners Through Metacognitive Teaching Strategies*. Peter Lang, New York. Journal Articles

- Flavell, J. H. (1979). *Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry*. *American Psychologist*, 34, 906-911.
- Lin, X. (2001). *Designing metacognitive activities*. *Educational Technology Research and Development*, 49(2), 23-40.

http://homepages.gac.edu/~dmoos/documents/DesigningMetacogAct_000.pdf

- Veenman, M. V. J., Hout-Wolters, B. H. A. M., & Afflerbach, P. (2006). *Metacognition and learning: conceptual and methodological considerations*. *Metacognition and Learning*, 1, 3–14.
- Veenman, M. V. J., Wilhelm, P., & Beishuizen, J. J. (2004). *The relation between intellectual and metacognitive skills from a developmental perspective*. *Learning and Instruction*, 14, 89–109.
- Wang, M. C., Haertel, G. D., & Walberg, H. J. (1990). *What influences learning? A content analysis of review literature*. *The Journal of Educational Research*, 84, 30-43. Reports
- Education Endowment Foundation Technical Report: *Research evidence on metacognition and self-regulation*
https://educationendowmentfoundation.org.uk/uploads/pdf/Metacognition_and_self-regulation_Technical_Appendix.pdf
- OECD Insights: Debate the issues. *Focus on metacognition*

<http://oecdinsights.org/2014/10/28/want-to-improve-your-problem-solving-skills-try-metacognition/>.

Websites

- Examples of both cognitive and metacognitive questions that can be used in the classroom
<http://journal.media-culture.org.au/0605/11-leslie.php>
- Education Endowment Foundation: Teaching and Learning Toolkit on metacognition
<https://educationendowmentfoundation.org.uk/evidence/teaching-learning-toolkit/metacognitionand-self-regulation>
- Thinking Together Project. A dialogue-based approach to the development of children’s thinking and learning. <http://thinkingtogether.educ.cam.ac.uk>
- Cambridge International Examinations education blog. An entry introducing the Biggs and Collis taxonomy for the Structure of Observed Learning Outcome (SOLO):
<http://blog.cie.org.uk/learning-to-learn-a-solo-perspective/>

ANNEX 1

DESK RESEARCH REPORTING TEMPLATE

PR2: Metacognitive Competence Framework

A1: Review of European policies in relation to the adoption and effectiveness of metacognition and wider adult self-directed learning strategies

PARTNER:

INFORMATION ON MATERIAL, ITEM, SOURCE FOUND

1. Name / Title / of resource/material/item (in original language):

2. Original language of resource/material/item:

English

Portuguese

Italian

Polish

Romanian

Greek

Estonian

3. Brief translation of title in English (if not an English original):

4. Type of resource/material/item:

Academic study / report / paper

Learning to learn training module

Metacognition related study programme (HEI)

Scientific publication

Tool to identify/validate learning skills

Cognitive / Metacognitive training tool

Competence framework

Other (please briefly describe):

5. Format of resource/material/item:

Paper/Print

Book

Magazine article / journal article

Audio (Podcast)

Video

Online (Digital)

Other:

6. For online formats, please provide links:

7. For paper, book, journal, magazine, please provide ISBN or bibliographical details (if available):

8. Please provide a brief English summary of the resource/material/item and its context. Who is it aimed at?

9. How does this resource /material /item fit with the objectives of the Met-AE project?

10. What elements / parts, if any, could be exploited to design the Metacognitive Competence Framework?

11. For which elements of the Metacognitive Competence Framework is the resource /material /item most useful:

- Identify adult trainers' training needs and challenges
- Identify adult learners' training needs and challenges
- Curricular design for adult learners
- Good practices of *Learning to learn* training for adults
- Content and instructional design for adult training
- Input on metacognitive knowledge, skills, and attitudes
- Metacognitive competence-oriented approach
- Tools / techniques to monitor and assess adult learners' *Learning to learn* knowledge, skills, and attitudes
- Quality elements of adult training
- Needs and challenges of vulnerable and NEET adult learners
- Support to adult trainers
- Technical requirements for adult teaching and learning environments
- Competence frameworks relevant to metacognitive competency framework

12. If possible, please attach a copy of the resource/material/item found (if not indicated above with a URL link or ISBN reference.)



Meta-Skills for AE



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