UNIT 2: Setting Learning Objectives in Computational Thinking (CT)

Structure of the Stage

1. Aim and Objectives
2. Outcomes
3. Main CT principles applied during this lesson
4. Relationship with WP2 modules (theory)
5. Learning Objectives: Definition and Challenges
6. Justification (why this stage is important);
7. Activities (9 Activities)
8. Additional Resources (3 Worksheets)
9. What is the value of this stage?

1. Aim and Objectives

The aim of this stage is to 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:

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

2. Outcomes

At the end of this stage:

- Learners understand what they are learning and why
- Objectives are clear, realistic, and learner-centered
- CT goals connect to everyday and work contexts
- Motivation and confidence increase
- Educators have a structured roadmap for CT instruction

3.Main CT Principles Applied

All 4 principles of CT are used in this unit.

4.Relationship with WP2 Modules

This unit can be linked to several Online 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.

a. The Role of Learning Objectives in Adult CT Education

Objectives give direction and confidence.

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

b. 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.

Personal Growth Objectives

Build confidence and ease.
These goals support comfort with technology and everyday problem-solving.
They help learners break tasks into steps, reduce anxiety, and improve organization.

Reskilling and New Career Objectives

Improve work performance. and prepare for new opportunities.
CT supports adults in work or volunteering by helping them analyze 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.

c. Designing Clear and Achievable CT Objectives

Objectives must be clear and realistic.
Effective objectives are:

- Concrete
- Measurable
- Relevant
- Achievable
- Time-based

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

d. 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, patterns, or algorithms, 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.

e. Tools and Methods for Setting CT Objectives

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

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.

CT Needs Assessment

Match problems with CT skills.
Checklists identify where learners struggle and link challenges to CT concepts like decomposition, abstraction, or debugging.

Objective-Building Using Card Sets

Combine skill + context + outcome.
Learners mix CT skills with life contexts to create meaningful, personalized objectives.

Sorting Short-Term and Long-Term Objectives

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

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.

f. 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 personalized 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
- Practice 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-centered learning journey, supporting confidence, independence, and long-term engagement.

7. Activities
Activity 1 - My CT Goal in One Sentence

To help learners articulate personal goals in their own words.

Time: 10–15 minutes
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."
- "Organize my weekly routines better."
- "Prepare for new job opportunities."

This sentence becomes the foundation for a formal CT objective.

Activity 2 - CT Needs Assessment Quiz

To identify which CT competencies are most relevant to each learner.

Time: 15–20 minutes
Group size: Individual

Use checked boxes to create personalized 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
Algorithms
□ I want clear routines for specific digital processes
□ I want a step-by-step method for tasks I repeat often
Debugging
□ I panic when something goes wrong
□ I want to fix mistakes independently

Activity 3 - Short-Term vs Long-Term CT Objectives Sort

To clarify that objectives exist on different timelines.

Time: 20 minutes
Group size: Small groups

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.

Activity 4 - CT Life Scenario Mapping

To ground CT objectives in real-life problems.

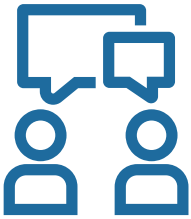
Time: 30 minutes
Group size: Individual or pairs

Choose a scenario relevant to older adults:

- Booking medical appointments
- Managing medications
- Planning multi-stop errands
- Navigating online banking
- Organizing 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?



Activity 5 - CT Objective Reflection Quiz

To help learners self-assess their goals and track progress.

Time: 15 minutes

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 recognize 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

Activity 6 - SMART CT Objective Builder

To guide educators in writing measurable CT objectives.

Time: 20 minutes

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 course, learners will be able to (action verb) using (CT skill) in the context of (real-life task) as shown by (success indicator)."

Activity 7 - Objective Co-Design Workshop

To build shared understanding and ownership of objectives.

Time: 40–60 minutes
Group size: Whole group

1. Educator presents draft objectives.
2. Learners discuss if these match their needs.
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.

Activity 8 - Objective Visualization Activity

To help older adults visualize their progress and long-term path.

Time: 20-30 minutes

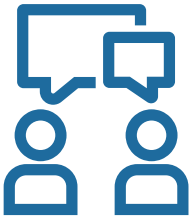
Provide a blank “Learning Roadmap” with milestones:

- 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)

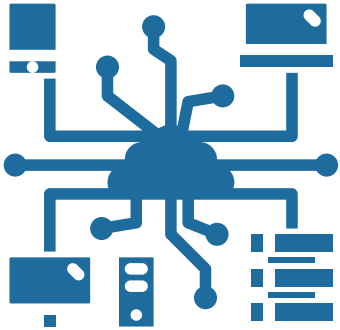
Display these in the classroom and revisit periodically.



Activity 9 - Real-Life CT Objective Templates

Educators can copy and paste these directly into the eGuide.

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

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

WORKSHEET 1 – My CT Goal in One Sentence

Instructions to 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:
"Learner will be able to_____
using _____
in the context of_____"

WORKSHEET 2 – 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
- Recognize a repeating pattern in weekly routines
- Understand CT vocabulary
- Debug a simple digital mistake
- 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

WORKSHEET 3 – CT Scenario Mapping Sheet

Instructions: Choose a real-life scenario and complete the form.

Scenario Selected:

- □ Booking medical appointments
- □ Managing medications
- □ Organizing 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
- □ Debugging

What would success look like?

_____

Draft CT Objective Based on This Scenario:

"Learner will_____
using _____ in the context of_____."

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