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Welcome

COMPUtational Seniors E-Guide



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INTRODUCTION

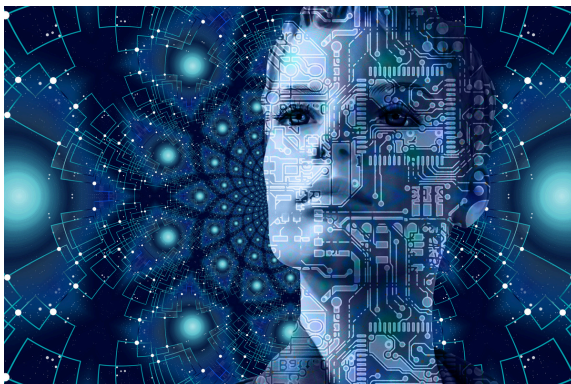


Welcome to the COMPUtational Seniors E-Guide, a training resource designed to support you, as an adult education professional, in bringing computational thinking into the planning, delivery, and assessment of your classes.



The E-Guide is designed to support adult trainers

Have you ever wondered how small changes in your teaching approach can lead to big differences in learner engagement? Or how everyday situations can become powerful learning tools? You are about to discover that computational thinking is not just about technology. It is about thinking smarter, teaching better, and learning with purpose!



Did you know that...?

Many of the problem-solving strategies used in today's digital world come from the same logical steps that people have used for centuries in daily life. Now, you will help your learners use them consciously and confidently.



Over recent decades, digital transformation has deeply reshaped the way we communicate, work, learn, and participate in society. But have you ever stopped to think about how different your daily life would be today without smartphones, online platforms, or instant communication?

The widespread adoption of digital technologies, the automation of processes, and the growing presence of artificial intelligence have opened the door to exciting new opportunities, but also to important challenges. How can we make sure that everyone feels confident in this fast-changing digital world? How do we promote inclusion, active participation, and lifelong learning for all?



In this context, adult education plays a strategic role in ensuring that no one is left behind by these changes. Traditionally, digital literacy has focused on learning how to use devices, applications, digital platforms, or online services. However, today this approach is no longer enough. It is not sufficient to know how to use technology.

Today, it is increasingly important not only to use technology, but to understand how it works and to engage with it in a logical, creative, and critical way. And this is exactly where computational thinking (CT) becomes your most powerful ally.



This is precisely where computational thinking (CT) emerges as a key competence for the twenty-first century, and not only for professionals in the technological field. In fact, it is for everyone.

Have you ever thought about how often you solve problems every day without even noticing? From planning your schedule to choosing the best option at the supermarket, you are already using the same thinking skills that lie at the heart of computational thinking.

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Computational thinking can be understood as a set of cognitive skills that help us approach problems in a structured and effective way. It involves breaking complex challenges into manageable parts, recognising patterns, focusing on what really matters, and designing step-by-step solutions. Sounds technical? Here is a fun fact: you use these skills every time you follow a recipe, organise a trip, or solve a practical issue at work – no coding required!

And this leads to an important shift in perspective. Contrary to common belief, computational thinking is not just about computer programming. These skills are transferable, practical, and deeply connected to everyday life.

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In the field of adult education, computational thinking becomes a powerful opportunity to empower learners, strengthen their autonomy, and encourage a more active and critical relationship with technology. Imagine your learners feeling more confident when facing digital tools, more motivated to try new approaches, and more capable of making informed decisions.

Far from being a complex or inaccessible technical subject, computational thinking can be naturally woven into everyday educational activities. When adapted to learners' contexts, interests, and previous experiences, it becomes much more than a methodology: it becomes a tool for building confidence, motivation, and meaningful learning.



What could change in your classroom if your learners started to see themselves not just as technology users, but as confident problem-solvers in a digital world?



For this reason, this E-Guide provides you with practical guidance on how to bring computational thinking into the classroom.

This E-Guide is designed especially for professionals like you: trainers and educators in adult education who want to bring computational thinking into the organisation and delivery of their classes.



Inside this guide, you will find pedagogical, methodological, and practical support to help you integrate computational thinking in a way that is cross-cutting, accessible, and deeply connected to real-life situations. There are no complicated theories, no unnecessary jargon, just meaningful ideas you can use in your everyday teaching practice.



And how will you do this? Through a gradual and friendly approach based on everyday examples, collaborative activities, and real-life situations. By working from experience, you help demystify technology and turn learning into something familiar, empowering, and truly engaging.

Are you ready to see your classroom become a space where curiosity grows, confidence builds, and learning feels relevant again?



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Structure of the E-Guide



- 1 Introduction
- 2 Unit 1. Understanding Adult Learners
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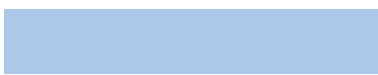
UNIT 1. Understanding Adult Learners

In this unit, you will explore the backgrounds, motivations, and digital confidence of your students to design truly inclusive computational thinking instruction. Older adults bring decades of rich life experience and problem-solving histories that you can use as a foundation for learning. You are encouraged to help them recognise CT as something they already perform in daily life, such as troubleshooting appliances or managing budgets. By using tools like learning scenarios and real-life experiences, you can validate their existing knowledge while addressing common barriers like digital anxiety or the fear of making mistakes.



UNIT 2. Setting Learning Objectives in CT

This unit helps you design and co-create learning objectives that are both empowering and attainable for your students. You will learn to categorise goals into personal growth, career advancement, or reskilling, ensuring they remain grounded in the learner's real-life needs. By involving your students in the co-creation process, you can increase their commitment and reduce anxiety. Ultimately, you will translate technical concepts into meaningful SMART objectives that help learners navigate their digital and professional lives with independence.





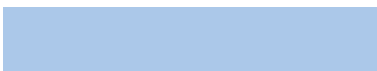
UNIT 3. Relevant Topic Selection

Selecting meaningful topics is essential because you act as a bridge between a learner's previous experience and new technical skills. You are encouraged to start from the learner's reality by using familiar situations, such as organising daily tasks or making household decisions, to introduce CT principles like decomposition and sequencing. This approach transforms your role from a content deliverer into a designer of learning experiences. By choosing relevant and practical content, you help increase motivation and reduce resistance to technological subjects.



UNIT 4. Materials and Resources Preparation

In this unit, you will learn how carefully prepared pedagogical tools can facilitate the development of CT skills. You will discover that CT can be taught using "unplugged" activities that require no digital devices, such as sequencing a routine or designing decision trees. The unit also covers tinkering, making, and remixing activities, as well as visual programming tools like Scratch. Your goal is to select or create resources that are accessible, easily editable, and innovative to meet the diverse needs of adult learners.





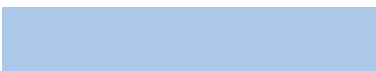
UNIT 5. Designing Learning Scenarios

This unit provides a framework for creating learning scenarios where your learners become active participants who must make their own decisions. You will design task-centred scenarios that start from existing knowledge and progress through demonstration, guided practice, and metacognitive reflection. The focus is not just on finding the "correct" answer, but on learning from mistakes in a realistic context. These scenarios help learners transfer knowledge to real professional problems or project management situations.



UNIT 6. Training Implementation: Flexibility and Accessibility

In this unit, you will find a practical framework for delivering training that is structurally flexible and cognitively accessible for low-qualified adults. The unit introduces the "Modular Format," which breaks 60-minute sessions into 15-minute "micro-modules" to ensure learning continuity even if a session is missed. You are encouraged to use plain language and multi-channel delivery (combining online, offline, audio, and visual paths) to remove the "digital wall". This approach creates a "safety net" that reduces learning anxiety and prevents dropouts.





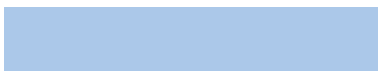
UNIT 7. Creating an Inclusive Learning Environment

The goal of this unit is to empower you to cultivate a psychologically safe and socially supportive environment. You will shift your role from a lecturer to a facilitator who creates a safe environment in which mistakes are treated as valuable learning opportunities. A central practice is establishing a "Classroom Learning Agreement" to ensure mutual respect and open communication. By prioritising emotional well-being and plain language, you remove exclusion barriers and help learners see CT as a tool they are entitled to use.



UNIT 8. Adapting to Different Learning Styles

This unit helps you adapt content to visual, auditory, kinaesthetic, and written styles by transforming material into multiple formats. You will learn to use AI tools to quickly generate slides, infographics, and synthetic speech to reduce your own technical effort. By applying CT principles such as abstraction, you can focus on core messages while converting content across formats. This flexibility allows you to reduce the cognitive load on your students and respond to learners' immediate engagement signals.





UNIT 9. Assessment and Self-Evaluation Tools

In this final unit, you will explore practical assessment tools that help both you and your learners measure progress in CT. It identifies four essential types: diagnostic (baseline), formative (ongoing), performance-based (demonstration), and summative (outcomes).

You will also compare digital platforms such as Magic School AI, Socrative, Moodle, and Google Forms for creating evaluation tasks. Effective assessment in this context is intended to be supportive and transparent, fostering continuous improvement rather than passive judgement.



Shall we start?



UNIT 1: Understanding Adult Learners



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this unit
- 4 Link to WP2 modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this stage?



1. Aim and Objectives

This unit aims to help adult educators understand adult learners' backgrounds, motivations, digital confidence, and learning needs to design relevant and inclusive Computational Thinking (CT) instruction.

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- Adult educators will be able to:
1. Identify learners' experiences, strengths, and motivations;
 2. Assess digital confidence and technology-related anxiety;
 3. Recognise different problem-solving and thinking styles;
 4. Identify key cognitive, emotional, and physical learning needs;
 5. Create a supportive learning environment;
 6. Use learner insights to inform instructional design and pacing.



2. Outcomes

By the end of this unit, adult trainers are able to:

1. Describe learners beyond demographic characteristics
2. Adapt CT instruction to real-life contexts
3. Align learning activities with adult motivations
4. Anticipate barriers and provide appropriate scaffolding, tasks, and group work
5. Build learner confidence and engagement early in the course



3. Main CT Principles Applied

All four CT principles are applied in this Unit:

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking



4. Link to WP2 Modules

This unit can be linked to several Open Educational Resources available through the Computational Seniors project, such as Understanding the Meaning of CT or Introduction to CT.





5. Challenges

Understanding adult learners is the starting point for any meaningful CT instruction. Older adults bring rich experience, diverse motivations, and unique challenges. Effective educators approach them with respect, curiosity, and empathy.

When trainers understand who their learners are—how they think, what they need, what they fear, and what they hope to accomplish—they can design CT courses that are not only informative but transformative.

This chapter establishes the human foundation upon which learning objectives (Unit 2) and instructional design (subsequent chapters) are built.

Computational Thinking becomes accessible, familiar, and relevant when it begins with the learner—not with the content.





6. Justification

This stage is critical because adult learners are not blank slates. They bring deeply ingrained experiences, beliefs, habits, and emotions that strongly influence how they engage with learning—especially in technology-related subjects like CT.

Understanding adult learners allows educators to:

- Bridge familiar life experiences with abstract CT concepts
- Transform fear into confidence and curiosity
- Design instruction that respects autonomy while providing support
- Reduce cognitive overload through appropriate pacing and scaffolding
- Create emotionally safe environments where mistakes are normalised
- Empower learners by reframing CT as something they already practise

In short, adult educators must first understand the learner before teaching the content. This stage lays the human foundation upon which all effective CT instruction for older adults is built.





7.1 Activity. The Learning Passport

To collect essential information about learners' backgrounds, strengths, fears, and goals.

Time: 25–35 minutes

Difficulty: Basic

Group size: individual work or work in pairs

1. Learners complete the passport.
2. Divide the students into pairs so they can exchange “passports” and introduce each other to the group.
3. The trainer collects the passports for planning.

Look for patterns: anxiety indicators, independence goals, motivation type (growth, social, cognitive, career).

Variations

- Use stickers or icons for low-literacy learners.
- Add “My greatest achievement” to highlight strengths.





7.2 Activity. Digital Confidence & Anxiety Quiz

To diagnose comfort levels with technology.

Time: 15 minutes

Difficulty: Basic

Format: Likert scale (1–5)

Sample Statements (1–5)

1. I feel comfortable trying new apps.
2. I fear clicking the wrong thing.
3. I like solving problems on my own.
4. I prefer step-by-step instructions.
5. Technology often feels overwhelming.
6. I enjoy logic puzzles.
7. When something goes wrong, I stay calm.
8. I want to become more independent with technology.

- High anxiety → slower pace, more repetition
- High support needs → more guided demonstrations

Scoring Categories

- Confidence → Items 1, 3, 6, 7
- Anxiety → Items 2, 5
- Learning support need → Item 4
- Motivation → Item 8



7.3 Activity. Two Truths and a Problem

To surface real-life challenges while introducing CT language.
Time: 20 minutes. Difficulty: Basic. Group size: 3–4 learners.

Each learner states:

- Two truths
- One real-life problem they want help solving

Use this exercise to introduce CT vocabulary informally.

Group members identify the “problem”, then:

- Decompose it
- Identify patterns
- Propose a simple algorithm
- Identify possible debugging steps



7.4 Activity. Experience Timeline

To show learners that CT is rooted in tasks they’ve already mastered. Time: 40 minutes. Difficulty: Basic.

Learners draw a timeline showing:

- Work roles
- Learning events
- Problem-solving moments
- Times they managed people, schedules, or logistics

This builds self-efficacy by highlighting pre-existing CT capability.

In pairs:

- Identify CT elements in selected life events
- Share with the group
- Trainer connects events to CT concepts



7.5 Activity. Problem-Solving Style Personality Test

CT relies on thinking preferences. This test identifies learner styles. Time: 25 minutes. Difficulty: Intermediate.

Questions (Choose A or B)

1. Before starting a task...
 - A: Plan steps
 - B: Dive in
2. In instructions...
 - A: I read all details
 - B: I skim headlines
3. When stuck...
 - A: Retrace steps carefully
 - B: Try multiple alternatives
4. When learning new technology...
 - A: I want a tutorial
 - B: I explore

Style Results

- Planner → strong in sequencing and algorithmic thinking
- Explorer → strong in debugging
- Detail-oriented → strong in decomposition
- Big-picture thinker → strong in abstraction

Balance groups by mixing complementary styles.



7.6 Activity. “My Learning Barriers”

To surface hidden fears or challenges. Time: 15-20 minutes.

Prompt Cards

- “I stop trying when...”
- “I struggle when technology...”
- “I wish technology would...”
- “I learn best when...”

Use this to identify needs around accessibility, pacing, support tools, and reassurance strategies.

Learners write on cards and discuss voluntarily.



7.7 Activity. Pre-CT Knowledge Quiz for Baseline Assessment

To measure early understanding of logic, ordering, and pattern thinking. Time: 15 minutes. Difficulty: Intermediate.

Sample Questions

1. Put these daily tasks in order (sequencing test).
2. Identify the repeating pattern in a list (pattern recognition).
3. Choose what information is essential vs. extra (abstraction).
4. Diagnose what went wrong in a simple step sequence.

This task is not about correctness, but about the thinking process.



7.8 Activity. Link to Learning Activity

Time: 20 minutes. Difficulty: Intermediate. Group size: Individual

Create a "Learning Profile Chart" from:

- Motivation
- Confidence
- Thinking style
- Digital comfort
- Barriers
- Learning preferences

This profile guides custom CT content selection and objective setting.





8. Additional Resources



8.1 WORKSHEET 1 - Learning Passport Template



8.2 WORKSHEET 2 - Digital Confidence & Anxiety Quiz



8.3 WORKSHEET 3 - Experience Timeline (Life → CT Map)



8.4. WORKSHEET 4 - Problem-Solving Style Personality Test



8.5 WORKSHEET 5 - “My Learning Barriers” Reflection Cards





8. Additional Resources

The following worksheets can be printed independently and used during your course.



8.1 WORKSHEET 1 - Learning Passport Template

(Trainer may print one per learner)

LEARNING PASSPORT

Name (or preferred name): _____

Previous roles/careers: _____

Everyday problems I can solve well: _____

Things that frustrate me about technology: _____

Why I joined this course: _____

My preferred way of learning:

- ☐ Talking & discussion
- ☐ Watching demonstrations
- ☐ Doing hands-on tasks
- ☐ Repetition
- ☐ Working slowly
- ☐ Working in groups
- ☐ Working alone



I want to feel more confident in: _____

Something I am proud of learning recently: _____

Trainer Notes Section (optional)

- Key learner strengths: _____
- Support needs: _____
- Early indicators of CT: _____



8.2 WORKSHEET 2 - Digital Confidence & Anxiety Quiz

Learners rate each item 1–5

(1 = Strongly Disagree ... 5 = Strongly Agree)

#	Statement	Score (1-5)
1	I feel comfortable trying new apps	
2	I get anxious when I click the wrong thing	
3	I can usually figure things out on my own	
4	I prefer written step-by-step instructions	
5	Technology often feels overwhelming	
6	I enjoy solving puzzles and problems	
7	I stay calm when something goes wrong	
8	I want to become more digitally independent	

Scoring Box

- Confidence: _____
- Anxiety: _____
- Learning Support Need: _____
- Motivation: _____

Trainer Interpretation Space _____



8.3 WORKSHEET 3 - Experience Timeline (Life → CT Map)

MY EXPERIENCE TIMELINE

My major life roles or jobs:

- _____
- _____
- _____

Times I solved complex problems:

- _____

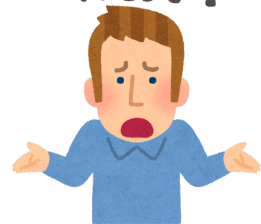
Times I learned something new as an adult:

- _____

Times I managed schedules, tasks, or people:

- _____

WHY?



CT MAPPING SECTION

For one event above, answer:

What was the problem?

What steps were involved? (Decomposition)

Did I notice patterns? (Pattern recognition)

What parts were important? (Abstraction)

What routine did I follow? (Algorithmic thinking)



8.4. WORKSHEET 4 - Problem-Solving Style Personality Test

Circle A or B for each item:

When starting a new task...

A: I plan the steps **B:** I jump in and adjust along the way

When reading instructions...

A: I read everything **B:** I skim for the main idea

When something goes wrong...

A: I retrace my steps **B:** I experiment with different fixes

When learning a new technology...

A: I want a full tutorial **B:** I explore on my own



RESULTS

Count the As and Bs:

- Mostly A → Planner / Detail Thinker
 - Strong in decomposition & algorithmic thinking
- Mostly B → Explorer / Big-Picture Thinker
 - Strong in debugging & abstraction

Trainer Comments



8.5 WORKSHEET 5 - “My Learning Barriers” Reflection Cards

Cut these into small cards.

- “I stop trying when _____”
- “I struggle when technology _____”
- “I wish technology would _____”
- “I learn best when _____”
- “I feel supported when _____”
- “I get frustrated when _____”

The trainer collects the answers or asks learners to discuss them in pairs.

Adult trainer notes

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9. What is the value of this stage?

This stage creates the foundation for effective CT education by placing the adult learner at the centre of the learning process.

Its value lies in:

- Ensuring CT is relevant to learners' real-life experiences
- Reducing anxiety and resistance towards technology
- Recognising and building on learners' existing problem-solving skills
- Enabling inclusive and adaptable instruction
- Increasing engagement, confidence, and retention
- Supporting educators in making informed instructional decisions

Overall, this stage ensures that Computational Thinking is introduced in a way that is accessible, meaningful, and empowering for adult learners.



End of the Unit

UNIT 2: Setting Learning Objectives in Computational Thinking



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this lesson
- 4 Link to WP2 modules
- 5 Learning Objectives: Definition and Challenges
- 6 Justification;
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this stage?



1. Aim and Objectives

The aim of this stage is to create clear, relevant, and achievable Computational Thinking learning objectives that connect CT skills with older adults' real-life, work, and reskilling needs.

OBJECTIVES

By the end of this stage, educators will be able to:

1. Translate CT concepts into practical learning goals
2. Support learners in defining personal, career, and reskilling objectives;
3. Co-create short- and long-term CT objectives with learners;
4. Apply SMART principles to structure learning goals;
5. Align instruction and assessment with learner needs.



2. Outcomes

By the end of this stage educators :

1. Can translate computational thinking (CT) concepts into practical learning objectives;
2. Know how to identify whether objectives are clear, realistic, and learner-centred;
3. Link CT to everyday and workplace situations goals;
4. Learners' motivation and confidence increase;
5. Educators can align teaching and assessment with learners' needs.



3. Main CT Principles Applied

All four CT principles are applied in this Unit:

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking



4. Relationship with WP2 Modules

This unit can be linked to several Open Educational Resources available through the Computational Seniors project, such as Understanding the Meaning of CT or Introduction to Integrating CT strategies.





5. Learning Objectives: Definition and Challenges

Setting CT learning objectives for older adults requires empathy, clarity, and connection to lived experience. When objectives are co-created, grounded in real-life tasks, and aligned with both short-term and long-term goals, older learners become more confident, motivated, and capable. Computational Thinking becomes not an abstract subject but a practical, empowering toolkit that helps learners navigate their digital, personal, and professional lives with greater independence and confidence.



5.1 The Role of Learning Objectives in Adult CT Education

Objectives give direction and confidence. Clear objectives reduce fear and show learners why CT matters. Objectives help educators plan, select materials, evaluate progress, and build learner independence through practical, real-life goals.



5.2 Designing Clear and Achievable CT Objectives

Objectives must be clear and realistic:

- Concrete
- Measurable
- Relevant
- Achievable
- Time-bound



The SMART model—Specific, Measurable, Achievable, Relevant, Time-bound—helps structure meaningful learning goals.



5.3 Categories of CT Learning Objectives

Goals reflect different learner needs. CT objectives for older adults focus on:

- Personal growth
- Career development
- Reskilling for new roles

Balanced objectives make learning relevant and motivating.

5.3.1 Personal Growth Objectives

Build confidence and peace of mind.

These goals support comfort with technology and everyday problem-solving.

They help learners break tasks into steps, reduce anxiety, and improve organisation.

5.3.2 Reskilling and New Career Objectives

Improve work performance and prepare for new opportunities. CT supports adults in work or volunteering by helping them analyse routines, structure tasks, and solve recurring problems more efficiently. CT also helps learners create step-by-step processes, strengthen thinking skills, and prepare for further digital or technical training.



5.4 Co-Creating Objectives With Learners

When adults define objectives with educators, motivation and commitment increase, and anxiety decreases.

Step 1: Elicit Personal Goals

Learners express what they want to achieve.

Step 2: Identify CT Skills Behind Their Goals

Educators connect everyday goals to CT skills such as decomposition, pattern recognition or algorithmic thinking, making CT practical and understandable.

Step 3: Negotiate Feasible Expectations

Goals are sorted into short-term and long-term, helping learners see what is achievable now and later.



5.5 Tools and Methods for Setting CT Objectives

Use structured, creative methods. Practical tools help learners connect CT skills with real-life situations and outcomes.

5.5.1 The “One-Sentence Goal” Strategy

Turn motivation into CT.

Learners write one goal sentence.

Educators convert it into a CT objective using clear skills and actions.

5.5.2 CT Needs Assessment

Match problems with CT skills.

Checklists identify where learners struggle and link challenges to CT concepts such as decomposition and abstraction.

5.5.3 Objective-Building Using Card Sets

Combine skill + context + outcome.

Learners mix CT skills with life contexts to create meaningful, personalised objectives.

5.5.4 Sorting Short-Term and Long-Term Objectives

Manage expectations.

Learners distinguish what can be learned quickly and what needs longer practice, supporting steady progress.

5.5.5 Scenario-Based CT Objective Setting

Use real-life situations.

Learners choose familiar scenarios and identify what CT skill can improve them, making goals practical and motivating.



5.6. Examples of Full Objective Sets

Example Set 1 — Everyday Autonomy

Short-term:

- Break down a daily task
- Identify recurring patterns in weekly routines

Long-term:

- Troubleshoot simple digital issues
- Create personalised digital routines

Example Set 2 — Workplace Skills

Short-term:

- Identify inefficiencies in tasks
- Create step-by-step instructions

Long-term:

- Apply CT principles to streamline workflows
- Support colleagues with procedural clarity

Example Set 3 — Reskilling

Short-term:

- Learn CT vocabulary
- Practise abstraction and decomposition

Long-term:

- Build a CT portfolio
- Prepare for beginner-level digital roles





6. Justification

This stage is essential because learning objectives give direction, meaning, and confidence to adult learners. For older adults, Computational Thinking can initially appear abstract or intimidating. Clearly defined and co-created objectives reduce this uncertainty by explaining what will be learned, why it matters, and how it connects to everyday life.

By involving learners in setting their own objectives, this stage respects adult learners' autonomy and prior experience. It increases motivation, commitment, and trust in the learning process. Learners are more likely to persist when they see that goals are realistic, relevant, and aligned with their personal, professional, or reskilling needs.

For educators, this stage provides a structured framework for planning instruction, selecting appropriate activities, and assessing progress. It ensures that CT instruction remains focused, inclusive, and achievable, while avoiding cognitive overload or unrealistic expectations.

Overall, this stage transforms Computational Thinking from a theoretical concept into a purpose-driven, learner-centred learning journey, supporting confidence, independence, and long-term engagement.



7.1 Activity. My CT Goal in One Sentence

To help learners articulate personal goals in their own words.

Time: 10–15 minutes. Difficulty: Basic. Group size: Individual.

Give learners a prompt:

“By the end of this course, I want to be able to _____.”

Examples learners may write:

- “Use online services without feeling stressed.”
- “Understand how to break a task down.”
- “Organise my weekly routines better.”
- “Prepare for new job opportunities.”

This sentence becomes the foundation for a formal CT objective.



7.2 Activity. CT Needs Assessment Quiz

To identify which CT competencies are most relevant to each learner. Time: 15–20 minutes. Difficulty: Basic. Group size: Individual. Use the ticked boxes to create personalised learning objectives.

Learners tick the CT skills they need:

Decomposition

- ☐ I want to break tasks into smaller parts
- ☐ I get overwhelmed with multi-step tasks

Pattern recognition

- ☐ I want to identify repeated tasks (bills, medications, appointments)
- ☐ I want to predict outcomes

Abstraction

- ☐ I want to simplify complex instructions
- ☐ I get lost in unnecessary details

Algorithmic thinking

- ☐ I want clear routines for specific digital processes
- ☐ I want a step-by-step method for tasks I repeat often



7.3 Activity. Short-Term vs Long-Term CT Objectives Sort

To clarify that objectives exist on different timelines.

Time: 20 minutes. Difficulty: Basic. Group size: 3–4 learners.

Give learners mixed cards representing tasks; they must sort them:

Short-Term Objectives
(achievable within the course)

- Break a daily task into steps
- Sequence digital actions correctly
- Identify one repeating pattern in weekly tasks
- Debug a simple digital mistake

Long-Term Objectives
(developed over months)

- Apply CT independently when learning a new app
- Troubleshoot common digital issues without help
- Use CT to plan travel or complex daily routines
- Improve workplace efficiency with CT-inspired strategies

Learners often overestimate or underestimate what they can do. This activity helps set realistic expectations.





7.4. Activity. CT Life Scenario Mapping

To ground CT objectives in real-life problems. Time: 30 minutes. Difficulty: Basic. Group size: Individual or pairs.

Choose a scenario relevant to older adults:

- Booking medical appointments
- Managing medications
- Planning multi-stop errands
- Navigating online banking
- Organising a weekly care plan
- Managing old photos and emails

Learners answer:

1. What is difficult in this scenario?
2. Which CT skill could help?
3. What would success look like?



7.5 Activity. CT Objective Reflection Quiz

To help learners self-assess their goals and track progress. Time: 15 minutes. Difficulty: Basic. Group size: Individual.

Rate 1–5:

1. I want to feel more digitally independent.
2. I can break down simple daily tasks into steps.

3. I feel overwhelmed by complicated tasks.
4. I can recognise patterns in my routines.
5. I troubleshoot calmly when mistakes happen.

Use the quiz twice: at the beginning, to set objectives; at the end, to measure impact.



7.6 Activity. SMART CT Objective Builder

To guide educators in writing measurable CT objectives. Time: 20 minutes. Difficulty: Intermediate. Group size: Individual.

A SMART CT objective includes:

- Specific CT skill
- Measurable output
- Achievable steps
- Relevant to real-life goals
- Time-bound (lesson, module, or term)

“By the end of this activity, learners will be able to (action verb) using (CT skill) in the context of (real-life task) as shown by (success indicator).”



7.7 Activity. Objective Co-Design Workshop

To build shared understanding and ownership of objectives. Time: 40–60 minutes. Difficulty: Intermediate. Group size: whole group.

1. Educator presents draft objectives.
2. The preliminary objectives are displayed on a poster or slide.
3. Groups propose modifications.

4. Educator integrates feedback.
5. Final objectives are displayed on a poster or slide.

This process supports autonomy, reduces resistance, and increases commitment.



7.8 Activity. Objective Visualisation Activity

To help older adults visualise their progress and long-term path. Time: 20-30 minutes. Difficulty: Intermediate. Group size: Individual.

Provide a blank “Learning Roadmap” with milestones:

- Today
- Week 1
- Week 4
- After the course
- 3–6 months later

Learners fill in:

- Skills they expect to gain
- Challenges they want to overcome
- A long-term CT goal (e.g., digital independence)

Display these in the classroom and revisit periodically.



7.9 Activity. Real-Life CT Objective Templates

Educators can adapt these templates for use in their lesson plans.

Template A. Personal Growth Objective

“Learners will improve confidence by successfully completing one multi-step digital task using CT strategies.”

Template B. Independence Objective

“Learners will apply decomposition to complete online services independently.”

Template C. Work Efficiency Objective

“Learners will use pattern recognition to identify and reduce redundant tasks.”

Template D. Cognitive/Memory Support Objective

“Learners will create simple routines (algorithms) for recurring daily tasks.”

Template E. Reskilling Objective

“Learners will apply structured thinking to prepare for beginner-level digital training.”



8. Additional Resources



8.1 WORKSHEET 1 – My CT Goal in One Sentence



8.2 WORKSHEET 2 – CT Needs Assessment Checklist



8.3 WORKSHEET 3 – Short-Term vs Long-Term CT Objectives Sort



8.4 WORKSHEET 4 – CT Scenario Mapping Sheet



8.5 WORKSHEET 5 – SMART CT Objective Builder





8. Additional Resources

The following worksheets can be printed independently and used during your course.



8.1 WORKSHEET 1 – My CT Goal in One Sentence

Instructions for learners:

Complete this sentence in your own words.

"By the end of this course, I want to be able to..."

Trainer Conversion Box

Rewrite the learner's sentence using a CT skill.

Converted CT Objective:

"The _____ learner _____ will _____ be _____ able to _____
 using _____
 in the context of _____"

GOALS:	
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____



8.2 WORKSHEET 2 – CT Needs Assessment Checklist

Instructions: Tick all statements that apply to you.

Decomposition (breaking things down)

- ☐ I get overwhelmed with multi-step tasks
- ☐ I want to break tasks into smaller parts
- ☐ I want better organisation strategies

Pattern Recognition (noticing similarities)

- ☐ I want to identify repeated tasks or problems
- ☐ I want to predict outcomes
- ☐ I want to reduce repeated effort

Abstraction (simplifying information)

- ☐ I want to focus only on the important parts
- ☐ I get lost in too many details
- ☐ I want clearer instructions

Algorithmic thinking (creating routines)

- ☐ I want clear, step-by-step guides
- ☐ I want routines for online tasks
- ☐ I want to avoid forgetting steps

Trainer Interpretation Section

CT priorities for this learner:



8.3 WORKSHEET 3 – Short-Term vs Long-Term CT Objectives Sort

Instructions:

Review the examples below and place them in the correct column.

Short-Term Objectives (within the course)

- Break a daily task into steps
- Recognise a repeating pattern in weekly routines
- Understand CT vocabulary
- Create a small routine for one digital task

Long-Term Objectives (beyond the course)

- Learn new apps without help
- Apply CT in daily decision-making
- Fix common digital issues independently
- Improve work routines using CT
- Prepare for digital upskilling or a new role

Short-Term Objectives	Long-Term Objectives



8.4 WORKSHEET 4 – CT Scenario Mapping Sheet

Choose a real-life scenario and complete the form.

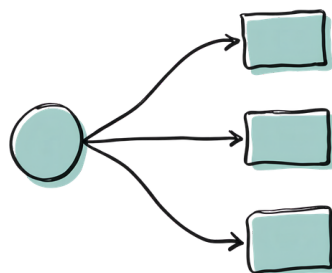
Scenario Selected:

- ☐ Booking medical appointments
- ☐ Managing medications
- ☐ Organising photos
- ☐ Completing online forms
- ☐ Planning errands
- ☐ Tracking expenses
- ☐ Weekly schedule
- ☐ Other: _____

What is difficult about this scenario?

Which CT skills could help?

- ☐ Decomposition
- ☐ Pattern recognition
- ☐ Abstraction
- ☐ Algorithmic thinking



What would success look like?

Draft CT Objective Based on This Scenario:

"The learner will _____
using _____ in the context of _____."



8.5 WORKSHEET 5 – SMART CT Objective Builder

S – Specific

What exactly will the learner do?

M – Measurable

How will we know?

A – Achievable

Is it realistic for this learner?

R – Relevant

Why does it matter in their life?

T – Time-Bound

By when?

Final SMART CT Objective



9. What is the value of this stage?

This stage ensures that Computational Thinking is learned with purpose and direction, grounded in learners' real lives. The value of this stage lies in:

- Making CT clear, relevant, and achievable;
- Increasing learner motivation and commitment;
- Reducing uncertainty and frustration;



- Supporting realistic progress and confidence;
- Providing a structured roadmap for effective CT instruction.

End of the Unit

UNIT 3: Relevant Topic Selection



Structure of the Stage

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied in this unit
- 4 Link with WP2 Modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this stage?



1. Aim and Objectives

In this unit, you will explore how appropriate topics that arise in everyday situations and simple problem-solving tasks can become powerful opportunities to embed computational thinking in a natural and engaging way.

O B J E C T I V E S

By the end of this stage, adult educators will be able to:

- Identify training topics that address adult learners' needs, interests, and real-life situations;
- Involve adult learners in selecting topics to strengthen motivation and ownership of learning;
- Select and justify appropriate topics for different adult learning contexts, considering their relevance, accessibility, and potential for applying computational thinking (CT);
- Translate a selected topic into a practical task that demonstrates relevant CT principles.



2. Outcomes

After implementing this stage, the following outcomes are expected:

- Training topics are aligned with adult learners' needs, interests and real-life situations;
- Learners contribute to topic selection, supporting their engagement and ownership of learning;
- Selected topics are justified in terms of their relevance, accessibility and potential for applying computational thinking (CT);
- Practical tasks connect selected topics with relevant CT principles through familiar, everyday examples;
- Topic choices accommodate diverse learning needs, supporting the inclusion of older adults and vulnerable learners.



3. Main CT Principles Applied

All four CT principles are applied in this unit

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking



4. Link with WP2 Modules

This unit links to WP2 Module 3, "Integrating Computational Thinking in adult education". Its emphasis on practical, accessible learning supports the selection of relevant everyday topics. Module 4, "Teaching strategies", adds a focus on developing soft skills through CT.





5. Challenges

One common challenge is turning everyday situations into learning moments for computational thinking. Not every topic fits naturally, but here's the trick: look at familiar situations with fresh eyes and ask, "Where's the problem to solve here?" Sometimes, all it takes is a new perspective.

Another key challenge is finding the right balance between simplicity and depth. Topics should feel close to learners' lives, yet still build strong thinking skills. The solution? Start simple, then go deeper step by step.

And what about moving away from abstract theory? It can be tempting to explain first and practise later. But here's a fun fact: learning sticks better when it starts from real life.



6. Justification

The topics that are chosen should naturally promote the analysis of real-world problems, structured reflection, active learner participation, and transferable learning.

Adult learners learn better when topics are relevant and presented through concrete examples and familiar language. They bring diverse life experiences that can enrich the learning process.





7.1 Activity: Everyday Stories

Objective: Identify topics in everyday stories, assess their suitability, and justify one choice before designing a CT task.

Time: 25–30 minutes.

Work in pairs or small groups.

1. Identify possible topics

Use a story shared by learners about shopping, travel or family commitments. Identify the difficulty and suggest two or three topics.

Example: shopping within a budget, comparing products or planning a route.

2. Assess each topic

Relevance: meets a learner need?

Value: useful in daily life?

CT: which principle fits?

Access: experience and support?

Scope: time and resources?

Involvement: learner input?

3. Select and apply

Agree on one topic with learners. Explain why it is more suitable than the alternatives and note any adaptations.

Outline a task using relevant CT principles.

Output: chosen topic, reasons, CT principles and a brief task outline.





7.2 Activity: Orchestra Conductor

This activity gives you, as a trainer, first-hand experience of why selecting appropriate topics matters when planning CT activities.

Select a short video of an orchestra conductor

Make sure the video is clear and easy to follow, as the goal is observation, not musical knowledge

Watch the video and look for patterns in:

The conductor's gestures
How musicians respond to those gestures
When the orchestra changes its behaviour

- Problem identification (coordinating many people)
- Decomposition (individual musicians and actions)
- Abstraction (focusing only on relevant signals)
- Algorithmic thinking (clear gestures and rules)





7.3 Activity: The Invisible System

This activity helps you to understand how an invisible system influences topic selection. It focuses on abstraction, pattern recognition, and systems thinking, using familiar situations with which adults interact daily.

Many everyday activities work because there is an underlying system behind them, even if we rarely think about it. This activity invites you to uncover that system.

Choose a familiar system. Select one everyday system you regularly use, such as:

- Booking a medical appointment
- Using public transport
- Borrowing a library book

Spot breakdowns and bottlenecks

Where does the system usually fail?

Where do people get confused or stuck?

CT Principles Applied

- Abstraction
(Focus on essentials)
- Pattern recognition
(Spot repetitions)
- Decomposition
(break into parts)

Algorithmic thinking
(Step-by-step solutions)



7.4 Activity: Reflective Challenges

Picture this: you're preparing your next lesson, and you want to introduce CT, but you catch yourself thinking,

“This topic is too practical... there's no room for CT here.”

Now pause for a moment and look at your own daily routine as a teacher. How do you plan a workshop session? How do you organise materials, time, instructions, and assessment? That's your real-life scenario.

Here's the challenge for you:

Where's the problem to solve in your own teaching practice?

Maybe learners often misunderstand instructions. Maybe activities take longer than planned. Maybe assessment feels messy or repetitive. Instead of seeing it as frustrating, try to see it as a CT opportunity.

Break down one of these situations step by step. What happens first? What decisions do you make? What patterns repeat every week? Then ask yourself:

“How could I redesign this process to make it clearer, faster, or more effective?”

By doing this, you're already practising problem decomposition, pattern recognition, and structured decision-making using nothing more than your everyday teaching reality.

And here's the key insight: if you can find CT in your own practice, you'll naturally know how to help your learners find it in theirs. Sometimes, computational thinking starts not in the lesson plan, but in the teacher's mindset.



8. Additional Resources

Teacher Education for Computational Thinking



Welcome!

Please introduce yourself in

- Name & Role
- District/Organization & State
- Something you are hoping to learn about today?

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9. What is the value of this stage?

The value of this stage lies in helping adult trainers select and frame topics that connect CT with learners' needs, interests and everyday experiences. Relevant topic selection provides the foundation for meaningful, accessible, and practical learning.

By using familiar situations, trainers can help adult learners recognise that they already apply elements of CT when organising tasks, comparing options, identifying patterns, making decisions, and solving everyday problems.



Selecting relevant topics can also strengthen participation and confidence by reducing the distance between abstract concepts and real-life application.



By selecting topics that reflect what learners know, experience, and care about, trainers can create inclusive learning experiences that encourage curiosity, support motivation, and promote the practical application of CT in everyday life.

End of the Unit

UNIT 4: Materials and Resources Preparation



Structure of the Stage

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this unit
- 4 Relationship with WP2 modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this stage?



1. Aim and Objectives

This unit aims to help adult trainers understand why careful preparation and selection of resources and materials are essential when introducing computational thinking (CT) in adult education. The same activity can lead to very different learning experiences depending on how it is presented.

OBJECTIVES

By the end of this stage, adult educators will be able to:

1. Analyse how different types of learning materials (digital and non-digital) support specific CT skills in adult education contexts;
2. Identify clear and practical criteria for selecting accessible and meaningful materials for adult learners;
3. Prepare learning activities that develop CT using non-digital and everyday resources familiar to adult learners;
4. Prepare and adapt resources that promote active participation, reflection, and the transfer of CT skills to everyday life.



2. Outcomes

By the end of this unit, adult trainers are able to:

1. Understand why the preparation and selection of resources and materials directly influence the development of CT skills in adult learners.
2. Understand how well-designed materials can make CT accessible, meaningful, and engaging for adult learners.
3. Design unplugged and technology-based activities that make CT accessible to adult and senior learners.
4. Facilitate learning experiences that encourage participation, reflection, and the application of CT to everyday problems.
5. Reflect on their role as trainers in organising, adapting, and evaluating learning materials according to learners' needs and contexts.



3. Main CT Principles Applied

All four CT principles are applied in this Unit:

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking



4. Relationship with WP2 Modules

This unit is closely linked to M3, "Designing Lesson Plans and Activities", which presents the structure and key elements of CT-based lesson planning. This unit builds on this content by guiding trainers in designing and completing learning resources. It also connects with M4, "Adapting CT Strategies for Different Learning Levels", supporting their adaptation to learners' needs and abilities.



5. Challenges

When adult trainers prepare materials and resources for a course on CT, they may soon realise that this task involves much more than choosing tools or activities.

Another challenge is related to understanding that CT resources truly support thinking, not just doing. Familiar, hands-on activities can be gradually adapted to develop the desired thinking skills.

Limited time for preparation can feel overwhelming. Creating clear, accessible, and meaningful resources often requires careful planning. The trick is to plan small, reusable activities and collaborate with colleagues; even simple templates can save time while keeping learning impactful.



6. Justification

Every teaching-learning process relies on materials that actively support the interaction between trainers and learners. In CT, materials play a particularly important role, as they help to make abstract thinking processes visible and tangible.

Familiar, everyday materials reduce cognitive load and allow learners to focus on developing CT skills rather than mastering complex technologies.



Studies show, that learners remember significantly more information when concepts are supported by well-designed materials rather than by explanation alone.



7.1 Activities

Let's look at the types of activities you can create within the framework of applying computational thinking in the classroom.

Unplugged Activities

Unplugged activities do not require digital devices and can help overcome barriers such as unfamiliarity with programming languages or limited access to digital resources. There is evidence that this type of activity supports learning in programming and facilitates access to robotics.

Tinkering Activities

Tinkering involves analysing the elements of an object, such as building blocks, puzzles, simulators, or program code, and then changing or modifying them. This shows how a small change can affect an algorithm or the solution to a problem.

Making Activities

These activities focus on enabling learners to solve problems, plan their work, select appropriate tools, communicate ideas, and connect different concepts.

Remixing Activities

In remixing activities, you share and modify existing code or algorithms in order to adapt them or combine them with other elements to solve a task, problem, or challenge.



7.1 Unplugged Activities

Who said you need computers to teach CT? Sometimes, the most powerful learning happens away from the screen. Unplugged activities help learners focus on thinking processes rather than technology, making learning more accessible and engaging.

Some practical examples include:

- Sequencing a routine by breaking it down into all intermediate steps
- Describing a drawing to a partner so they can reproduce it
- Writing a set of instructions (code) to guide another person in completing a construction, movement, or similar challenge
- Designing decision trees
- Working with algorithms
- Playing games to encode or decode binary code.



<https://www.csunplugged.org>



7.2 Technology-Based Learning Activities

One of the most well-known tools for visual programming is Scratch. Scratch makes it easier to move towards more advanced programming languages while allowing learners to experiment, create, and learn through trial and error. With Scratch, you can design quiz games to work on content, create simple applications or games, and make abstract concepts visible, visual, and intuitive.

Finally, it is also worth exploring platforms linked to robotics, such as Arduino and Micro:bit, as well as others associated with robots and devices like mBlock or LEGO.

These tools offer hands-on opportunities to connect CT with real-world actions, making learning both concrete and highly motivating.

Do you want to know more about Scratch?

LEARN MORE



Scratch is used worldwide not only in schools but also in universities, community centres, and adult learning programmes. Its strength lies in turning complex ideas into something learners can see, manipulate, and understand.



7.3.1. Activity. Tips for Content Design

When creating learning activities, adult trainers should ask themselves:

Who will use this content? How easily can it be adapted? And what kind of learning experience will it create? Keeping these questions in mind helps ensure that your materials truly support meaningful learning.

To achieve this, the content you design should be:

- **Accessible:** It should follow recommended accessibility guidelines so that learners with different abilities can use it. For adult learners this includes clear instructions, familiar objects and visual clarity.
- **Easily editable:** Activities should be created using free, simple, and cross-platform tools. When content is easy to modify, it becomes easier to adapt to different learners, contexts, and needs.
- **Innovative:** Learning materials should go beyond information delivery and act as tools for change, creativity, and innovation.

For this reason, a well-designed learning activity is one that:

- Makes the learning situation tangible, realistic, and feasible.
- Clearly describes the role of both learners and trainers, so everyone knows what is expected.
- Clearly explains how digital technology is used in the teaching-learning process.
- Promotes active learning, where learners develop competences through participation and reflection.

Can be linked to a specific subject area, or connect several areas at the same time, supporting cross-cutting learning.



7.3.2 Activity. Tips for Content Design

One of the most widely recognised frameworks is the Brennan–Resnick framework. Have you ever wondered how educators make sense of all the elements of CT? This framework is a powerful tool to guide you. It's organised around three dimensions: concepts, practices, and perspectives, helping you see the big picture while breaking it down into manageable parts.

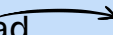
With this framework at your disposal, you can develop clear criteria for key decisions:

- What do you need to learn as a trainer?
- What should you teach your learners?
- How can you integrate CT into the activities of your subject area?
- How can you assess learning effectively?
- What content should you select, prioritise or omit?
- How can you distinguish high-quality resources from less effective ones?

To explore it in more detail and deepen your understanding, you can consult: Brennan, K., & Resnick, M. (2012). New frameworks for studying and assessing the development of computational thinking. Proceedings of the 2012 Annual Meeting of the American Educational Research Association. Vancouver: American Educational Research Association.



Click to download

 Brennan, K., & Resnick, M. (2012).



7.4 Activity. Sorting Game with Everyday Objects

Provide learners with a collection of everyday objects (keys, buttons, coins, pens, etc.).

Ask them to work in small groups and sort the objects according to different criteria, such as size, colour, material, or function.



1. Let each group decide on their own sorting rule and explain why they chose it.
2. Ask them to change the rule and sort the same objects again using a different criterion.
3. Invite learners to describe their sorting process as a simple set of instructions (an algorithm).

This activity develops abstraction, classification, and algorithmic thinking skills, helping learners understand how computers organise and process information. When learners sort and re-sort objects using different rules, they practise the same logical processes that data scientists and programmers use every day!



7.5 Activity. Patterns Using Geometric Shapes

Provide your learners with a variety of geometric shapes (circles, squares, triangles, etc.) and ask them to create patterns using these shapes.

Tell them that they need to create a pattern by alternating circles and squares, or by progressively increasing the size of the triangles. Try to combine colours so they can also work on colour association, which is always effective.

Then, they need to express these patterns as simple algorithms, such as “circle, square, circle, square” or “add one triangle each time”. This activity develops pattern recognition and algorithmic thinking skills, helping learners learn how to identify, for example, errors in programming code.

Did you know that...?

Creating patterns with shapes and colours isn't just fun; it trains the same brain skills that programmers use to spot errors in code! By alternating shapes or increasing sizes, learners practise pattern recognition and algorithmic thinking, which are fundamental in coding, problem-solving, and even everyday decision-making.



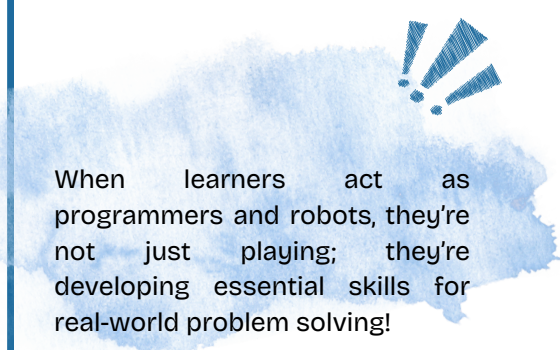
7.6 Activity. Role-Playing Game With Logic Problems

Organise role-playing activities in which learners act as programmers and robots, and must communicate with each other to solve logic problems.

Design a scenario in which a robot must follow a series of precise instructions to find a hidden treasure, using clear and concise commands.

This activity promotes collaboration, effective communication, and algorithmic thinking as learners work together to overcome challenges.

Encourage learners to work together so that they become familiar with collaborative development, a common approach in professional programming projects.



When learners act as programmers and robots, they're not just playing; they're developing essential skills for real-world problem solving!



7.7 Activity. Reflecting on Everyday Problems

In this activity, learners should discuss in pairs the problems they face in their daily lives. You will open the dialogue by asking: “What problems do you face every day at home or at school?”

You will write the ideas on the board. Your aim is to help learners become familiar with the concept of everyday problems that can be solved.

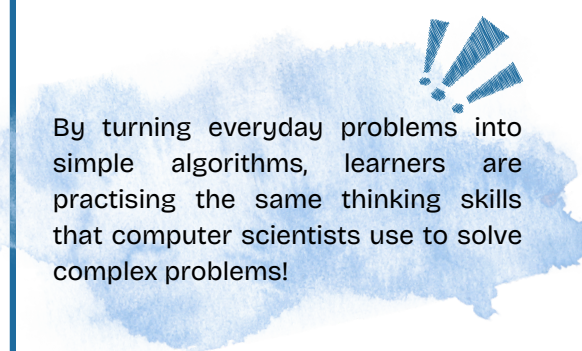
After 15 minutes, you will lead a whole-class brainstorming session, during which learners will share the problems they have discussed.

Next, explain the concept of an algorithm to them in a simple way, using everyday examples (such as making a sandwich or preparing a smoothie).

You will tell them that an algorithm is simply a series of steps that are followed to complete a task.

Afterwards, divide the class into groups of four to five learners, and have each group choose one problem from the board to work on together. They should clearly define the problem and then sketch a simple algorithm on paper.

In this way, they will begin to see how computational thinking can be used to solve everyday problems.



By turning everyday problems into simple algorithms, learners are practising the same thinking skills that computer scientists use to solve complex problems!



7.8 Activity. Challenges

Imagine a situation in which you notice that many adult learners arrive late, feel rushed, or struggle to organise their daily tasks. Instead of just talking about time management, you decide to turn this real, everyday problem into a short and powerful computational thinking activity.

Your challenge is to design a 20-minute learning activity that helps adult learners to plan a realistic morning routine using only simple, unplugged materials (paper, pens, or cards). You have limited preparation time, no digital tools, and a mixed-ability group.

Set a clear goal:

- What do I really want my learners to practise through this activity?
- Is the focus on problem decomposition, sequencing, prioritisation, or conditional thinking?
- Which of these skills would make the greatest difference to their everyday lives?

You can ask learners to visualise a typical morning and list all their tasks on cards or post-its. Have them organise these tasks into a logical order, then challenge them with realistic “what if” situations (waking up late, skipping breakfast, having an early appointment). Invite them to test their routine step by step, identify what doesn't work, and improve their plan through reflection and debugging.



8.1 Additional Resources

You can use online mind-mapping tools such as MindMeister or Coggle to help groups visualise how they break down problems and sequence their algorithm. This will make the process clearer and more structured for them.

Use examples and learning materials that include diverse representations, both in algorithms and in everyday situations. Consider problems that reflect the experiences of different ethnic and socio-economic groups.

Form heterogeneous groups that include learners with different abilities and backgrounds. This promotes peer learning, where one learner can support another in achieving their learning goals.



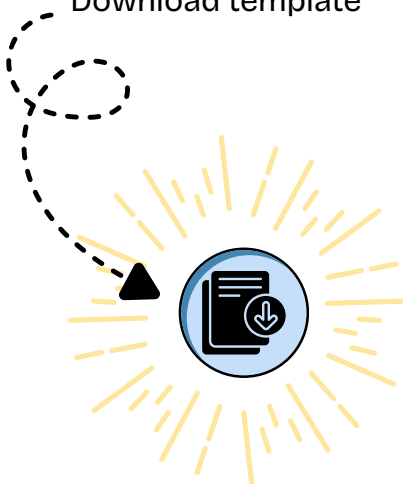
“When learners see problems from different perspectives and work together, they don’t just build algorithms; they build understanding, empathy, and skills that last a lifetime.”



8.2 Additional Resources

As an adult trainer, you have the opportunity to turn everyday information into a powerful learning moment. This fact-checking checklist offers a simple and practical way to guide learners through the complexity of disinformation using computational thinking principles. By following clear steps, learners move from instinctive reactions to structured reasoning, developing skills they can confidently apply beyond the training room.

Download template



FACT-CHECKING CHECKLIST



STEP 1 – Decomposition
Break the information into parts

- ☐ What is the main claim being made?
- ☐ Who is the author or source?
- ☐ When was it published or shared?
- ☐ What evidence is provided (data, quotes, links)?

STEP 2 – Pattern Recognition
Look for common signs of disinformation

- ☐ Emotional or sensational language
- ☐ "Shocking", "secret", or "they don't want you to know" phrases
- ☐ Lack of named sources or experts
- ☐ Strong opinions presented as facts
- ☐ Similar posts appearing on multiple questionable pages

STEP 3 – Abstraction
Focus on what really matters

- ☐ Which information is essential to judge credibility?
- ☐ What details can be ignored (images, tone, personal opinions)?
- ☐ What key question must be answered to verify this claim?

STEP 4 – Algorithmic Thinking
Follow a step-by-step verification process

- ☐ Search for the same claim on reliable sources
- ☐ Check the source's "About" page
- ☐ Verify facts using fact-checking websites
- ☐ Compare with information other example?



Final decision:

☐ Reliable
 ☐ Misleading
 ☐ False
 ☐ Not enough information



8.3 Additional Resources





9. What is the value of this stage?

The value of this unit lies in demonstrating that materials and resources are not merely supplementary teaching aids; they are essential components of effective learning design. Their selection, preparation, and presentation directly influence how adult learners understand, engage with, and apply computational thinking (CT).

This unit enables trainers to make purposeful decisions about which materials best support specific learning objectives and learner needs. It demonstrates how unplugged activities, familiar everyday objects, digital tools, or a combination of these resources can make abstract CT concepts more concrete, accessible, and relevant to real-life situations.

The unit also highlights that effective CT education does not require advanced technological expertise. Its value lies in strengthening trainers' ability to begin with manageable activities, adapt resources to different learners, remove barriers to participation, and emphasise thinking processes rather than technological complexity.

Ultimately, this unit strengthens trainers' capacity to create inclusive, practical, and engaging learning experiences. By preparing meaningful and flexible resources, trainers can help adult learners develop confidence, practise problem-solving, and transfer computational thinking skills to their everyday lives.

UNIT 5: Designing Learning Scenarios



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied in this unit
- 4 Link to WP2 Modules
- 5 Challenges
- 6 Justification
- 7 Learning Scenarios: Types, Examples, Benefits
- 8 Activities
- 9 Additional Resources
- 10 What is the value of this unit?



1. Aim and Objectives

The aim of this unit is to support you in designing meaningful and effective learning scenarios that bring computational thinking (CT) to life in adult education.

O B J E C T I V E S

By the end of this unit, adult trainers will be able to:

- Design meaningful and realistic learning scenarios that bring computational thinking into adult education practice.
- Connect abstract computational thinking principles with authentic everyday, professional and social situations.
- Create learner-centred activities that promote problem-solving, logical reasoning, creativity and reflection.
- Use scenario-based learning to develop transferable competences in adult learners.



2. Outcomes

Upon completion of this unit, adult trainers are able to:

- design learning scenarios based on real-life problems relevant to adult learners.
- integrate decomposition, pattern recognition, abstraction and algorithmic thinking into scenario-based activities.
- adapt learning scenarios to different learner profiles, needs, confidence levels and educational contexts.
- use learning scenarios to support learners' critical thinking, decision-making, confidence and practical problem-solving.



3. Main CT Principles Applied

All four CT principles are applied in this unit:

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking

4. Link to WP2 Modules

This unit is directly linked to M3, "Integrating Computational Thinking in Adult Education", specifically U3, "Designing Lesson Plans and Activities". This unit provides adult trainers with step-by-step guidance on defining learning objectives, designing CT-based activities, incorporating real-life situations, scaffolding learning and assessing results. It also includes a practical one-hour lesson example that can be used as a reference for designing CT-based learning scenarios.



5. Challenges

When you begin designing learning scenarios that integrate computational thinking, you may quickly realise that this involves much more than simply planning activities. Have you ever felt that a well-prepared activity didn't quite work as expected? Designing effective scenarios requires reflection, adaptation, and a learner-centred mindset.

- One challenge you may face is creating scenarios that feel authentic to adult learners. Adults bring rich professional and personal experiences and quickly notice when a situation feels artificial. A practical solution is to start from their real contexts –by listening to their experiences, asking questions, and adapting scenarios to reflect their motivations and challenges.
- Another challenge is transforming abstract ideas into meaningful learning experiences. Concepts like problem decomposition or logical reasoning can feel distant unless they are grounded in reality. A helpful strategy is to embed these concepts in familiar, everyday situations, allowing theory to emerge naturally through practice.
- You may also struggle with managing complexity. Scenarios should be challenging enough to promote deep thinking, but not so complex that learners feel overwhelmed. A good solution is to introduce complexity gradually, limiting information and choices at first and expanding them as learners gain confidence.

“The most powerful learning experiences are not perfect from the beginning; they evolve through listening, reflection, and refinement.”



6. Justification

Learning scenarios should be as realistic as possible. Scenario-based learning immerses learners in meaningful contexts through simulations or structured situations that reflect real challenges.

Learning scenarios should apply a learning-by-doing approach and foster learner motivation.

Learner-centred: scenarios should allow learners to apply the skills they are developing while at the same time strengthening their weaker areas.



7. Learning Scenarios

A learning scenario is a structured framework that guides learners towards achieving competency-based objectives. In adult education, a learning scenario always starts from a real-life problem and guides learners through a clear thinking process, using computational thinking as a support tool.

In short, a learning scenario is a bridge between knowledge and competence: a space where learners can experiment, make mistakes and grow, while you, as a trainer, guide and support the learning process.

Would you like to learn more about learning scenarios?

LEARN MORE





7.1 Types of Learning Scenarios

Different types of learning scenarios can be used to support computational thinking, depending on the learning objectives, the learners' profiles, and the level of complexity required. Here are some common types of learning scenarios and their purposes in education.

- **Gamified scenarios:** Use game mechanics and dynamics to increase motivation and engagement.
- **Decision-making scenarios:** Present a dilemma in which each choice leads to different outcomes. They are particularly suitable for training leaders and managers.
- **Narrative scenarios:** Incorporate stories that capture learners' attention and create an emotional connection with the content.
- **Simulations:** Useful for developing practical skills in areas



Combining different types of scenarios can create rich learning experiences that support CT through exploration, experimentation, and reflection.



7.2 Benefits of Scenario-Based Learning

- Learning is situated in realistic contexts: This makes it easier for learners to transfer knowledge and skills to professional and real-life situations.
- Scenarios build on learners' existing knowledge and experience: They help connect new learning to what learners already know and do, supporting deeper understanding.
- Scenario-based learning addresses more than content knowledge: It also develops skills, attitudes, and decision-making abilities in authentic contexts.
- Working on realistic problems increases engagement: When learners see a clear, recognisable purpose, motivation and participation naturally rise.
- Concepts and models are learned through practical application rather than in isolation: Applying ideas in context leads to deeper understanding and longer-lasting learning.

When learning happens in real-life contexts, the brain makes stronger connections between knowledge and action, making it much easier for learners to apply what they've learned outside the classroom.



The learning scenarios are not lesson plans.

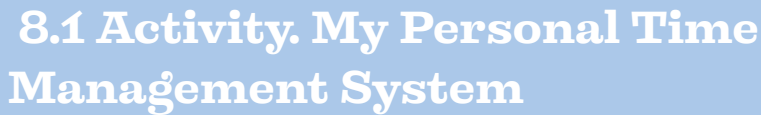
A learning situation does not focus on curricular objectives, nor is it a teaching unit.

It is driven by teaching and learning objectives and should prompt reflection on the capabilities and competencies the situation is intended to develop.



7.3 Ideas for Examples of Learning Scenarios

- **Solving a real professional problem:** Learners analyse a common problem from their work context (customer conflict, process failure, low productivity) and propose well-justified solutions.
- **Designing a product or service:** Participants design a resource, protocol, programme, or service that responds to a specific need in their professional environment.
- **Decision-making in a complex scenario:** Learners are presented with a case involving incomplete or evolving information that requires prioritisation, negotiation, and evidence-based decision-making.
- **Simulation of a professional situation:** Role-play or simulations (meetings, interviews, interventions, negotiations) in which both technical and communication skills are applied.
- **Analysis and improvement of an existing practice:** Learners review a real practice (their own or their organisation's), identify areas for improvement, and propose feasible changes.
- **Managing a short project:** Participants plan, implement, and evaluate a limited-scope project while assuming different roles and responsibilities.



"I never have enough time... and I don't know where to start."

The key competence to develop:

The mission is clear:

To help them analyse, structure and improve the way they use their time by applying the four principles of computational thinking.





8.2 Activity. My Personal Time Management System with CT

PHASE 1 – Decomposition

Big problems feel overwhelming. So let's break them down. Ask each learner to reflect individually: What blocks make up my day? Work or training, commuting, housework, leisure. Suddenly, the chaos becomes visible.

Result: My personal time map.

PHASE 2 – Pattern Recognition

Now it's time to look for regularities: What activities appear again and again? When do I have more energy? When do I feel exhausted? Powerful questions to spark insight: Where do I lose the most time? What habits sabotage my organisation?

Result: My personal patterns.

PHASE 3 – Abstraction

From all this information, we extract what is essential. Learners formulate simple rules: "If I'm tired, I don't perform well." "If I don't write things down, I forget them." Then distil everything into 3–4 key criteria, such as: energy, priorities, real available time.

Result: My decision-making compass.

PHASE 4 – Algorithmic thinking

Now they design their own "life algorithm": a clear, repeatable sequence, for example: List all fixed commitments. Calculate real free time. Choose 2–3 priorities. It can be a list, a diagram, or step cards. The important thing is that it is their system.

Result: My personal weekly algorithm.

You are observing their thinking: Can they analyse their time and recognise real patterns? There is no single correct model. Every life is different. What truly matters is learning how to think. Ask yourself as an adult trainer: Where else in my classroom could this same process help my adult learners? Decision-making? Problem-solving? Study planning?



8.3 Activity. How to Overcome Challenges?

Imagine you are preparing a new module for your adult learners in CVET. Your objective is not only that they complete a task, but that they learn to think logically and approach problems systematically. You decide to design a learning scenario based on a real professional situation: for example, managing a technical service request, organising a small project, or solving a production problem.

You know the content, tools and learning outcomes. However, designing the scenario raises questions. Ask yourself:

- What is a real problem your adult learners would face in a workplace?
- How can you break this complex situation into smaller, meaningful steps that reflect computational thinking (analysis, decomposition, sequencing, decision-making)?
- Which parts of the process are essential for learning, and which are only contextual?



8.4 Activity. The Job Interview

Here's an exciting opportunity to design a learning scenario that transforms a real-world experience into a structured problem-solving activity. Your learners will see how computational thinking skills can make them more confident and effective in a job interview.

In this activity, learners prepare for a job interview by applying CT principles, especially focusing on communication, problem-solving, and decision-making skills.

- Divide the preparation into clear steps: research the company; identify the key skills required; prepare answers to common questions; and practise responses.



9. Additional Resources





10. What is the value of this unit?

The value of this unit lies in:

The ability to transform learning objectives into structured, realistic, and meaningful learning experiences. Designing a learning scenario involves more than planning a series of activities.



Well-designed scenarios allow learners to explore different solutions, learn from mistakes in a supportive environment, and gradually develop confidence in applying new skills.

End of the Unit

UNIT 6. Training Implementation: Flexibility and Accessibility



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this unit
- 4 Link to WP2 modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this unit?



1. Aim and Objectives

The aim is to equip adult trainers with a practical framework and computational thinking (CT) tools to deliver training that is structurally flexible and cognitively accessible for seniors and low-qualified adults.

O By the end of this unit, adult educators will be able to:

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- C**
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- I**
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- E**
- S**
1. Use the “Modular Format” for lesson delivery by applying the CT principle of decomposition to break complex lessons into 15-minute segments.
 2. Implement “Multi-Channel” delivery, combining offline worksheets, recorded explanations, and visual aids to ensure accessibility.
 3. Establish a consistent “Review-and-Connect” cycle that leverages adult learners’ life experiences to ensure learning continuity.



2. Outcomes

Adult trainers will be able to:

1. Adapt any CT lesson plan—specifically regarding disinformation—into a modular and accessible format that accommodates varying digital literacy levels, irregular attendance, and diverse learning styles;
2. Implement “Multi-Channel” delivery, combining offline worksheets, recorded explanations, and visual aids to ensure accessibility.
3. Establish a consistent “Review-and-Connect” cycle that leverages adult learners' life experiences to ensure learning continuity.



3. Main CT Principles Applied

- **Decomposition:** Breaking a complex 60-minute training session on disinformation into micro-modules (e.g., 15-minute tasks).
- **Abstraction:** Simplifying complex technical instructions regarding online "fake news" into plain language and clear visual aids.
- **Algorithmic thinking:** Creating step-by-step "recipes" for adult learners to follow when verifying the source of an online article.
- **Pattern Recognition:** Helping adult learners identify recurring traits of disinformation, such as clickbait headlines or suspicious URLs.





4. Link to WP2 Modules

This unit serves as the practical approach for the WP2 Theoretical Framework on Computational Thinking (CT).

Unit 6 explains how to present these concepts to adult learners in a simple, understandable way.

It applies the "Andragogical Principles" by focusing on providing multiple means of learning by engaging with and integrating learners' life experiences.



5. Challenges

Adult trainers must overcome several interconnected challenges: irregular attendance, heterogeneous skill levels, limited reading abilities, low confidence, restricted access to technology, and anxiety about using digital tools. A fixed, lecture-based approach may intensify these barriers, particularly when learners miss sessions, require additional time, or have difficulty following written instructions.

Trainers should create a responsive learning environment that prioritises flexibility and accessibility. A modular approach can provide alternative learning pathways, enabling learners to develop specific computational thinking (CT) competences even if they miss a session, join an activity late, or cannot access technology at home.

Trainers should also use simple language, provide clear instructions, create psychological safety, and recognise learners' existing knowledge and life experiences. These measures can help reduce digital barriers, strengthen participation, and prevent learners from disengaging or dropping out.





6. Justification

Adult education is often hindered by irregular attendance and heterogeneous skill levels. Without flexibility, adult learners who fall behind often drop out.

Accessibility (visual, auditory, and physical) removes the "digital wall" that seniors often face, making the transition to CT concepts smoother and more inclusive.

Balancing Life Responsibilities

Adult learners, especially seniors and low-qualified adults, often balance work, family, and community responsibilities, which directly impacts their availability and mental energy.

Goal-Oriented Nature

Adults are oriented to goals and very practical; they are more likely to engage when they see immediate, real-life value in the computational thinking (CT) concepts being taught.

Vulnerability and Self-Confidence

Many seniors experience high levels of "learning anxiety" or lack confidence in using digital tools. Trainers who understand this can avoid high-stress activities—such as compulsory personal introductions.

Recognition of Life Experience

Understanding the learner's rich life experience allows the trainer to use tools like the "Life Experience Map" to validate what they already know, turning technical concepts into familiar "digital recipes" or algorithms for daily life.

Why is this unit important?

Understanding learners' needs helps trainers adapt the pace, support and delivery of training.



7.1 Activity. The Life Experience Map

When working with seniors, **flexibility and accessibility** are important. At this stage of life, adult learners are not looking for “activities for the sake of activities” — they want to feel that their years of experience are an asset, not a relic of the past.

Here is an example of an icebreaker activity designed to validate adult learners’ **life experience** while supporting accessibility and participation without pressure.

The Life Experience Map

This activity turns a standard “introduction” into a visual celebration of a life well-lived. It shifts the focus from “what I want to learn” to “what I already bring.”

Accessibility Tip:

For those with limited mobility or vision, this can be done as a “Verbal Map” where they describe their journey to a partner who takes notes.

Step-by-Step:

Task 1:

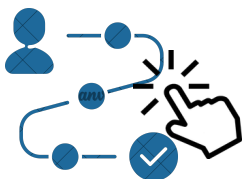
Provide each participant with a large sheet of paper (or a digital whiteboard like Miro if online). Ask them to draw a simple “road” or “map” representing their professional and personal journey.

Task 2:

Mark three or four milestones at which you learnt something you still use today.

Task 3:

Instead of saying names, each learner introduces themselves as an “expert by experience”.



Activity Template: The Life Experience Map



7.2 Activities. The “Expert for a Minute”

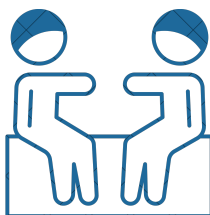
The “Expert for a Minute”

Seniors often feel a bit intimidated by new technology or modern training methods. This game flips the power dynamic and puts them in the teacher's seat immediately.

The “Expert for a Minute”

Accessibility Tip:

Ensure the room has low background noise so participants can hear their partners clearly.



Activity: “The Disinformation Life-Hack”

- **Task:** In pairs, learners share one “trick” they’ve used in life to spot a lie or a scam (e.g., at a market or over the phone).
- **CT Integration:** The trainer explains that this is pattern recognition—applying past experience to solve a new digital problem.
- **Accessibility:** For those with hearing impairments, use the “Chat” function in digital sessions to summarise the tip.

Step-by-Step:

Task 1:

Divide the group into pairs. Each person has 60 seconds to teach their partner one “life hack” or skill they’ve mastered over the years—anything from “how to grow the perfect tomato” to “how to negotiate a complex contract.”

Task 2:

Question: “What is one thing you can do so well that you could do it with your eyes closed?”

Task 3:

Establish within the group that everyone in the room has something valuable to contribute, which promotes the creation of a mutual learning environment.



7.3 Activity. The Wisdom Network

Common Threads (The Wisdom Network)

This is a high-energy but physically low-impact icebreaker activity that highlights shared history and collective knowledge.

The Wisdom Network

Accessibility Tip:

If tossing a ball of yarn is difficult due to motor skills, use a "Digital Connection List" on a screen where you draw lines between names as people find commonalities.



Step-by-Step:

Step 1:

The trainer starts with a ball of yarn. You state a piece of "learned wisdom" (e.g., "I've learned that patience is more important than speed"). Anyone who agrees or has had a similar experience raises their hand. You toss the yarn to one of them (holding onto the end), and they share their experience before stating their own piece of wisdom.

Step 2:

Ask participants: "Share something you have learnt through work or everyday life."

Step 3:

By the end, the group is physically connected by a "web" of shared experiences, proving they are a community of experts.



When facilitating these activities, keep three principles in mind:

Respect: Acknowledge their history.

Relevance: Connect the game to the actual training topic.

Relaxation: Keep the atmosphere light to lower "tech anxiety" or "classroom jitters."



7.3.1 How can these activities be adapted for a remote/digital environment?

Here is a **practical checklist for trainers** to ensure these activities are inclusive and effective in a **virtual classroom**.



General Digital

Accessibility Checklist

Before starting any digital game with seniors, ensure these foundational elements are in place:

- **Pre-Session Tech**

Check: Did you offer a 15-minute "tech-intro" session a day before to help participants test their mics, cameras, and platform features?

- **The "Big Font" Rule:** Are all your shared slides and digital instructions using a sans-serif font of at least 24 pt?

- **Co-Pilot Support:** Do you have a moderator to handle "I can't hear anything" or "Where is the button?" in the chat while you lead the activity?

- **Simplified Navigation:** Have you replaced complex links with easy-to-click buttons or QR codes?



Activity-Specific Adaptations

1. The Life Experience Map (Digital Version)

Instead of physical paper, use a collaborative tool like Padlet or Google Slides.

- Adaptation: Assign each participant one slide in a shared presentation. Pre-load the slides with a simple "road" graphic.
- Action: Ask them to insert 3 text boxes or photos representing their milestones.
- Accessibility: If a participant struggles with the "drag and drop" interface, have them describe their milestones while the trainer/moderator builds the map for them on screen in real time.

2. The Expert for a Minute (Digital Version)

Utilise Breakout Rooms to reduce sensory overload.

- Adaptation: Move participants into pairs in breakout rooms. This mimics the intimacy of a face-to-face conversation and prevents the "everyone talking at once" fatigue.
- Action: Use the "Broadcast Message" feature to tell them when to switch speakers.
- Accessibility: For those with hearing impairments, encourage the "learner" to keep their camera on so the "expert" can see their reactions, and suggest using the "Chat" function to summarise the key "life hack" tip.

3. Common Threads (Digital Version)

Replace the yarn with a Collaborative Digital Whiteboard (e.g., Miro or Zoom Whiteboard).

- Adaptation: Place everyone's name in a circle on the screen.
- Action: When someone shares a piece of wisdom and others agree, the trainer draws a colourful line (a "digital thread") connecting their names.
- Accessibility: Ensure you announce whose names are being connected (e.g., "I'm drawing a blue thread from Maria to John because they both value community"). This helps those with visual impairments follow the "growth" of the web.



7.4.1 Activity. The "Modular Blueprint" Challenge

This is a practical exercise for trainers to shift from a 60-minute "lecture" to a flexible, 15-minute "modular" system. This approach directly applies the computational thinking (CT) principle of decomposition—breaking a large, intimidating goal into small, achievable victories. In adult education, one hour of digital training can be exhausting or impossible due to irregular attendance. By decomposing the lesson into three 15-minute segments, you ensure that even if a learner arrives late or has to leave early, they still master at least one complete micro-competency.

Task:

Take a standard 60-minute CT lesson (e.g., "Safe Online Shopping") and "decompose" it into three 15-minute micro-tasks.

Step-by-Step:

Task A: Identify a product (Pattern Recognition).

Task B: Compare two prices (Evaluation).

Task C: Mock checkout (Algorithmic thinking).

Practical Tool:

A "Modular Template" for identifying core, optional and extension tasks according to the group's pace.



Activity: The "Modular Disinformation" Challenge
[Downloadable Resource Link](https://computationseniors.eu/)



7.4.2 Activity. The "Modular Blueprint" Challenge

The practical example: "Safe Online Shopping"

60-minute lesson: 5 minutes for the introduction, three 15-minute tasks, and 10 minutes for discussion.

Task A: Identify a Product (Pattern Recognition) – 15 min

- **The CT Goal:** Recognise common patterns in online stores (where is the search bar? where is the price?).
- **Practical Action:** Learners find a specific item on two different websites. They "recognise the pattern" of how shopping sites are structured.

Task B: Compare Two Prices (Evaluation/Abstraction) – 15 min

- **The CT Goal:** Evaluate information and filter out "noise" (like distracting ads) to focus on the total cost including shipping.
- **Practical Action:** Learners compare the final costs. This teaches them to "abstract" the important data from a cluttered screen.

Task C: Complete a Mock Checkout (Algorithmic thinking) – 15 min

- **The CT Goal:** Follow a step-by-step sequence of instructions to reach a goal.
- **Practical Action:** Learners follow the "Algorithm" of checking out: Add to Cart - view cart - enter address - review.

Note: This should always be done on a "mock" or "testing" site to ensure safety.





7.4.3 Activity. The "Modular Blueprint" Challenge

Practical Implementation Tips:

The 15-Minute Rule

If a task takes longer than 15 minutes, it is likely too complex and should be decomposed further.



Offline Backups

For each micro-task, have a printable worksheet ready. If the internet fails or a learner finds the screen too bright, they can continue the "Evaluation" task on paper without losing momentum.

"Small Victories"

At the end of each 15-minute module, ask the learners: "What is the one thing you can do now that you couldn't do 15 minutes ago?"





7.5 Activity. Engagement & Review

To ensure psychological safety and continuity, every session should begin with a "Review and Connect" phase.

The Short Review Cycle:

Use 5-minute interactive tools to recall previous content before starting a new lesson or activity.

Practical Recommendation:

Use simple "Flashcard" games or a "One Thing I Remember" circle.

Ice-breaking for Seniors:

Links to 2–3 simple introductory games (e.g., "The Life Experience Map") that validate their existing knowledge.

Engaging Vulnerable Groups:

Tips on "What to Ask."

Example: Instead of "Do you understand?", ask: "How could this step apply to your morning routine?" or "What part of this feels most useful for your daily tasks?"

What would you like to add to this activity?





7.6 Activity. "When?" and "How?"

This activity focuses on the "When" and "How" of participation, ensuring no adult learner is left behind due to life responsibilities.

Recorded Learning Paths:

Recommendations for recording sessions so learners can catch up if they miss a class.

Step-by-Step:

A simple guide on recording, for example, a Zoom session or using a smartphone to record a "Lesson Summary" audio clip.

The "Small Segments"

Strategy: Break 60-minute topics into 10–15-minute modular segments.

Practical Task:

Take a complex topic like "Online Public Services" and decompose it into three micro-tasks:

(1) Logging in, (2) Finding the form, (3) Final submission.

Flexible Lesson Scheduling:

Tips for offering "Drop-in" hours or varied time slots to accommodate adult learners' irregular attendance.





7.7 Activity. Multi-Format Accessibility

Accessibility must go beyond technology to include physical and cognitive ease. This approach reduces "learning anxiety" and helps learners see the immediate relevance of the concepts to their daily routines.

The Hybrid Approach:

Every digital task must have a "Printable Equivalent".

Scenario: If teaching "Managing a Household Budget", provide an Excel link and a printable paper worksheet with the same structure.

Visual and Plain Language:

Guidelines on avoiding abstract concepts. Replace technical jargon with "everyday metaphors".

Example:

Instead of saying "create an algorithm," ask: "What is the recipe for paying a bill online? What are steps 1, 2 and 3?"

Converting Content Simply:

- **Text to Audio:** Instructions on using free tools (e.g. browser "Read Aloud" features) to let learners listen to the manual.
- **Video Summaries:** How to use a phone to create a 2-minute "Visual Summary" of a lecture for those with low reading literacy.





8. Additional Resources

To enhance Unit 6: Training Implementation: Flexibility and Accessibility, the following resources are proposed to help adult trainers create lessons for adult learners that respect their diverse needs.

Video Resources

Microsoft Accessibility Fundamentals:

A series of short video modules on creating inclusive digital content (useful for trainers designing their own slides).

<https://learn.microsoft.com/en-us/training/paths/accessibility-fundamentals/>

UNESCO: Bridging the Grey Digital Divide

Discusses innovative digital learning initiatives tailored to the unique needs of older adults.

[Watch here](#)



Unplugged vs. Digital CT Activities

CT Principle	Unplugged (Offline) Example	Digital (Online) Example
Decomposition	"The Tea Algorithm" : Breaking down making a cup of tea into tiny, logical steps for a "robot" to follow.	"Folder Hierarchy" : Organising 10 photos into 3 clearly named folders (e.g., "Family," "Garden," "Holiday").
Pattern Recognition	"Song Lyric Hunt" : Identify repeated phrases (choruses) in a familiar song and call them "Functions".	"Predictive Text" : Observing how a phone "guesses" the next word based on previous patterns.
Abstraction	"The Simple Map" : Drawing a map from the classroom to the nearest cafe, leaving out every detail except the turns.	"Icon Literacy" : Learning that a "Trash Can" symbol always means delete, regardless of the app.
Algorithmic thinking	"Treasure Hunt" : One person writes instructions (code) to find a hidden object; the other follows them exactly to find "bugs".	"Online Checkout" : Following a 3-step sequence to "purchase" a free item in a training sandbox.



9. What is the value of this unit?

By planning for flexibility, the trainer creates a "safety net." This unit ensures that the training is not a "one-size-fits-all" event but a personalised approach to learners. It builds the adult learner's self-trust by proving that the material can adapt to them, rather than forcing them to adapt to a rigid, complex system. In adult education, "life happens." A learner might have a doctor's appointment, a family emergency, or simply a day when they find it difficult to concentrate.

Practical Action

Flexibility Modular lessons (15-minute tasks)

Accessibility Plain language & visual icons.

Personalisation Core vs. Extension tasks

Inclusivity Physical/Paper backups.



Impact on Learners

Reduces anxiety and dropout rates.

Removes the "Digital Wall" of jargon.

Validates individual learning paces.

Ensures access regardless of technological skill.



End of the Unit

UNIT 7. Creating an Inclusive Learning Environment



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied
- 4 Link to WP2 modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this unit?



1. Aim and Objectives

The aim of Unit 7 is to empower adult trainers to cultivate a psychologically safe and socially supportive environment that reduces digital anxiety and encourages learners to apply computational thinking principles to real-world challenges like disinformation.

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- By the end of this unit, adult trainers will be able to:
1. Establish “Classroom Learning Agreements” that foster trust when discussing sensitive topics like online truth and lies;
 2. Use plain language to explain technical CT concepts to older adults;
 3. Implement peer-support structures (buddy systems) specifically designed for collaborative disinformation verification.



2. Outcomes

Adult trainers are able to:

1. Create an inclusive and psychologically safe learning environment that empowers learners to apply CT principles to identify and challenge disinformation without fear of making mistakes;
2. Establish "Class Agreements" that foster trust when discussing sensitive topics like online truth and lies;
3. Use plain language effectively during training sessions;
4. Establish peer-support structures designed for collaborative disinformation verification.



3. Main CT Principles Applied

- **Abstraction:** Focusing on the "core truth" of a news story rather than getting lost in technical website details.
- **Pattern Recognition:** Identifying the emotional triggers (fear, anger) that disinformation creators use to bypass our logic.
- **Decomposition:** Breaking down feelings of being overwhelmed into small, manageable questions about a source's credibility.
- **Algorithmic thinking:** creating step-by-step procedures for verifying information.





4. Link to WP2 Modules

Unit 7 operationalises the WP2 principles of Andragogy and Universal Design for Learning (UDL). It builds on WP2 Module 5 by supporting inclusive learning environments for disadvantaged adults. It complements Module 3 through accessible resources and activities adapted to diverse learning needs. It also links to Module 4 through peer support, communication and collaboration.



5. Challenges

Inadequately adapted resources

Dense text, small print and unfamiliar examples can create barriers. Use plain language, readable layouts and relevant examples, adapting resources to learners' needs.

Acceptance and belonging

Stereotypes or exclusion may prevent learners from feeling accepted. Challenge discriminatory behaviour, value each person's experience and ensure everyone can contribute.

Fear of mistakes or judgement

Fear of embarrassment may discourage questions or participation. Clear, respectful group rules, a welcome for questions and treating mistakes as learning opportunities may reduce these fears.

Unequal participation

Confident learners may dominate while others remain silent. Use turn-taking, paired activities and varied ways to contribute. Respect each learner's pace.



6. Justification

Inclusion is one of the foundational principles for the learning process of adult learners. If a learner feels excluded or overwhelmed in the first hour, they are likely to drop out. For vulnerable groups, psychological safety is not a "soft skill"—it is a cognitive requirement.

The focus on a **culture of mutual respect, psychological safety, and active participation** is fundamental to building trust and engagement among vulnerable groups.

To earn adult learners' trust, use plain language and explain the benefits and expected learning outcomes.

It is also important to create a positive, encouraging environment where **participants support each other** and see their progress. Emotional well-being and inclusion are essential foundations before introducing new content.





7.1 Activity: The “Classroom Learning Agreement”

Entering into a “Learning Agreement” with a group is important for adult learners, especially older adults and those with few qualifications:

Establishing Psychological Safety

The primary aim is to cultivate a psychologically safe environment that fosters trust and reduces digital anxiety.

Ensuring Mutual Respect

It establishes clear shared rules to ensure mutual respect and open sharing among participants.

Empowering the Learner

Instead of imposing rules, the trainer should ask learners directly what will help them to feel comfortable even when they make mistakes.

Building a “Digital Safety Net”

It creates a culture where all questions are welcome, everyone waits for others to finish, and successes are celebrated.

Reducing the Fear of Failure

Defining the learning environment together helps learners move from fear towards curiosity and belonging, where mistakes are treated as valuable learning opportunities rather than failures.





7.2 Activity: The Digital Safety Net Learning Agreement

Trainer Introduction Script

"In this room, we are not just learning; we are building a community. To make sure everyone feels comfortable, let's agree on how we will treat each other. Instead of me giving you rules, I want to ask: What do you need from me and this group to feel comfortable making a mistake today?"

Ways to Formalise the Agreement

To ensure this agreement is inclusive and accessible to all literacy levels, use one of the following methods:

1. **Print** the agreement and have every learner sign it or place a sticker next to it. Hang it prominently in the classroom.
2. **Record the final agreed points** as an audio file or a short video. Share this in the group chat or platform so learners can "hear" the safety rules whenever they feel anxious at home.
3. **Post** the agreement on the main page of the digital learning platform used for the course.

The Agreement Points

- **No "Stupid" Questions.** We recognise that every question helps the whole group learn. If you are thinking it, someone else probably is too.
- **The "Slow Down" Rule.** We wait for everyone to finish a task before moving to the next one. No one gets left behind.
- **Mistakes are Data:** We treat a "wrong" click not as a failure, but as a "data point" to help us understand how the system works.
- **Celebrate Moments.** When someone discovers something new or solves a problem, we take a moment to celebrate that success.
- **The Jargon-Free Zone.** We promise to use plain language. If the trainer or a peer uses a word that sounds like "tech-talk," anyone can ask for a "Benefit Translation".



7.3 Activity: Computational Thinking in Daily Life

Topic: "Managing Health Appointments and Medication"

Create a flexible activity scenario suitable for older adult participants.

Stage 1 (Review):

Review how we decomposed a shopping list last week.

Stage 2 (Implementation):

Use a modular worksheet.

Task A: List all medications.

Task B: Identify patterns (e.g. medications taken in the morning).

Task C: Create an algorithm (step-by-step schedule).

Stage 3 (Accessibility):

Provide the schedule as a colourful printable chart (Visual/Offline) and a voice-recorded reminder template (Audio/Digital).





7.4 Activity: The "Digital Safety-Net" Buddy System

This activity operationalises the unit's objective to "implement peer-support structures" and build a socially supportive community.

- **The aim is to reduce** "digital fear" and move adult learners towards a state of "curiosity and belonging" by ensuring no one feels alone when facing a technical challenge.
- **Target Principles.** Pattern Recognition (identifying shared challenges) and Algorithmic thinking (creating a step-by-step support sequence).

Step 1. The "Strength-Spotting" Match (10 Minutes):

Based on the "Life Experience Map" (from Unit 6), the trainer pairs learners with complementary strengths.

Example: Pair someone who is particularly patient with someone who has a bit more technical confidence.

Step 2. Creating the Buddy Agreement (10 Minutes):

- Pairs discuss: "What is one thing that makes you nervous about today's lesson?" and "How can I help you when that happens?"
- They agree on a "Buddy Signal" (e.g., placing a specific coloured card on the desk) to indicate they need a 2-minute peer consultation before asking the trainer for help.

Step 3. The "Benefit Script" Exchange (5 Minutes):

Buddies practise explaining the purpose of the day's task using a Benefit Script.

Example Script: "We are learning to use folders (Task) so you can keep your grandchild's drawings organised and never lose them (Benefit)".





8. Additional Resources



8.1 Tips for Adult Trainers



8.2 Resources for Building Psychological Safety



8.3 Real-Life Case Example: Silver Gaming





8.1 Tips for Adult Trainers

When working with diverse learners—particularly seniors or vulnerable groups—the goal is not only to transmit information but to reduce the "digital friction" that often leads to frustration. These practical strategies focus on empathy, accessibility, and immediate feedback to ensure every participant feels capable and heard.

How can trainers ask supportive questions?

Use "Open-Ended Benefit Questions": "If this digital task were as easy as making coffee, how would your daily routine change?"

Simple Audio/Video Conversion:

Use the "Record & Reflect" method. Use your smartphone's voice memo app to record the lesson summary. This allows seniors to listen while at home without needing to read complex manuals.

Assessment Recommendation

Use emoji polls for quick emotional checks (How do you feel about this task? 😊 😐 😞). This approach accommodates different literacy levels.





8.2 Resources for Building Psychological Safety

These resources are designed to help trainers build psychological safety, peer support, and cultural relevance in their digital skills workshops for adult learners.

Video Resources

This video demonstrates how to create an inclusive atmosphere and reduce anxiety.

"Managing Anxiety in a Digital World": Although general, the strategies (Setting Boundaries, Digital Detox) are perfect "Benefit Scripts" for seniors overwhelmed by 24/7 connectivity.

Downloadable Activity Templates

"Jargon Buster" Flashcards:

Create a simple template where one side has the technical term (e.g., "Browser") and the other has the "Benefit Script" translation (e.g., "The window to the world").

Real-Life Case Examples

- **Connect Hackney (@online clubs):** A project that replaced "training" with "social clubs." They found that tea, biscuits, and unstructured social time were just as important as the tablet instruction for reducing isolation.
- **Digital Mentors (Be Connected):** Uses a "train-the-trainer" model where older citizens teach their peers. This removes the power dynamic of a "young expert" teaching an "old novice".



8.3 Real-Life Case Example: Silver Gaming

Silver gamification 2.0

<https://gaming.fundacjamis.org.pl/>

The Silvergaming initiative uses digital games (**Digital Games-Based Learning**) to familiarise seniors with new technologies.

The Silvergaming initiative effectively illustrates how to create an inclusive and stress-free learning environment.

- **Principle:** Gamification instead of lectures.
- **Application:** Instead of a traditional “Introduction to Computers” course, seniors learn how to use a mouse and keyboard and navigate menus through engaging games.

Effect: Fear of technology (“I’ll break something”) is replaced by curiosity and a desire to compete (“I want to move on to the next level”).

Tip for the trainer: Use simple browser games as “icebreakers” at the beginning of the class to create a relaxed atmosphere before moving on to more difficult topics.

Silver Gaming-inspired activity idea:

Name: “The 5-Minute Gamer”

- **Objective:** To show that mistakes in the digital world do not cause harm (building mental resilience).
- **Activity:** The trainer launches a simple, safe game (e.g., online solitaire or a simple arcade game). Seniors play in pairs.
- **Key moment:** When a senior “loses” (e.g., time runs out), the trainer and the group reward them with applause for trying. This teaches that “Game Over” is not the end of the world, but an opportunity to press “Try Again” – just like learning online banking or email.



9. What is the value of this unit?

The value of this unit lies in providing guidance on how adult trainers can empower adult learners.

This unit transforms the training from a technical chore into a social community. By prioritising emotional well-being and plain language, the trainer removes the "exclusion barrier".



Learners stop seeing CT as "something for young people" and start seeing it as a tool they are entitled to use, backed by a group that supports their progress.



End of the Unit

UNIT 8. Adapting to Different Learning Styles



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this unit
- 4 Link to WP2 modules
- 5 Challenges
- 6 Justification
- 7 Activities
- 8 Additional Resources
- 9 What is the value of this unit?



1. Aim and Objectives

The aim of this unit is to help trainers design learning activities adapted to different learning styles by transforming the same content into multiple formats using CT principles.

By the end of this unit, adult trainers will be able to:

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1. Identify the role of different learning styles in CT learning.
2. Present the main learning styles.
3. Employ AI tools to generate content for different learning styles.

4. Apply CT principles to decompose content and reuse core elements across different formats.
5. Present additional resources that can be used to prepare different content formats.



2. Outcomes

Adult trainers are able to design and adapt learning activities to suit different learning styles, structure them using CT principles, use different content formats as learning triggers, and adjust activities based on learners' responses.



3. Main CT Principles Applied

Abstraction – learning activities focus on the core message, separating meaning from specific forms. This allows the same content to be reused and transformed across different learning formats without dependence on the original medium.

Pattern Recognition – trainers identify recurring interaction patterns when using AI tools, such as prompting, generating, and converting content between formats. Recognising these similarities supports efficient transfer of skills across tools and activities.

These principles enable flexible adaptation of learning formats based on learners' responses, without requiring technical expertise.



4. Link to WP2 Modules

M3, slide 17, "What Makes Adult Students Different", states that CT activities should be adapted for visual, auditory, and tactile learners. Slide 22, "Elements of a Good Lesson Plan", identifies methods addressing different learning styles as an important element of an engagement strategy.

M5, slide 35, presents visual, auditory, kinaesthetic, and written learning styles.



5. Challenges

Adult trainers face challenges when they have to deliver content in different formats for different learning styles in both online and offline settings.

Cognitive Overload

Managing different content forms for different learning styles requires considerable effort from trainers and can shift their attention from monitoring CT-related reasoning to managing instructional complexity.

Trainer Confidence

Adult trainers may feel uncertain about facilitating CT activities when using different formats or unfamiliar content. This may affect their confidence.

Assessment and Feedback

If learners experience CT through different formats, adult trainers may find it challenging to apply unified assessment and feedback methods.

Overreliance on learning styles

Overreliance on learning styles may distract from more effective training and can lead to fragmented training design that prioritises format over learning outcomes.

Abstract CT Principles

CT principles are abstract by nature. Converting CT principles into different formats can cause them to be overly simplified or distorted.

Digital Technology Skills

Trainers may lack the practical proficiency with diverse digital tools required to transform CT content into different formats.



6. Justification

Why adapt different content formats for different learning styles?

Adult learners differ in how they process information. Using multiple content formats helps reduce cognitive load and improves understanding and engagement.

Why use AI tools to generate materials for different learning styles?

AI tools allow trainers to generate and convert learning materials quickly with limited time and technical skills.

AI tools enable trainers to prepare different formats for the same content.

Why focus on formats rather than learning styles?

Content formats are observable and adjustable during training. They allow trainers to respond flexibly to learner reactions without a formal diagnosis.

Why apply CT?

CT supports structured content reuse and transformation. It helps trainers decompose content, identify reusable elements, and apply them across formats.

Why is simple observation sufficient?

In adult learning, immediate feedback and engagement signals are often more reliable than formal tests. Observing learners' questions and attention, as well as their need for clarification, supports timely adjustments to the content format.



7.1 Activity: Preparation of Visual Content

AI-powered generation of slides, images and short videos

Goal: To enable the preparation of visual learning materials using AI with minimal technical effort.

Outcome: Ability to prepare visual learning materials using AI tools.

SLIDES

1. Open <https://gamma.app/>
2. Click "Create New (AI)"
3. Choose "Generate"
4. Type a topic (e.g. "Disinformation")
5. Click "Generate"
6. Edit and export as PPTX

INFOGRAPHIC

1. Open <https://chatgpt.com/>
2. Start a new chat.
3. Enter a prompt (e.g. "Create an infographic about disinformation").
4. Download the generated image.

DISINFORMATION



False or misleading information used deliberately to mislead or manipulate people.

SOURCES



SOCIAL
MEDIA



WEBSITES



TRADITIONAL
MEDIA



INDIVIDUALS

HOW TO SPOT DISINFORMATION



SENSATIONAL
HEADLINES



UNVERIFIED
SOURCES



MANIPULATED
CONTENT

APPEAL TO EMOTIONS



Some AI tools require users to sign up, but the described functions are available through free or freemium plans.



7.1 Activity: Preparation of Visual Content

VIDEO GENERATION FROM AN IMAGE

1. Open <https://app.heygen.com/>
2. Click "Create" → "Create a video"
3. Choose "Photo to video"
4. Upload one image (e.g. a photo of a rat)
5. Paste a short script (e.g. "Rats never lie... Because they do not speak.")
6. Select a voice and language
7. Click "Generate"
8. Download the generated video



Results:

- AI-generated slide deck with visuals.
- AI-generated infographic suitable for visual explanation.
- An AI-generated video created from a single image with a synthetic voice-over.

CT principles:

- **Abstraction** – focuses on retaining the core message independently of visual details when generating slides, infographics, or short videos.
- **Pattern Recognition** – focuses on recognising recurring interaction patterns with different AI tools, such as providing a prompt and supplying input in another format when generating or transforming visual content.



Visual content is a primary learning format when learners can decode meaning directly from images without additional verbal or text-based explanation.



7.2 Activity: Preparation of Audio Content

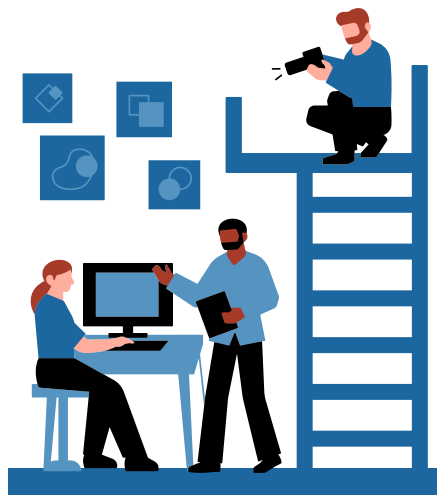
Generation and conversion of speech-based audio content

Goal: To enable trainers to prepare audio learning materials by generating speech from text and extracting audio from video content.

Outcome: Ability to generate, convert, and reuse speech-based content as standalone learning materials suitable for audio-focused activities.

SLIDE NARRATION

1. Prepare slides with notes
2. Save the presentation as PPTX
3. Open <https://www.narakeet.com/>
4. Click "Tools" → "Slides to Video..." → "Try Now"
5. Upload the PPTX file
6. Click "Continue"
7. Click "Create video"
8. Download the video with narration



TEXT TO SPEECH

1. Open <https://elevenlabs.io/>
2. Click "Text to Speech".
3. Enter the text (e.g. "Hello, this is an automated security call from your bank. We have detected unusual activity on your account. Confirm your identity immediately to avoid account suspension.")
4. Select a voice and language.
5. Click "Generate speech".
6. Download the audio file.



7.2 Activity: Preparation of Audio Content

AUDIO GENERATION FROM VIDEO

1. Open <https://cloudconvert.com>
2. Upload a video file (e.g. slide narration video)
3. Select MP3 as the output format
4. Click "Convert"
5. Download the audio file



Results:

- Automatically narrated slides based on speaker notes.
- Synthetic speech audio generated directly from text.

An audio-only file extracted from video content.

CT principles:

Abstraction – spoken content is separated from its original source (slides, text, or video) so that meaning is carried only through sound.

Pattern Recognition – trainers recognise that different audio tools follow similar interaction steps, such as providing text, selecting speech output, or converting existing media into audio.



Auditory learning becomes primary when learners can follow and explain content through listening alone, without requesting visual cues or written support.

T

7.3 Activity: Preparation of Text

Generation and conversion of text-based learning materials for reading, analysis, and diagnostic purposes

Goal: To enable trainers to generate, extract, and use text-based content as a flexible learning format and support basic learning-style diagnostics.

Outcome: Ability to prepare and reuse text-based learning materials for text-focused learning activities.

GENERATED TEXT MESSAGE

1. Open <https://chatgpt.com/>
2. Start a new chat
3. Enter a prompt (e.g.
"Generate a short text message impersonating a family member who claims to be in urgent trouble.")
4. Review and copy the generated message

Generated example of a short scam message:

"Mum, I had an accident and need help right now. I'll explain later – please message me back immediately."

CT principles:

- **Abstraction** – focuses on extracting meaning from spoken or visual content and representing it as text that can be reused independently of the original format.
- **Pattern Recognition** – focuses on recognising recurring workflows when using text-based AI tools, such as entering prompts, refining outputs, and converting content from other formats into text.

T

7.3 Activity: Preparation of Text

TRANSCRIPT FROM VIDEO

1. Open <https://www.youtube.com/>
2. Select a video
3. Click "...more" below the video
4. Click "Show transcript"
5. (Optional) Toggle timestamps if needed
6. Select and copy the transcript text

LEARNING STYLE DIAGNOSTICS

1. Open <https://claude.ai/>
2. Start a new chat
3. Paste the following prompt: "You are assisting an adult trainer during a live training session. Explain how to identify which learning format (visual, audio, or text-based) works best for learners in real time. Focus on observable behaviours, typical learner reactions, and practical signals that indicate a preference for one format over other formats."
4. Keep the guidance concise and actionable.
5. Review the generated guidance
6. Apply the suggested observation cues during activities

Results:

- Generated short text message illustrating a disinformation pattern.
- Text transcript extracted from video for reading and analysis.
- AI-generated guidance for real-time learning style diagnostics.



Text-based learning works best when learners prefer reading, annotating and reflecting on text, and can understand and explain ideas clearly.



8. Additional Resources

Additional freemium tools for generating content in various formats are available. Most require users to sign in, often using a standard Google account.

Text generation

<https://chatgpt.com/>
<https://claude.ai/>
<https://gemini.google.com/>
<https://www.perplexity.ai/>

Image generation

<https://chatgpt.com/images>
<https://leonardo.ai/>
<https://www.canva.com/>
<https://ideogram.ai/>

Speech generation

<https://elevenlabs.io/>
<https://www.narakeet.com/>
<https://murf.ai/>
<https://ttsmaker.com>

Video generation

<https://app.heygen.com/>
<https://runwayml.com/>
<https://pictory.ai/>
<https://pika.art/>

Slide generation

<https://gamma.app/>
<https://www.canva.com/>

Think

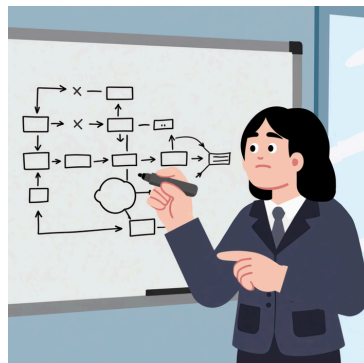
Which tool is your favourite?



9. What is the value of this unit?

This unit explains the need to adapt training content to different learning styles:

- Visual
- Auditory
- Kinaesthetic
- Written

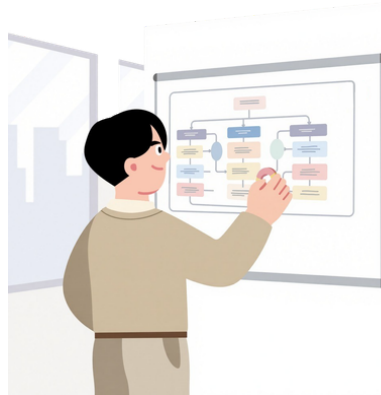


This unit provides practical recommendations on how to prepare training content in different formats:

- Visual content
- Audio content
- Written content

This unit supports adult trainers by:

- Providing practical examples of how to adapt training content to different learning styles;
- Building their confidence and awareness of cognitive diversity.



End of the Unit

UNIT 9. Assessment and Self-Evaluation Tools



Structure of the Unit

- 1 Aim and Objectives
- 2 Outcomes
- 3 Main CT principles applied during this unit
- 4 Link to WP2 modules
- 5 Challenges
- 6 Justification
- 7 Types of Assessment
- 8 Platforms for Assessment
- 9 Activities and Resources
- 10 What is the value of this unit?



1. Aim and Objectives

This unit aims to present practical and effective assessment tools that help trainers and adult learners measure progress in CT.

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- By the end of this unit, adult trainers will be able to:
 - 1. Identify the purpose and role of assessment in CT learning.
 - 2. Present diagnostic, formative, summative and self-evaluation tools.
 - 3. Present digital platforms (MagicSchool, Socrative, Moodle Quizzes, Google Forms) for CT assessment.
 - 4. Apply rubrics, checklists, and reflection sheets to evaluate CT competences.
 - 5. Interpret assessment results to support learner progress.



2. Outcomes

Upon completing this unit, adult educators will be able to:

1. Demonstrate an understanding of the role of assessment in CT, including familiarity with practical assessment tools and digital platforms for the assessment of CT competences;
2. Choose appropriate tools and platforms for the assessment of adult learning outcomes;
3. Interpret and analyse assessment results.



3. Main CT Principles Applied

All four CT principles are applied in this unit.

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithmic thinking



4. Link to WP2 Modules

WP2 M4 presents “Assessment of Soft Skills Development in CT Activities”. This module presents approaches such as observation, self-assessment, and peer feedback, and provides examples of rubrics and checklists to measure progress without formal testing.

WP2 M3, in the topic “Designing Lesson Plans and Activities”, presents assessment techniques such as peer and formative assessment.





5.1 Challenges

The greatest challenge is to assess not only what adult learners know but also how they think, solve problems, create algorithms, and identify patterns.

Assessment must cover:	Effective assessment:	Evaluation tools must be:
<ul style="list-style-type: none"> • Process • Reasoning • Strategies • Reflection • Creativity 	<ul style="list-style-type: none"> • Guides instruction • Motivates learners • Identifies knowledge gaps • Fosters metacognition and self-regulation • Encourages continuous improvement 	<ul style="list-style-type: none"> • Accessible • Simple to use • Meaningful • Supportive





5.2 Challenges

Assessment materials that match adult learners' needs

It may be challenging for adult trainers to prepare assessment tasks that are practical, realistic and age-appropriate, while still measuring key competences and learning outcomes.

Suitable digital tools for assessment and self-evaluation

Adult trainers struggle to choose tools that are easy for learners, especially older adults, to access and use while also supporting quizzes, surveys, self-assessment and feedback collection.

Continuous formative assessment

Adult trainers need to plan activities where they can observe progress during learning, not only at the end, and adjust support based on learner performance.

Clear assessment criteria

It can be challenging to define simple and understandable criteria so adult learners clearly know what is expected and how their work will be evaluated.

Summative assessment with limited time

It may be difficult for adult trainers to combine performance-based assessment with summative assessment and meaningful reflection within a limited training schedule.





6. Justification

Why does CT require unique assessment approaches?

CT assessment tracks reasoning and problem-solving processes, as well as answers, throughout learning.



<https://www.evelynlearning.com/top-7-assessment-tools-for-teachers/>

Why do adult learners need transparent and supportive assessment?

Adults may experience:

- Anxiety related to technology
 - Low confidence in mathematics or logic
 - Fear of making mistakes
- A strong need for clarity and relevance

Assessment tools must:

- Build confidence
- Support autonomy
- Encourage reflection rather than judgement
- Provide constructive feedback



7. Types of Assessment

Types of Assessment	Usage	Examples
Diagnostic Assessment	Used at the beginning of a module to measure: <ul style="list-style-type: none"> • prior knowledge • misconceptions • initial CT level 	<ul style="list-style-type: none"> • Socratic entry quiz • Google Forms CT baseline test • Sorting tasks ("Arrange the steps of an algorithm in the correct order") • Pattern recognition puzzles
Formative Assessment (Ongoing Assessment)	<ul style="list-style-type: none"> • Regular • Low-pressure • Highly specific 	<ul style="list-style-type: none"> • Exit tickets ("What was most difficult today?") • Think-aloud protocols • Observation checklists • Peer review • Self-evaluation sheets • Short quizzes (ungraded)
Performance-Based Assessment	Learners demonstrate skills through actions.	<ul style="list-style-type: none"> • Creating a flowchart • Solving a logic problem • Modelling a process
Summative Assessment (Final Evaluation)	Used at the end of a topic or module to measure achieved learning outcomes.	<ul style="list-style-type: none"> • Structured test (multiple-choice, open-ended questions) • Practical task: "Create an algorithm to solve..." • Portfolio of work



8. Platforms for Assessment

MAGiCSCHOOL

Assists in designing high-quality assessment tasks aligned with higher-order cognitive skills.



Enables the real-time collection of student responses through quizzes and open-ended questions.



Quizzes provide a flexible and robust assessment environment capable of supporting complex and multi-step problem-solving tasks.



Creates quizzes and surveys. Matching and ordering tasks use a multiple-choice grid.

Comparison of Different Assessment Platforms

Question Type	MagicSchool	Socrative	Moodle Quizzes	Google Forms
Multiple Choice	Yes	Yes	Yes	Yes
Dichotomous	Yes	Yes	Yes	Yes
Matching	Yes (AI-generated)	No	Yes	Via a grid
Ordering	Yes (AI-supported)	No	Yes	Via a grid



9.1 Activities and Resources: Diagnostic Assessment

CT Diagnostic Assessment with Digital Tools

Goal: To identify learners' initial CT knowledge before training.

Outcome: Learners understand their starting point, and trainers can adapt upcoming lessons.

Procedure:

- The trainer creates a 10–15-item diagnostic quiz.
- Learners complete the quiz individually or after discussion in a group.
- The trainer identifies which CT concepts are clear and which require more instruction.

Focus of the Quiz

To identify, analyse and respond to disinformation using CT principles.

Estimated time: 25–30 min



Offline diagnostic quiz

The adult trainer can print out the quiz in different formats.

These tasks can be completed individually or in groups.

Online diagnostic quiz example

[Socrative.com](https://socrative.com)*

Code: SOC-UMDPJLRZ

*If you are using Socrative for the first time, create an account on this platform. Then you can add this quiz to your library.

Resources

[You can find an example of the diagnostic test here.](https://computationseniors.eu/)



9.2 Activities and Resources: Offline Diagnostic Test

How can trainers conduct an offline diagnostic test?

1

EXAMPLE

An Individual Task

Materials: a board on which questions will be written and sticky notes in different colours.

Procedure: Write questions on the board and ask adult learners to write the correct answers on sticky notes. Then ask learners to come to the board and place their notes next to the corresponding questions and discuss their answers.

2

EXAMPLE

An Individual Task

Materials: printed questions with answer options and pens.

Procedure: Distribute handouts containing the questions and answer options. Ask learners to select their answers and discuss their choices with the trainer and other participants.

3

EXAMPLE

Group Task

Materials: questions printed separately, with one question per page and sticky notes in different colours.

Procedure: Print each question on a separate page. Ask learners to discuss it in groups, choose an answer and write it on a sticky note beside the question.





9.3.1 Activities and Resources: Formative Assessment

AI-Supported Formative Assessment with Adaptive Feedback

Goal: To assess learners' CT knowledge during the teaching process.

Outcome: Learners recognise their progress and areas for improvement; trainers can modify particular tasks based on adaptive feedback.

How can MagicSchool* be used to apply CT principles when analysing disinformation?

1
STAGE

Suggested Prompt: "Create formative assessment questions to help adult learners practise identifying disinformation using computational thinking skills. Use real-life online scenarios and provide short feedback for each answer."

Prepare your prompt. The next page presents two alternative tools for developing the assessment.

Teacher Tools Create custom tool

1

Hi Teacher, you're magic.

Create formative assessment questions to help adult learners practice identifying disinformation using com

Related tools for "Create formative assessment questions to help adult learners practice identifying disinformation using computational thinking skills. Use real-life online scenarios and provide short feedback for each answer." (8) Clear Results

<p>Multiple Choice Quiz / Assessment</p> <p>Generate a multiple choice assessment, quiz, or test based on any topic, standard(s), or criteria.</p>	<p>Academic Content</p> <p>Generate custom academic content based on the criteria of your choice.</p>	<p>SE Model Lesson Plan</p> <p>Generate a SE model lesson plan - Engage, Explore, Explain, Elaborate, Evaluate.</p>
<p>DOK Questions</p> <p>Generate questions based on topic or standard for each of the 4 Depth of Knowledge (DOK) levels.</p>	<p>Multi-Step Assignment</p> <p>Generate an assignment based on any topic, including a warmup, academic content, vocabulary, and questions.</p>	<p>Real World Connections</p> <p>Generate real world examples to increase student investment.</p> <p style="text-align: center;">2</p>
<p>MagicSchool for Students Ideas</p> <p>Generate ideas on how to use MagicStudent tools with your students.</p>	<p>3</p> <p>Raina</p> <p>Have a question or request? Ask Raina, our trusted AI chatbot for educators.</p>	

*If you are using MagicSchool for the first time, you will first need to create an account on this platform.



9.3.2 Activities and Resources: Formative Assessment

OPTION A

Option A: use “Real World Connections” to create scenarios, then draft questions and feedback.

Real World Connections

[Show exemplar](#)

Generate real world examples to increase student investment.

Grade level: *

Professional Staff

Topic, standard, objective (be as specific as possible): *

Disinformation explanation using Computational Thinking principles

[Add File](#)

Total word limit: 0/75,000

[Generate](#)

[Web Search](#)

OPTION B

Option B: enter the prompt in Raina. Check the generated questions and feedback and adapt them to your learners.



Hello! I'm Raina. [?](#)

Made for Schools

Hello! My name is Raina, your AI instructional coach. You can ask any questions related to best practices in teaching or your work in a school building. Feel free to ask me for ideas for your classroom, research on best practices in pedagogy, behavior management strategies, or any general advice! The more specific your questions, the better my responses will be. How can I help you today?

Propose strategies for engaging parents in math homework help

Plan a digital citizenship lesson for 8th graders

Create formative assessment questions to help adult learners practice identifying disinformation using computational thinking skills. Use real-life online scenarios and provide short feedback for each answer.



[Fastest](#)

[Web Search](#)





9.4.1 Activities and Resources: Performance-Based Assessment

Goal: To assess learners' CT knowledge and problem-solving skills through activities conducted in real-world or simulated situations.

Outcome: Learners demonstrate their ability to apply knowledge and skills through project implementation, presentations, or problem-solving activities.

How to Prepare an Information Reliability Task

Purpose

This task, "Verify Before You Share", assesses learners' ability to apply CT skills in real-life situations by verifying online information and making evidence-based decisions.

Scenario

You receive a viral online post (article, social media message, or short video) that claims to present important information (for example, related to health, politics, or finance).

Preparation

Before sharing it, you must decide whether the information is reliable.



Task for Learners

Using CT, verify the information step by step and explain how you reached your conclusion.



9.4.2 Activities and Resources: Performance-Based Assessment

Learners should apply the following CT principles:

1. Decomposition

Break the claim into clear components:

- What is being claimed?
- Who published or shared it?
- What evidence is provided?
- What is the purpose of the post?

2. Pattern Recognition

Identify observable indicators related to reliability, such as:

- presence or absence of sources;
- repeated claims found elsewhere;
- similarity to known misleading content;
- lack of verifiable data.

3. Abstraction

Focus only on essential information needed to verify the claim:

- Ignore design, formatting, or presentation style.
- Concentrate on facts, sources, and evidence.

4. Algorithmic thinking

Describe the verification process in clear steps, for example:

1. Identify the original source.
2. Check the publication date.
3. Compare with trusted sources.
4. Verify any images or videos.
5. Check information for consistency.



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9.4.3 Activities and Resources: Performance-Based Assessment

Assessment Format (Trainer Selects One)

- Written report (500–700 words)
- Slide presentation (5–7 slides)
- Oral explanation (5–7 minutes)

Recommended Tools

Primary Tools

Moodle (Assignment / Workshop) – submission and rubric-based evaluation
 Google Docs or Slides – structured work and collaboration

Supporting Tools

- Fact-checking websites
- MagicSchool – support for drafting and feedback

Assessment Criteria (Rubric Overview)

CT skills:

- Decomposition
- Pattern recognition
- Abstraction
- Algorithmic thinking

Performance levels:

- Excellent
- Satisfactory
- Needs improvement

Reflection (Required)

Learners briefly answer:

- Which step in the verification process was most challenging?
- How will you use this process in real life?



9.5.1 Activities and Resources: Summative Assessment

Relationship Between Summative Assessment and CT Principles

CT Skill	Excellent	Satisfactory	Needs Improvement
Decomposition	The claim is clearly broken down into all key components (claim, source, evidence, purpose). Each part is explained accurately.	Most components are identified, but some details are unclear or incomplete.	Key components are missing or not clearly identified.
Pattern Recognition	Identifies clear indicators related to reliability (e.g. sources, repetition across platforms, consistency with trusted information).	Identifies some indicators, but analysis is limited or partially developed.	Indicators are not identified or are incorrectly interpreted.
Abstraction	Focuses only on essential facts and verification needs; irrelevant details are successfully ignored.	Mostly focuses on key information, but includes some unnecessary details.	Struggles to distinguish essential information from non-essential details.
Algorithmic thinking	The verification process is presented as a clear, logical and complete sequence of steps.	The steps are logical but incomplete or not clearly ordered.	Steps are unclear, missing, or not logically connected.



9.5.2 Activities and Resources: Summative Assessment

Summative Assessment

Goal: To measure the learning outcomes achieved at the end of a topic or module.

Outcome: Learners identify what they have learned throughout the course.

Examples:

- Final project demonstrating CT principles
- Structured test: multiple-choice and open-ended questions
- Practical task: "Create an algorithm to solve ..."
- Portfolio of work

Tool	Assessment Features	Role
Moodle	Rubrics	Primary final evaluation
Project-based (Moodle/Docs)	Projects	Authentic assessment
Google Forms	Quizzes	Flexible alternative



9.6 Additional Resources

Resources:

- [Types of assessment](#)
- [List of digital assessment tools](#)

Video links:

- [How does disinformation work?](#)
- [How to understand Misinformation, Disinformation and Malinformation?](#)
- [Disinformation: The End of Humanity?](#)

Downloadable activity templates:

- CT Diagnostic Assessment Quiz (file [CTDiagnosticAssessment.docx](#) contains quiz questions that can be transferred to different digital assessment tools)

Real-life case examples:

- [AI deepfakes of real doctors spreading health misinformation on social media](#)
- [Disclose.tv: Conspiracy Forum Turned Disinformation Factory](#)

[Examples of unplugged and digital activities](#)

[Inclusive, culturally aware content](#)





10. What is the value of this unit?

This unit presents essential types of assessment in CT:

- Diagnostic Assessment
- Formative Assessment (Ongoing)
- Performance-Based Assessment
- Summative Assessment (Final Evaluation)



This unit presents and compares different digital assessment platforms, such as:

- MagicSchool
- Socrative
- Moodle Quizzes
- Google Forms

This unit supports adult trainers by:

- Providing practical examples of online and offline tools for assessing knowledge;
- Building trainers' confidence and insight into learners' thinking.

