

UNIT 1: Understanding Adult Learners



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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:

- _____

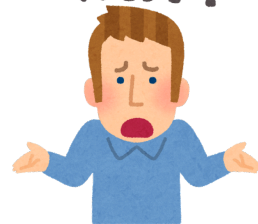
Times I learned something new as an adult:

- _____

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

A purple rectangular notepad with a white circular hole punch at the top left. It has eight horizontal yellow lines for writing. The bottom edge of the notepad is decorated with a scalloped pattern.



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