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DiSTT

Implementation Guide

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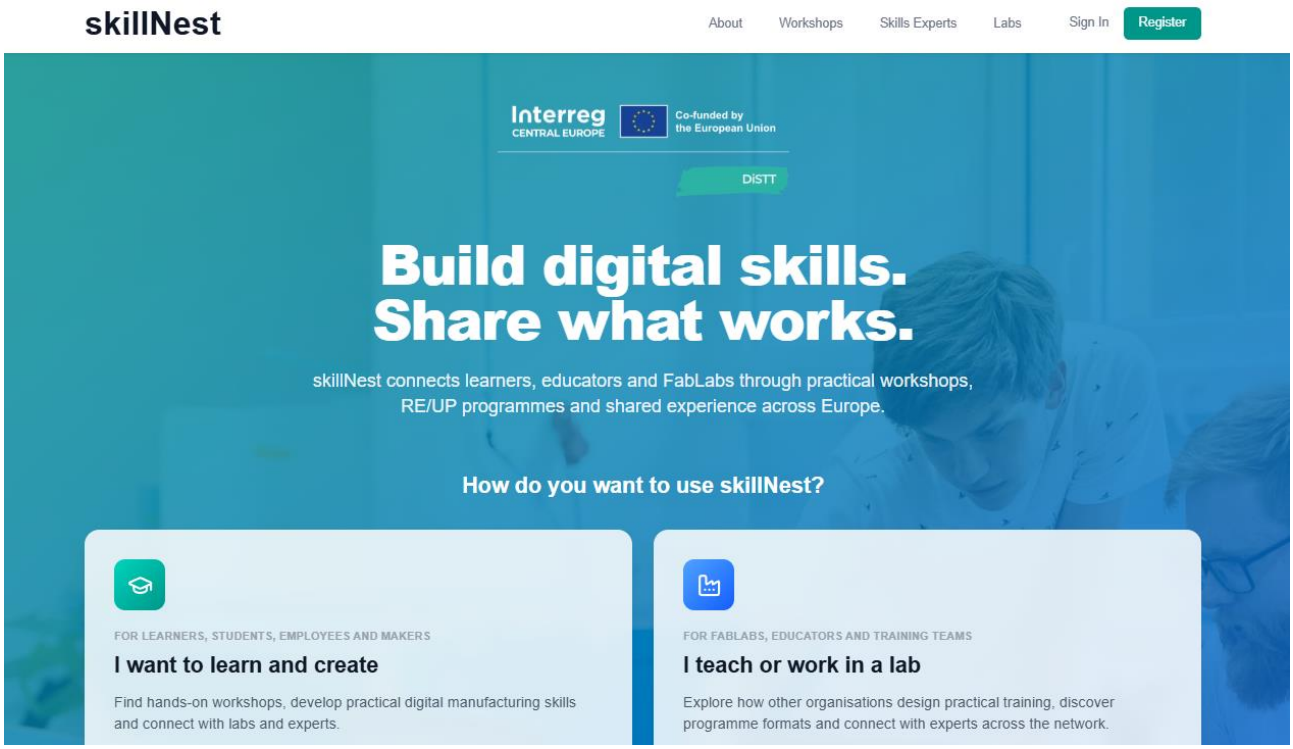


INTERREG CENTRAL EUROPE

Digital Skills Transformation Toolkit for a Resilient Labour Market

IMPLEMENTATION GUIDE

Step-by-step adoption of the DiSTT re/upskilling programmes, assessment tools and SkillNest toolkit



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skillnest.app

Jointly developed by the DiSTT partnership

Document control

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Disclaimer

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Abbreviations

Abbreviation	Meaning
AF	Application Form
BUT	Brno University of Technology
CE	Central Europe
DME	Digital Manufacturing Engineering
EU	European Union
FabLab	Fabrication Laboratory
KPI	Key performance indicator
LP / PP	Lead Partner / Project Partner
ME	Maker Engineering
PPE	Personal protective equipment
RE/UP	Re/upskilling

Abbreviation	Meaning
SME	Small and medium-sized enterprise
VET	Vocational education and training

1. Executive Summary

The Implementation Guide is the jointly developed manual for organisations adopting the re/upskilling programmes and assessment tools contained in the Digital Skills Transformation Toolkit. It converts the practical experience gained through the design, piloting and evaluation of re/upskilling programmes into a repeatable implementation pathway for FabLabs, makerspaces, schools, universities, VET providers, innovation organisations and company-training environments.

PURPOSE

Help an adopting organisation move from an identified digital-fabrication skill gap to a selected and adapted programme, prepared delivery, documented learning outcomes and a sustainable repeat offer.

The guide is designed for two publication formats. The first is a concise, easy-to-use step-by-step guide for rapid orientation and action. The second is this comprehensive, web-embedded document, which explains decisions, roles, checklists, assessment, risk management, quality assurance, transfer and sustainability in sufficient detail for an implementation team.

Who should use the guide

- A FabLab or makerspace manager deciding whether and how to add a DiSTT programme to the local offer.
- An educator adapting a validated workshop to a new target group, language, machine or timetable.
- A school, university or VET coordinator arranging access to facilities, educators and assessment.
- A company or business-support organisation commissioning an applied upskilling activity.
- A programme owner or SkillNest administrator supporting transfer and monitoring uptake.

How to use the guide

Situation	Recommended entry point	Expected result
First exploration	Chapter 4 web step-by-step structure	Understand the full adoption route in minutes
Programme choice	Chapter 6 selection matrix	Shortlist the closest validated solution
Planning a first run	Chapters 5 and 7	Complete an implementation plan and risk register
Configuring assessment	Chapter 8	Select a proportionate evidence solution
Using SkillNest	Chapter 9	Find content, register users and connect resources
Repeating or scaling	Chapter 11	Protect quality while increasing reach

Source: D3.3.1 Digital Skills Transformation Toolkit; D2.2.1 partner Pilot Run Reports; D2.3.1 Joint Evaluation Report; approved DiSTT output definition.

2. Purpose, Scope and Relationship to Digital Skills Transformation Toolkit

2.1 Scope of the Implementation Guide

The Implementation Guide covers organisational adoption and implementation. It explains what an adopter must decide, prepare, deliver, record and improve. It does not reproduce all programme materials and does not replace technology-specific operating instructions, machine safety documentation or local legal requirements.

2.2 Relationship between the guide and the toolkit

Deliverable	Primary question	Content	Use by adopter
Implementation Guide	How do we implement it successfully and sustainably?	Steps, decisions, roles, readiness, adaptation, delivery, assessment, risks and scaling	Plan and govern adoption
Digital Skills Transformation Toolkit	What validated solution and resources can we adopt?	Six programme solutions, assessment toolkit, programme fiches, SkillNest functions and resources	Select and use the final solution
SkillNest	Where do we discover, access and connect the elements?	Catalogue, workshop details, assessments, materials, labs and experts	Access and support delivery

2.3 What adoption means

Adoption is more than downloading a presentation. An organisation has adopted the toolkit when it has selected a solution, and optimally also documented local adaptations, assigned coordination and lecturer roles, prepared the required resources, delivered at least one run, collected proportionate assessment evidence.

MINIMUM ADOPTION EVIDENCE

A completed implementation record (eg. Letter of Intent), organisation itself or experts are visible on the skillnest.app

2.4 Scope boundaries and local responsibility

- The programme owner supplies the validated learning logic and core resources.

- The adopter remains responsible for local safety, equipment compliance, accessibility, safeguarding and data protection.
- Technology substitutions are permitted when learning outcomes remain achievable and the substitution is documented.
- Formal certification requires separate validation, examination and recognition arrangements unless explicitly included in the selected solution.
- Commercial terms, licensing and cost recovery must follow the rights attached to the final toolkit resources or global skillnest licensing rules.

3. Implementation Principles derived from the design, piloting and evaluation of re/upskilling programmes

The guide is grounded in practical implementation across different Central European regions, target groups and institutional settings. The design, piloting and evaluation of the re/upskilling programmes demonstrated that transfer is most reliable when a common quality core is preserved while format, language, examples, duration and equipment are adapted transparently.

Principle	Operational interpretation	Minimum evidence
Start from a real skill gap	Use evidence from learners, employers, educators or regional stakeholders; avoid selecting technology only because equipment is available.	Needs statement and target-group profile
Keep learning hands-on	Move quickly from explanation to making, programming, testing or troubleshooting.	Practical activity occupies the majority of delivery time
End with visible evidence	Use a prototype, file, demonstration, pitch, portfolio or documented process as an observable outcome.	Defined final output and review criteria
Preserve the learning mechanism	Retain the programme element that produces the intended learning, such as a challenge, iterative project, mentoring or final demonstration.	Essential-versus-adaptable decision record
Use formative facilitation	Support participants during the process and adapt scaffolding to entry competence.	Facilitator plan and observation notes
Assess proportionately	Match the depth of pre/post assessment and practical evidence to programme duration and purpose.	Assessment solution selected before recruitment
Combine technical and transversal skills	Embed teamwork, communication, planning and problem-solving in the technical task.	Explicit roles, milestones or presentation
Version and improve	Treat the first run as an evidence-generating implementation cycle.	After-action review and revised resource version

3.1 Lessons with direct implementation consequences

- Heterogeneous groups benefit from pre-assessment, differentiated tasks and balanced team formation.
- Mirrored pre/post questions are more useful than unrelated satisfaction-only surveys.
- Registration or stable matching codes are needed when individual learning gains are to be calculated.

- Short workshops need a reduced assessment package/solution so evaluation does not displace practical work.
- Equipment, software, wiring, consumables and starter files should be tested before participants arrive.
- Final projects should remain connected to taught content; activities with no visible role in the final task are often perceived as less useful.
- Company and expert participation works best with a clear, bounded role and realistic time commitment.
- Scaling should begin with repeated cohorts and facilitator development before increasing group size.

3.2 Implementation quality standard

FOUR NON-NEGOTIABLES

Every adopted workshop (pilot run) should have: (1) evidenced need, (2) explicit learning outcomes, (3) supervised practical activity, (4) proportionate assessment.

3.3 Illustrative Case Examples from Pilot Implementations

The following examples illustrate selected implementation experiences from the pilot phase. They are intended as representative examples and do not cover all pilot activities carried out within the project.

Pilot Example 1: Maker Engineering and Digital Manufacturing Engineering (BUT/strojLAB)

During the pilot implementation phase, Maker Engineering and Digital Manufacturing Engineering formats were delivered through 23 pilot runs involving 353 participant places and more than 5,500 cumulative participant-hours. Activities ranged from short introductory workshops to multi-week project-based learning formats focused on digital fabrication, engineering problem-solving and applied manufacturing skills.

The pilot experience showed that participants benefited most when practical activities remained directly connected to a clearly defined final project. The implementation also demonstrated the value of pre-assessment for team formation and differentiated support. These findings were subsequently reflected in the implementation principles and assessment recommendations presented in this guide.

Pilot Example 2: High School Competition and TechSprint (FabLab Brno/JINTEK)

The High School Competition and TechSprint pilots engaged secondary-school learners in challenge-based projects combining digital fabrication, prototyping and teamwork. Participants developed prototype solutions using technologies such as 3D printing, laser cutting and electronics.

The pilots demonstrated strong development of practical technical skills while also highlighting the importance of structured onboarding, balanced team formation and clearly defined team roles. Experience further showed that external stakeholders and companies can successfully contribute to educational activities when challenges and expectations are clearly defined from the beginning.

Pilot Example 3: Digital Tools in Vocational Training (Happylab Vienna)

The Digital Tools in Vocational Training programme was piloted through nine runs involving 67 apprentices and 189 hours of training. The programme connected CAD, 3D printing, laser cutting, robotics and introductory programming through a shared team-based prototype.

The pilot evaluation showed substantial competence gains across the assessed areas, particularly in laser cutting, 3D printing, robot programming and 3D modelling. Repeated delivery of a common learning format also generated valuable implementation knowledge and confirmed the transferability of the approach to different vocational education contexts.

4. Two Delivery Formats of the Guide

4.1 Guide format 1 – Step-by-step guide

The Step-by-step guide serves users who need more clarity. It is a sequence of short action cards, each with one decision, a short checklist, the expected output.

Card	Core action	Output
1. Define your case	Name the target group, need and programme owner.	One-sentence implementation case
2. Check readiness	Score facilities, people, safety, recruitment, assessment and sustainability.	Readiness decision
3. Select a solution	Compare the six validated programme families.	Selected solution and fallback
4. Protect the core	Identify essential and adaptable elements.	Adaptation record
5. Build the team	Assign programme, educator, technical, safety and evaluation roles.	Named implementation team
6. Prepare resources	Test equipment, software, files, materials and contingencies.	Delivery-ready checklist
7. Configure assessment	Choose mirrored questions, output evidence and matching method.	Assessment package/solution
8. Recruit and onboard	Communicate prerequisites, access, schedule, safety and expected output.	Confirmed cohort
9. Deliver and support	Use concise input, demonstration, hands-on work and feedback.	Completed programme run
10. Review and improve	Combine data, observations and participant/stakeholder feedback.	After-action review
11. Repeat and scale	Version resources, plan the next run and report adoption.	Sustainability decision

4.2 Guide format 2 – Comprehensive web-embedded document

This document is the detailed implementation reference. It is embedded or linked from the web guide. It contains the rationale and instruments that would guide Educators to create their own workshops. We have prepared a procedure on the website for the natural adoption of the toolkit https://skillnest.app/how-to

4.3 Linking the two formats

Web-guide element	Deep link in comprehensive guide	SkillNest action
Define your case	Chapters 2 and 5	Review programme information
Check readiness	Chapter 5 and Annex A	Review lab and expert requirements
Select a solution	Chapter 6	Search catalogue and programme pages
Prepare resources	Chapter 7 and Annexes B-D	Access registered/educator materials
Configure assessment	Chapter 8 and Annex E	Open or configure pre/post assessment
Review and scale	Chapter 11 and Annex F	Record uptake and contact programme owner

4.4 Accessibility and language

- Use action-led headings and short sentences in the web format.
- Provide text alternatives for screenshots and diagrams.
- Avoid relying on colour alone for status or meaning.
- Publish key implementation content in the relevant partner and adopter languages.
- Keep a stable English reference version for cross-border comparability.
- Show document version and last review date in both formats.

5. Step-by-Step Implementation Pathway

The pathway below is the core operating model of the guide. An organisation may move quickly through familiar stages, but it should not skip the associated decision gate. Each stage produces a small piece of evidence that makes the first run auditable, improvable and transferable.

Stage	Action	Main task	Required output	Decision gate
0	Appoint an implementation owner	Confirm authority, time, internal sponsor and reporting route.	Named owner and sponsor	Owner can commit resources or escalate decisions
1	Define the implementation case	Describe target group, skill gap, context and intended value.	Implementation case	Need is evidenced and aligned with mission
2	Assess readiness	Review people, facilities, safety, recruitment, assessment and sustainability.	Readiness score and gap plan	Critical readiness gaps have owners
3	Select the programme package/solution	Compare target group, mechanism, duration, resources and transfer fit.	Selected package/solution and fallback	Selection rationale is documented
4	Adapt while protecting the core	Localise language, examples, schedule, software or equipment.	Adaptation record	Essential learning mechanism remains intact

Stage	Action	Main task	Required output	Decision gate
5	Plan delivery and risks	Assign roles, sequence sessions, test resources and prepare contingencies.	Delivery plan and risk register	Safety and critical dependencies are controlled
6	Configure SkillNest and assessment	Prepare pages, access, surveys, matching and data handling.	Published information and assessment package/solution	Participant journey has been tested
7	Recruit and onboard participants	Use suitable channels and communicate prerequisites and expectations.	Confirmed cohort and onboarding record	Participants can make an informed commitment
8	Deliver the programme	Combine short inputs, demonstrations, practical work and feedback.	Completed run and practical outputs	Learning outcomes were addressed
9	Evaluate and improve	Triangulate survey, practical, observation and feedback evidence.	After-action review and change list	Limitations and changes are explicit
10	Repeat, transfer and scale	Version resources, develop facilitators and plan sustainable continuation.	Next-run and scaling decision	Quality can be maintained with available capacity

5.0 Appoint an implementation owner

Confirm authority, time, internal sponsor and reporting route.

- Nominate one accountable implementation owner.
- Confirm an internal sponsor who can resolve budget, staffing or partnership barriers.
- Set a decision date for first-run approval.
- Create one shared implementation record rather than dispersed email decisions.

Required output: Named owner and sponsor. **Decision gate:** Owner can commit resources or escalate decisions.

5.1 Define the implementation case

Describe target group, skill gap, context and intended value.

Question	Implementation note
Who should learn?	Define group, size, age, prior experience, language and access barriers.
What should change?	State 3–8 observable learning outcomes, not only technologies covered.
Why now?	Link the need to learner demand, employer evidence, curriculum or regional priorities.
What should participants produce?	Specify a prototype, file, demonstration, pitch, portfolio or validated process.
What happens after?	Identify a next course, project, workplace application or independent access route.

Required output: Implementation case. **Decision gate:** Need is evidenced and aligned with mission.

5.2 Assess readiness

Review people, facilities, safety, recruitment, assessment and sustainability.

Domain	Scoring anchor
Strategic fit	0 = unclear; 1 = plausible; 2 = evidenced and sponsored
Educator capacity	0 = unavailable; 1 = external/partial; 2 = named and competent
Facilities and equipment	0 = missing; 1 = gaps manageable; 2 = tested and available
Safety and safeguarding	0 = unresolved; 1 = plan exists; 2 = approved and assigned
Recruitment access	0 = no channel; 1 = partner-dependent; 2 = confirmed route
Assessment capacity	0 = no plan; 1 = basic survey; 2 = survey plus practical evidence
Sustainability	0 = one-off only; 1 = conditional repeat; 2 = repeat pathway identified

READINESS RULE

Do not proceed while any safety or safeguarding domain scores 0. For other domains, a score of 0 requires a named mitigation, owner and deadline before recruitment begins.

Required output: Readiness score and gap plan. **Decision gate:** Critical readiness gaps have owners.

5.3 Select the programme solution

Compare target group, mechanism, duration, resources and transfer fit.

Use Chapter 6 to compare solutions. Select by learning mechanism and target-group fit before selecting by equipment. Record one fallback format in case the preferred duration, educator or machine cannot be secured.

Required output: Selected solution and fallback. **Decision gate:** Selection rationale is documented.

5.4 Adapt while protecting the core

Localise language, examples, schedule, software or equipment.

Preserve	Adapt with documentation
Learning outcomes	Examples, terminology and local industry context
Hands-on or project mechanism	Timetable and session length
Final practical evidence	Software, machine or material where outcomes remain achievable
Safety and supervised access	Group size within safe staffing limits
Assessment purpose	Number of questions and collection method

Required output: Adaptation record. **Decision gate:** Essential learning mechanism remains intact.

5.5 Plan delivery and risks

Assign roles, sequence sessions, test resources and prepare contingencies.

- Freeze the first-run scope early enough to test all files, accounts and machines.
- Prepare a low-technology or alternative-machine contingency for non-critical equipment failure.
- Schedule setup, cleanup, data collection and participant movement—not only teaching time.
- Confirm software licences, user accounts, material quantities, PPE and accessibility adjustments.

Required output: Delivery plan and risk register. **Decision gate:** Safety and critical dependencies are controlled.

5.6 Configure SkillNest and assessment

Prepare pages, access, surveys, matching and data handling.

Publish accurate public information, check registered and educator access, configure pre/post assessment and test the complete participant journey. Exact administrative procedures are described in Chapter 9 and require final verification by the platform owner.

Required output: Published information and assessment solution. **Decision gate:** Participant journey has been tested.

5.7 Recruit and onboard participants

Use suitable channels and communicate prerequisites and expectations.

- State prerequisites honestly and offer a beginner route where possible.
- Explain duration, attendance expectations, physical access, language, safety and expected output.
- Use schools, employers, community organisations and existing FabLab networks as trusted recruitment channels.
- Collect only registration data needed for delivery and evaluation.
- Send a short pre-arrival task or assessment only when it will be used in facilitation.

Required output: Confirmed cohort and onboarding record. **Decision gate:** Participants can make an informed commitment.

5.8 Deliver the programme

Combine short inputs, demonstrations, practical work and feedback.

Delivery phase	Facilitator action
Open	Connect objectives to the participant context; confirm safety and final output.
Demonstrate	Show the complete workflow briefly before dividing it into supported steps.
Practice	Keep participants active; use staged tasks and optional extensions.
Troubleshoot	Ask learners to identify evidence and test corrections before giving the answer.

Delivery phase	Facilitator action
Review	Make outputs visible and connect them explicitly to learning outcomes.
Close	Complete post-assessment and explain next access or application opportunities.

Required output: Completed run and practical outputs. **Decision gate:** Learning outcomes were addressed.

5.9 Evaluate and improve

Triangulate survey, practical, observation and feedback evidence.

- Compare mirrored pre/post results only for items actually taught.
- Report response counts and whether responses were individually matched.
- Triangulate self-assessment with practical outputs and facilitator observation.
- Identify which adaptations helped, which created friction and which affected comparability.
- Translate findings into a short, owned change list before the next run.

Required output: After-action review and change list. **Decision gate:** Limitations and changes are explicit.

5.10 Repeat, transfer and scale

Version resources, develop facilitators and plan sustainable continuation.

- Repeat with a comparable cohort before making major scale claims.
- Develop additional facilitators through observation and co-delivery.
- Version the core resource set and preserve local variants separately.
- Share transferable improvements with the programme owner and SkillNest contact.
- Confirm financing, facility access, staff time and content maintenance for the next 12 months.

Required output: Next-run and scaling decision. **Decision gate:** Quality can be maintained with available capacity.

6. Selecting the Right Programme Solution

The Digital Skills Transformation Toolkit consolidates six jointly developed programme solutions. The adopter should choose the closest learning mechanism and context, then adapt it. Each specific solution is a **validated starting point** rather than a fixed franchise. Each solution corresponds to one of the six pilot re/upskilling programme families designed, tested, evaluated and refined by the partnership during the project. Together, they provide transferable approaches for different target groups, learning contexts and levels of technical complexity. Each solution may include several modules, variants or delivery formats that together form a coherent implementation model adapted to specific local needs.

Solution	Target group	Typical duration	Primary mechanism	Equipment	Best-fit context
BUT / strojLAB - ME and DME	Students, professionals, secondary schools	2 hours to multi-week	Project, studio, challenge and professional practice	Low to very high	FabLab, university or professional technical training
FabLab Brno/Jintek - Competition and TechSprint	Secondary-school classes and teams	3 days to multi-month	Authentic challenge and team prototype	Medium to high	School-FabLab or company-supported STEM programme
Happylab - Digital Tools in VET	Apprentices	3 days	Shared multi-technology robotic prototype	High	VET and apprenticeship introduction
brigk - Digital Transformation Skills	SMEs, students, apprentices	1 hour to multi-month	Technology entry plus mentored innovation	Low to high	Innovation hub, incubator or SME support
NOI - LEARN IT! / MAKE IT!	Adults, employees, artisans, SMEs	Short to multi-session	Structured technical course or finished object	Medium to high	Regional bilingual course catalogue
FabLab Zagreb - Idea to Prototype	Secondary schools and outreach groups	Independent modules	Guided modular prototyping	Low to medium	School outreach, mobile or resource-limited settings

6.1 Selection questions

- Which solution uses the learning mechanism most appropriate to the intended outcomes?
- Is the target group comparable in age, motivation, prior experience and institutional setting?
- Can the adopter provide the minimum educator, facility and safety conditions?
- Can the programme duration accommodate meaningful hands-on work and a visible output?
- Which elements must change for language, culture, equipment, accessibility or labour-market relevance?
- Is there a lower-equipment or shorter fallback that still protects the intended learning?

6.2 Solution-specific implementation notes

Maker Engineering and Digital Manufacturing Engineering

Essential: Framing by an engineering perspective, a real fabrication task, clear learning outcomes, direct equipment use, facilitator feedback and a documented practical result. **Adaptable:** Technology, duration, difficulty, target group (partially), challenge brief, delivery schedule and recognition method.

Minimum implementation condition: Technical competence in the selected process, ability to supervise equipment and safety, and experience with project-based facilitation. Depends on the selected module: computers and CAD tools, desktop or robotic 3D printing, 3D scanners, CNC/laser equipment, electronics and standard FabLab PPE.

High School Competition and TechSprint

Essential: Authentic challenge, team-based prototyping, access to fabrication tools, milestone support and final presentation. **Adaptable:** Challenge source, programme length, number of technologies, class size, jury composition and competition element.

Minimum implementation condition: Multi-technology facilitation, ability to support heterogeneous classes, and experience structuring team roles and milestones. FabLab access with 3D printers, laser cutter, computers, electronics and suitable materials.

Digital Tools in Vocational Training

Essential: Connected multi-technology prototype, beginner-accessible progression, iterative challenges and final demonstration. **Adaptable:** Robot challenge, optional sensors, programming depth, pace and organisational recruitment route.

Minimum implementation condition: Competence across digital fabrication and introductory programming; close facilitation for beginners; ability to stage challenges. Computers, 3D printers, laser cutter, Calliope mini and movement kits, hand tools and workshop facilities.

Digital Transformation Skills Programme

Essential: A clear skill or challenge focus, immediate practical application, facilitator support and an explicit reflection or demonstration. **Adaptable:** Technology topic, duration, challenge ownership, mentoring cadence, number of prototype iterations and participant profile.

Minimum implementation condition: Technology-specific competence plus innovation facilitation, mentoring and the ability to work with company-defined problems. Selected workshop equipment, computers and software, electronics kits, 3D printers, laser/CNC tools and prototyping materials.

LEARN IT! and MAKE IT!

Essential: Clearly defined competence or object, supervised hands-on use, participant autonomy and a reusable assessment core. **Adaptable:** Course subject, language, entry level, object design, session structure and participant recruitment channel.

Minimum implementation condition: Subject competence, bilingual or language-adaptable delivery, and ability to move between structured instruction and project coaching. Depends on the course: computers and CAD/CAE software, CNC equipment, 3D printers, laser cutter, electronics and woodworking tools.

Idea to Prototype with Cutting-Edge Fabrication Technology

Essential: Accessible problem or task, guided practical work, learner output, inclusive support and local safety arrangements. **Adaptable:** Module combination, equipment intensity, school schedule, language, delivery location and project theme.

Minimum implementation condition: Inclusive facilitation, school coordination, basic competence across the selected module and ability to operate with constrained local infrastructure. Portable or local access to computers, 2D/3D fabrication tools, basic electronics, recycled plastic tools/materials and low-cost prototyping supplies.

6.3 When no solution fits exactly

Combine modules only when one organisation remains accountable for the complete learner journey. Start with one solution as the backbone, borrow clearly identified modules from another, align learning outcomes and avoid duplicate assessment. Record the hybrid design as a local variant rather than presenting it as an unchanged DiSTT solution.

7. Detailed Operational Planning

7.1 Minimum implementation team

Role	Accountability	May be combined with
Implementation owner	Scope, resources, decisions, partner coordination and final record	Programme coordinator
Lead educator	Learning outcomes, facilitation, differentiation and final review	Assessment lead
Technical / lab lead	Equipment readiness, files, materials, setup and troubleshooting	Safety lead where locally permitted
Safety / safeguarding lead	Risk assessment, induction, PPE, minors and incident procedure	Institutional safety officer
Assessment lead	Questions, consent, matching, response monitoring and analysis	Lead educator
SkillNest/content contact	Pages, access, resources, links and support requests	Implementation owner
External stakeholder	Challenge relevance, expert input, jury or application feedback	Optional but recommended

7.1.1 Educator recruitment, onboarding and training

Educators should be selected according to the requirements of the programme. The minimum profile should include relevant subject knowledge, practical familiarity with the technologies used, the ability to facilitate hands-on and project-based learning, and any safety qualification required by the facility. Where one person cannot cover all areas, the delivery team should combine a lead educator with a technical specialist or workshop assistant.

Onboarding should include four steps: orientation to the programme objectives and target group; review of the teaching materials, prerequisites, schedule, equipment, safety procedures, assessment methods and SkillNest functions; practical rehearsal of the core activities; and a documented readiness check. Before delivery, educators should complete or test the main practical task themselves, verify digital files, machines and consumables, and agree on team roles, participant-to-facilitator ratios, escalation procedures and fallback activities.

The first delivery by a new educator should be co-facilitated or observed by an experienced colleague unless equivalent delivery experience has already been demonstrated. A short debrief should follow the training to record difficulties, participant feedback and required changes. Updated local delivery notes should then be shared with other educators and used when preparing subsequent runs.

7.2 Planning backwards from the final output

Define the practical output and acceptance criteria.
Identify the knowledge and skills needed to produce it.
Select the demonstrations, exercises and milestones that build those skills.
Estimate machine time, educator attention and failure/rework time.

Add assessment, setup, breaks, cleanup and reflection.
Remove activities that do not support the outcomes or the final output.

7.3 Equipment and materials readiness

- Verify machine condition, calibration, maintenance status and local operating permission.
- Test the exact software version, licence, account and starter file on participant devices.
- Prepare consumables for the planned run plus a reasonable failure allowance.
- Create labelled kits where participants would otherwise queue for small components.
- Prepare sample outputs showing acceptable quality and common failure modes.
- Separate participant-facing instructions from educator notes, answers and recovery procedures.
- Define a productive alternative task if a non-critical machine becomes unavailable.

7.4 Group size and facilitator ratio

Capacity should be determined by the narrowest operational constraint: safe machine access, educator attention, available workstations, material preparation or the number of participants who can remain meaningfully active. Increasing registration capacity without changing the workflow can reduce learning to observation.

CAPACITY RULE

If participants wait for equipment, redesign the workflow with parallel stations, team roles, simulation, sample data or staggered machine access before increasing cohort size.

7.5 Communication and recruitment

Communication is an integral part of programme implementation, not only a promotional activity. It supports participant recruitment, preparation and retention, stakeholder involvement and the wider uptake of the programme. For each training run, the communication plan should be adapted to the target group and should clearly state the expected learning outcome, prerequisites, practical activities, duration, available capacity, registration process and contact person.

Audience	Message emphasis	Useful channel
Learners / individuals	Practical outcome, prerequisites, time, access and next step	SkillNest, social media, newsletters, community partners
Schools / VET	Curriculum fit, class logistics, safeguarding and teacher role	Direct outreach, teacher networks, regional education bodies
Companies / SMEs	Skill gap, application, employee time and expected business relevance	Business networks, chambers, expert contacts, direct invitation
Educators	Reusable resources, facility needs, assessment and support	FabLab networks, professional communities, partner referrals

Before communication is published, the programme coordinator should verify that all information corresponds to the actual capacity, equipment, accessibility, costs and safety requirements of the

training. After delivery, registration sources, attendance, recurring questions and participant feedback should be reviewed to determine which messages and channels were effective and what should be changed for the next run.

7.5.1 Dissemination and community engagement

Each organisation implementing a DiSTT training programme should prepare a short dissemination and community engagement plan before recruitment begins. The plan should identify the target audiences, communication objectives, key messages, channels, timing, responsible persons, calls to action and evidence to be retained. Calls to action should be specific, such as registering for a workshop, accessing materials through SkillNest, contacting a local organiser, contributing an industrial challenge or adopting a training programme.

Community engagement should be treated as a two-way process. Implementers should collect feedback from participants, educators, schools, companies and regional innovation actors through short surveys, debriefing sessions, stakeholder meetings or the SkillNest contact channel. A designated programme owner should review the feedback and translate relevant findings into updates to workshop descriptions, prerequisites, teaching materials, assessment questions or delivery arrangements.

Partners and adopting organisations should record dissemination activities, audiences reached, registrations and attendance, educator enquiries, external reuse of programmes and available SkillNest uptake data. These findings should be reviewed periodically to identify successful channels, document transferable examples and improve future communication.

7.6 Risk management

The following table should be used as a starting point for a programme-specific risk assessment. Risks should be reviewed during programme preparation, before participant recruitment and immediately before delivery. Each relevant risk should have an assigned owner, an assessment of likelihood and impact, a preventive measure, a trigger for action and a practical contingency response.

Risk	Prevention	Contingency
Low enrolment	Recruit through trusted partners; confirm value and prerequisites	Merge cohorts, reschedule or use outreach format
Wide entry-skill variation	Use pre-assessment and transparent prerequisites	Balanced teams, staged tasks and extensions
Equipment failure	Pre-test, maintain and prepare spares	Alternative machine, sample data or offline task
Software/account failure	Test licences and logins on actual devices	Guest accounts, offline files or demonstration path
Safety incident	Risk assessment, induction, supervision and PPE	Stop activity and follow local incident procedure

Risk	Prevention	Contingency
Incomplete post-assessment	Reserve time before participants leave	Send one follow-up; report response limitation
External expert cancellation	Confirm bounded role and backup date/person	Educator-led review using shared criteria
Programme too dense	Prioritise outcomes and rehearsal	Remove optional module; protect practical output

The Pilot Runs identified recurring risks including uneven prior knowledge, over-scoped assignments, participant no-shows, equipment or software failure, insufficient facilitator capacity, safety issues and incomplete post-training assessment. Incidents, near misses and significant deviations from the delivery plan should be documented and discussed during the post-training debrief. The risk register and local implementation instructions should then be updated before the next delivery.

7.7 First-run approval gate (checklist)

- ☐ Implementation owner and educator approve the final scope.
- ☐ Safety and safeguarding requirements are complete.
- ☐ Equipment, accounts, files and consumables have passed a dry run.
- ☐ Public programme information and participant instructions are accurate.
- ☐ Assessment and data-handling arrangements are configured.
- ☐ Critical risks have owners and workable contingencies.

8. Assessment, Evaluation and Quality Assurance

8.1 Assessment purpose

DiSTT assessment is primarily formative and evaluative. It helps educators understand entry conditions, support learning and improve the programme. Unless a solution includes validated examination arrangements, self-assessment and workshop outputs should not be presented as a formal qualification.

8.2 Minimum package by format

Format	Minimum evidence	Recommended extension
1–4 hour workshop	3–5 mirrored competence items and one usefulness question	Short facilitator note
1–3 day intensive	5–8 mirrored items, practical-output check and satisfaction/open feedback	Matching code and application-intention question
Multi-week studio	Baseline, milestone reviews, output rubric and post-assessment	Portfolio plus peer/expert review

Format	Minimum evidence	Recommended extension
Competition / sprint	Baseline, team observation and final prototype/pitch criteria	Jury feedback and team reflection
Professional programme	Technical baseline, practical criteria and post-assessment	Recognition, employer feedback and follow-up application

8.3 Building mirrored pre/post questions

- Select predesigned skillGaps from the list (system add 3 questions per skillGap for comparability across workshops)
- Write one statement for each central learning outcome.
- Use the same wording and scale before and after delivery.
- Anchor the five-point scale in observable independence.
- Avoid asking about tools or concepts not addressed in the programme.
- Use no more than three common transversal items unless they are central outcomes.
- Decide before recruitment whether responses must be matched individually

Recommended anchor: 1 = no understanding / cannot perform; 2 = limited understanding; 3 = can perform with support; 4 = mostly independently; 5 = independently and able to explain or adapt.

8.4 Triangulating evidence

Evidence	What it shows	Main limitation
Pre/post self-assessment	Perceived confidence and development	Response shift and self-rating bias
Practical output	Application in a defined task	May reflect team rather than individual contribution
Facilitator observation	Process, safety, troubleshooting and collaboration	Requires clear criteria and consistent observation
Participant feedback	Usefulness, pacing and experience	Satisfaction is not competence
Stakeholder/expert feedback	External relevance and transfer potential	Perspective may be context-specific

8.5 Interpretation and reporting

- Report pre and post response counts and the number of matched pairs.
- Describe the scale, timing and administration method.
- Separate perceived learning gain from objective or practical evidence.
- Do not over-interpret small or unmatched samples.
- Document logistical causes of missing data.
- Use findings to change a specific part of the next run.

8.6 Quality assurance cycle

Before delivery: verify outcomes, resources, assessment and participant information.
During delivery: record deviations, incidents, bottlenecks and adaptations.
Immediately after: preserve response counts, outputs and facilitator observations.
Within two weeks: conduct an after-action review and agree changes.
Before the next run: publish or distribute the revised version and archive the superseded version.

8.7 Recommended implementation indicators

Area	Indicator
Reach	Registered, attended and completed participants; target-group profile
Delivery	Planned versus delivered hours; completion of practical output
Assessment	Pre/post response rate; matched pairs; practical evidence coverage
Learning	Change in mirrored items plus rubric or observation result
Experience	Usefulness, satisfaction and open improvement themes
Transfer	Intention and evidence of application after the programme
Sustainability	Repeat run scheduled; educator capacity; resource and financing status

9. Implementing through SkillNest

SkillNest is the digital access point for the toolkit. It supports discovery, structured workshop information, assessment, role-based materials and connections between programmes, labs and experts. The implementation team should test the full participant and educator journey before recruitment opens.

9.1 Find the relevant pathway

Start at skillnest.app and use the stakeholder pathways and RE/UP programme information to clarify whether the user is acting as an Learner (trainee) or educator (e.g. adopting organisation).

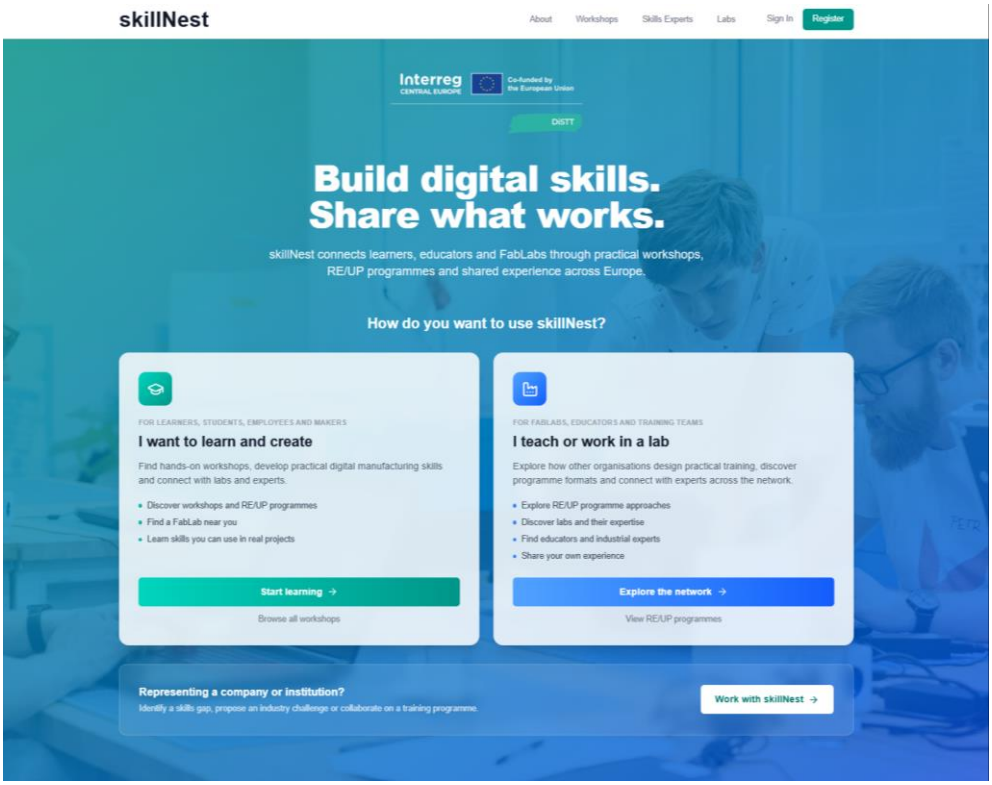


Figure 1. SkillNest landing page and stakeholder pathways.

9.2 Discover and compare workshops

Use the catalogue, search and available filters to identify relevant workshops, skill-gap tags, labs and delivery formats. Compare workshop metadata with the readiness and solution - selection criteria in Chapters 5 and 6.

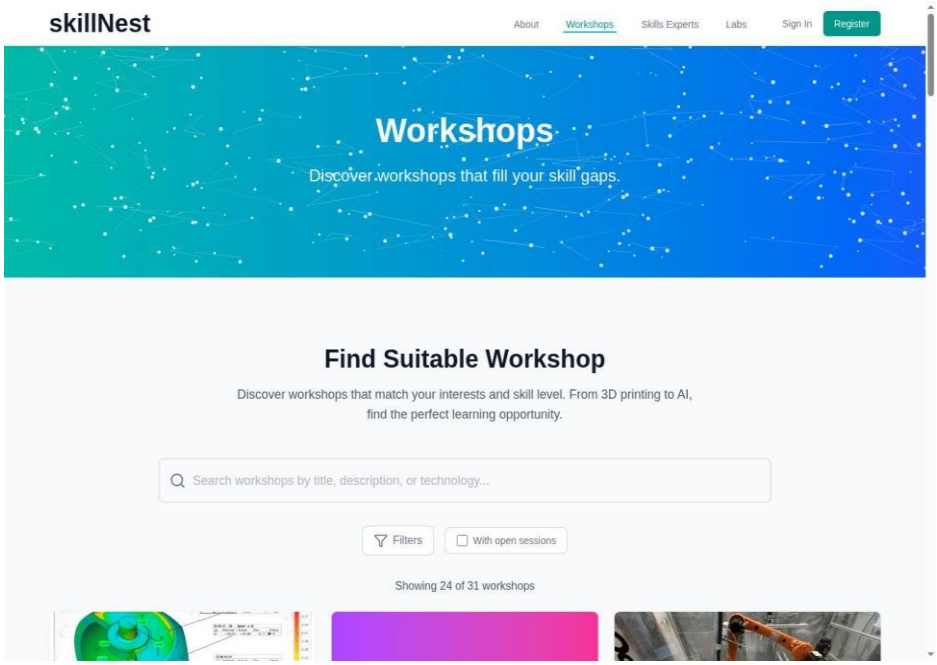


Figure 2. Workshop catalogue used for programme discovery.

9.3 Verify the workshop detail

Before adopting or promoting a workshop, verify learning objectives, prerequisites, target group, duration, capacity, organisation, educators, experts, assessment links and material access. Incomplete metadata should be corrected before public recruitment.

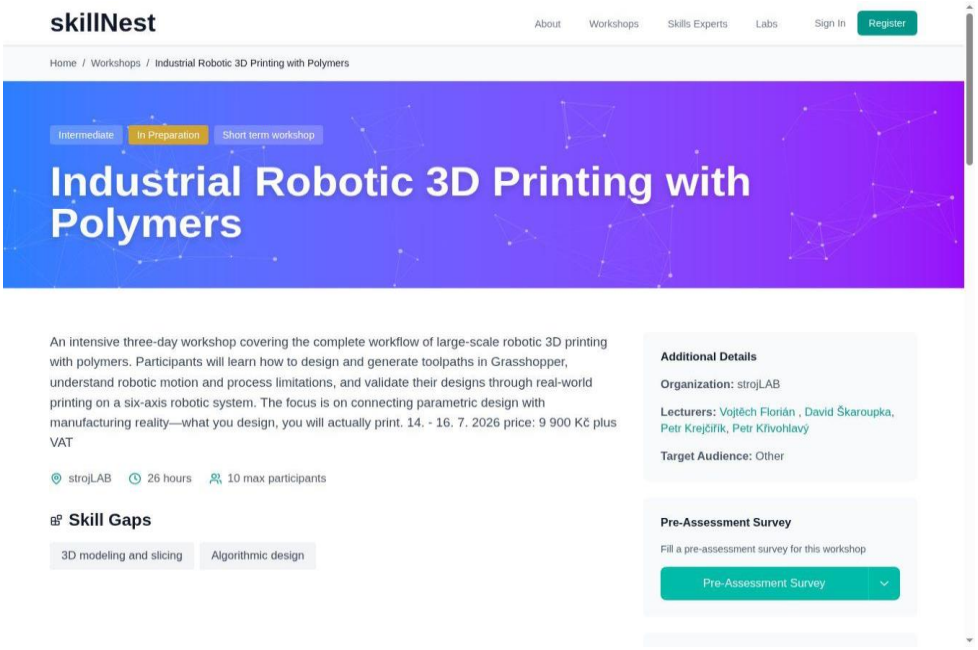


Figure 3. Workshop detail and implementation metadata.

9.4 Configure the assessment journey

Participants should receive the pre-assessment early enough for the educator to use the results. Reserve time for post-assessment before the formal end of the programme. Test survey links, scale labels, language and the chosen matching method.

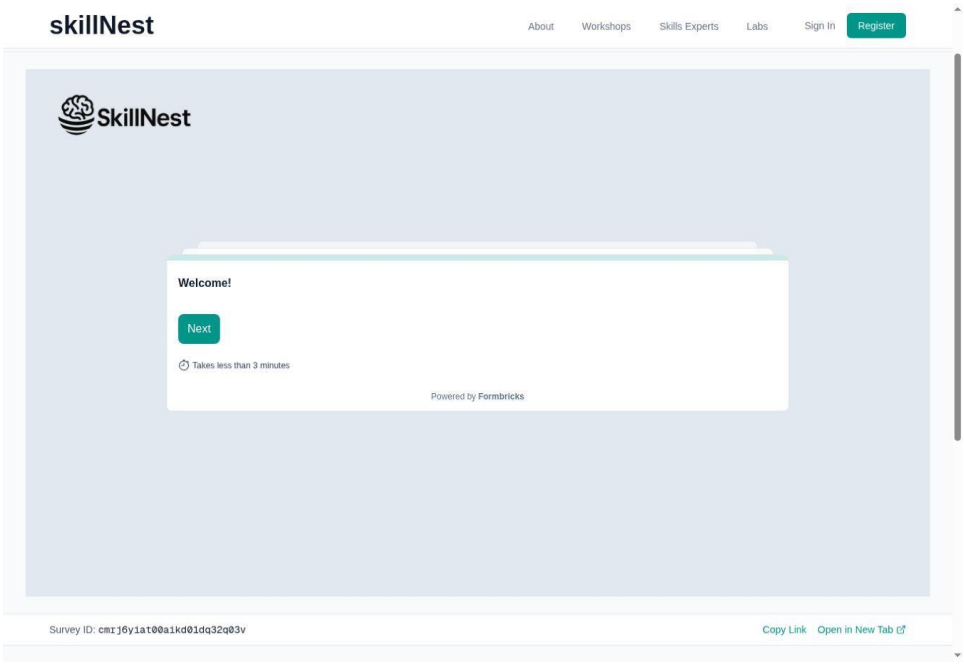


Figure 4. Embedded pre-assessment environment.

9.5 Access and distribute materials

Confirm which resources are public, registered-user or educator-only. Use a versioned participant package and a separate educator package when facilitation notes, answer keys or recovery procedures should not be distributed publicly.

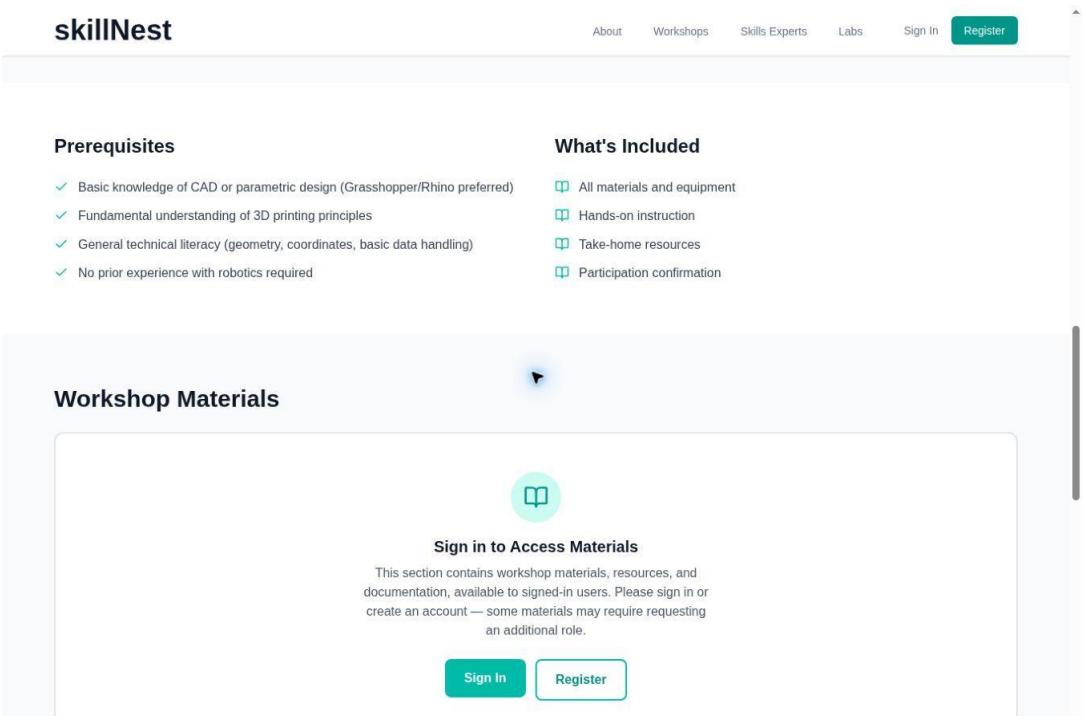


Figure 5. Role-gated access to learning and facilitation materials.

9.6 Educator and administrator procedures

After registering on skillNest, submitting an application for the role of educator and its approval, the Dashboard is accessible on the skillNest platform with the role of "educator", where workshops can be managed.

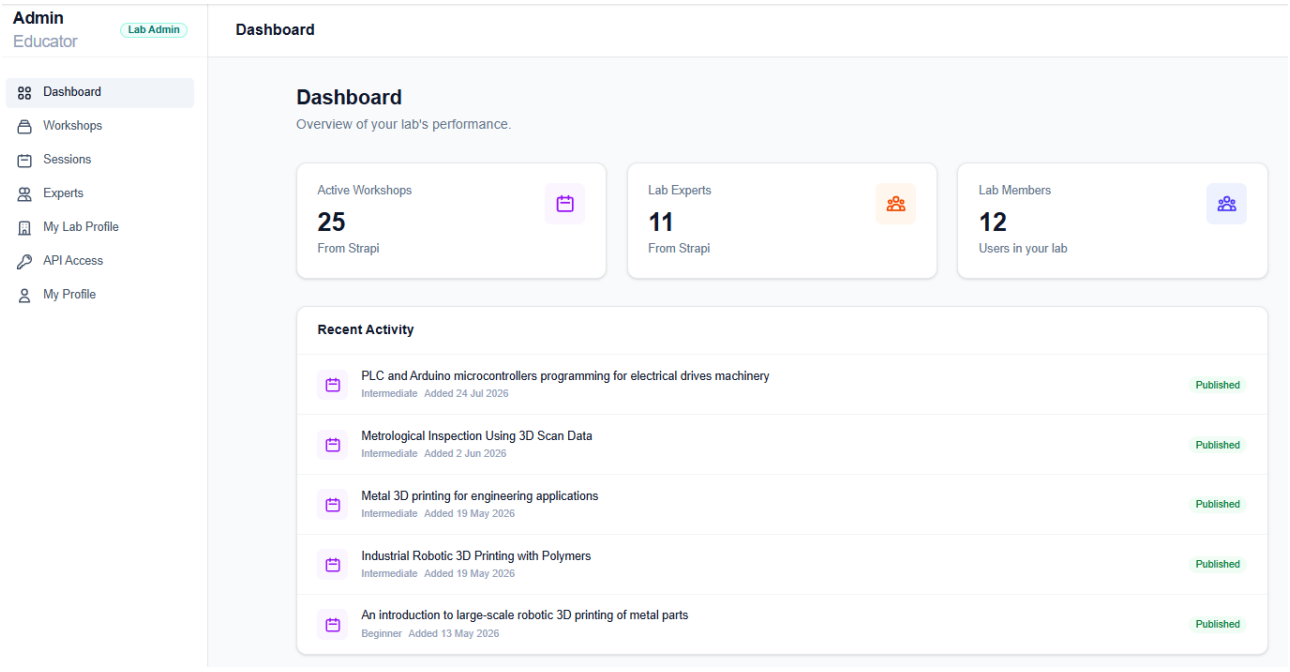


Figure 6. . SkillNest educator dashboard.

In the dashboard menu "workshops", after click the “Create new workshop” following form for the setting up a new workshop appears.

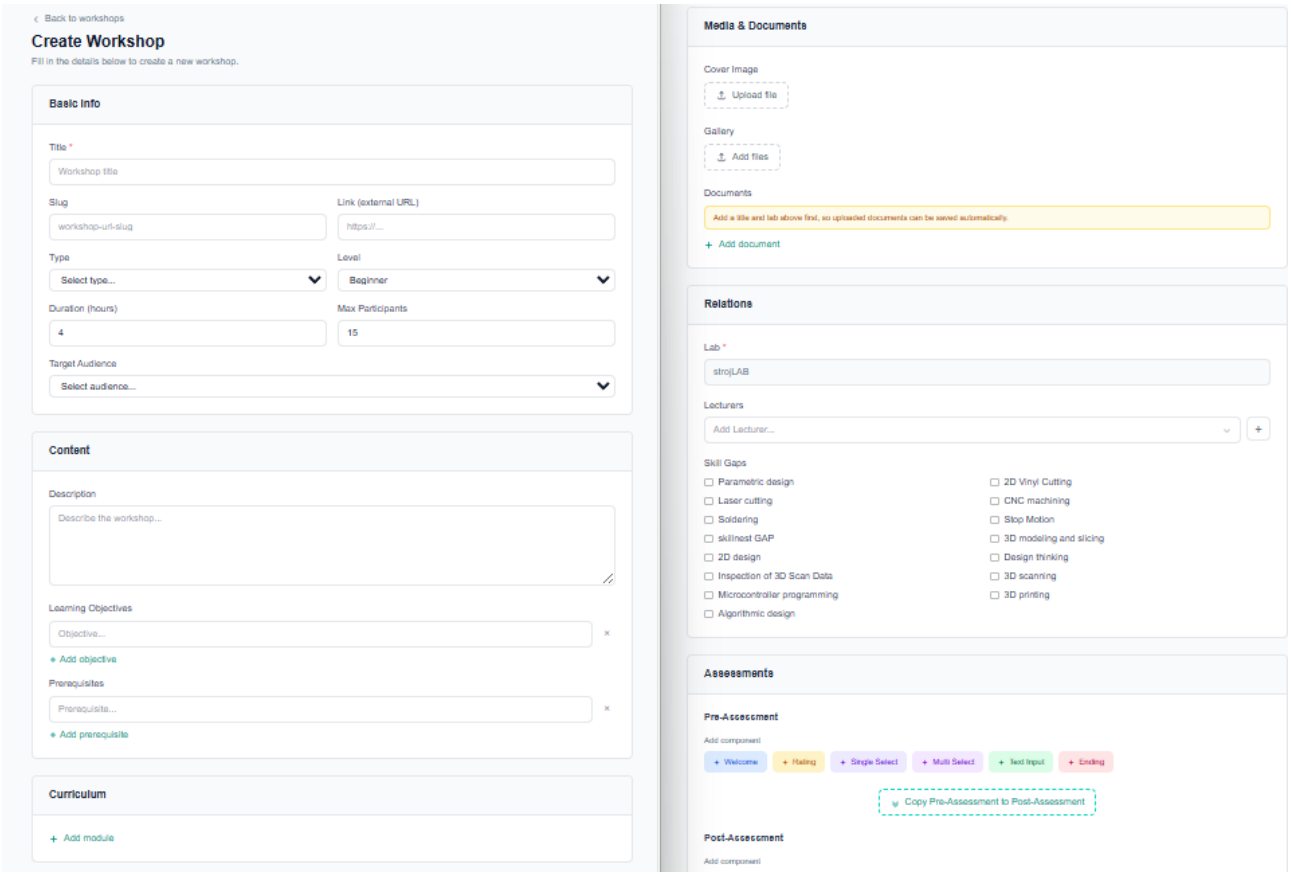


Figure 7. SkillNest educator dashboard - creating workshop.

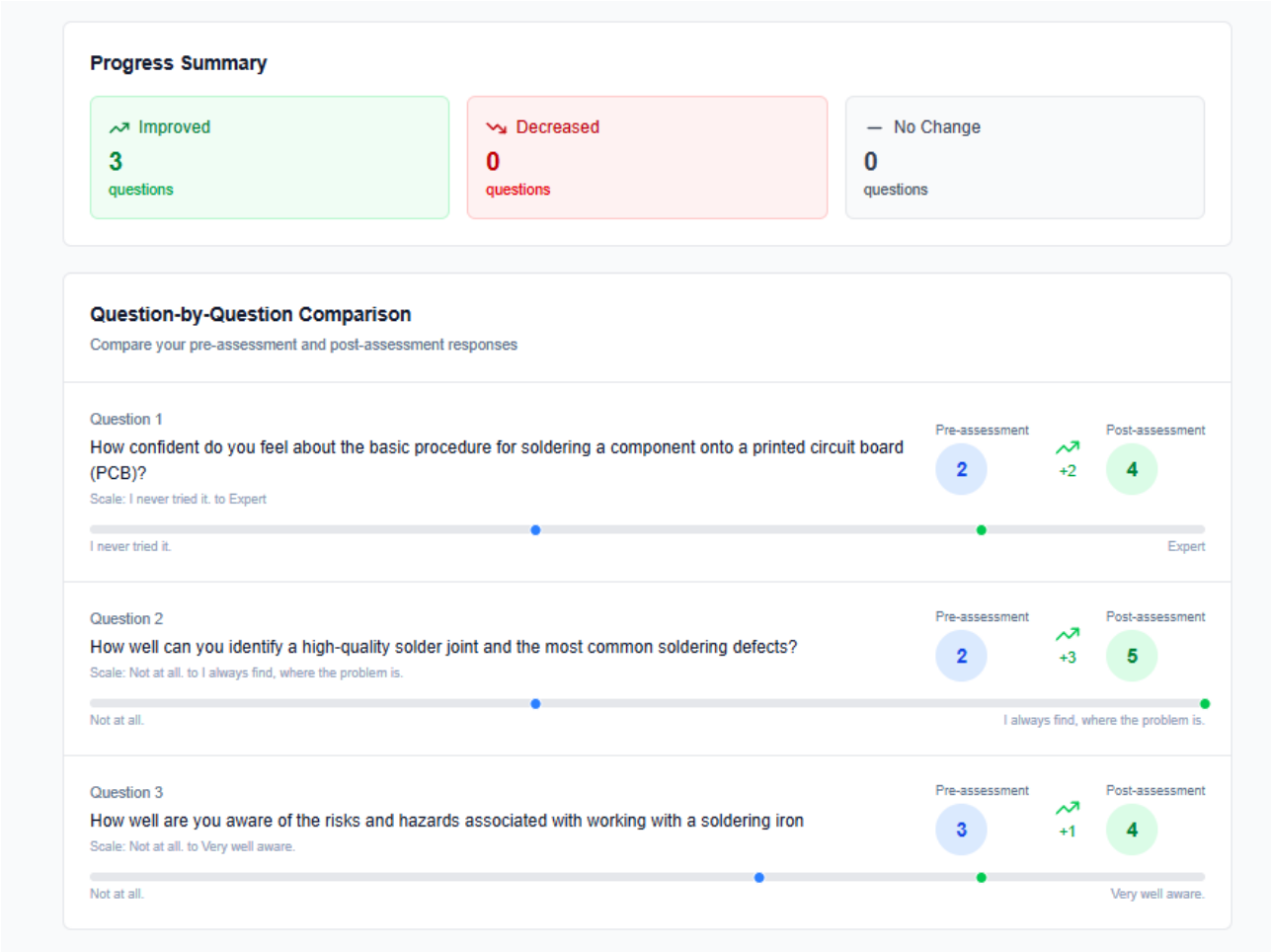


Figure 8. SkillNest learner statistics - self-evaluation report

9.7 Pre-publication content check

- ☐ Title, summary and target group are accurate.
- ☐ Prerequisites, duration, capacity and delivery format are explicit.
- ☐ Learning outcomes match the assessment questions.
- ☐ Organisation, educator, expert and lab links are current.
- ☐ Participant and educator materials have the correct access level and version.
- ☐ Pre/post assessment links work in the intended language.
- ☐ Contact and registration routes have been tested from a non-admin account.

10. Inclusion, Ethics and Data Protection

10.1 Inclusive implementation

- Describe prerequisites without equating previous access to technology with ability.
- Offer staged beginner tasks and optional extensions for experienced participants.
- Use visual demonstrations, readable instructions and more than one way to ask for help.
- Balance team roles so confident machine users do not monopolise the practical task.
- Provide reasonable adjustments and alternative ways to demonstrate learning.
- Use inclusive language and imagery and monitor participation patterns.
- Use local languages where they materially improve participation and safety.

10.2 Minors and vulnerable participants

School and youth formats require local safeguarding, consent, supervision and communication arrangements. Assessment reporting should use aggregated data unless individual identification is necessary, lawful and clearly communicated.

10.3 Responsible assessment data

Principle	Implementation requirement
Purpose limitation	Collect data only for delivery, learning support, evaluation and agreed uptake monitoring.
Data minimisation	Avoid names where an anonymous matching code is sufficient.
Transparency	Explain purpose, access, retention and contact point before collection.
Access control	Limit identifiable results to authorised roles.
Aggregation	Use grouped reporting for public or consortium communication.
Retention	Delete or anonymise identifiable data according to the approved schedule.
Accuracy	Allow correction of registration data and document analytical limitations.

10.4 Intellectual property and third-party content

- Use only software, images, files and teaching materials that may lawfully be shared with the intended audience.
- Mark third-party licences and attribution requirements in educator resources.
- Clarify ownership and permitted use of participant prototypes, photographs and portfolios.
- Do not publish confidential company challenge information without approval.
- Separate open toolkit materials from locally restricted or commercially licensed resources.

11. Sustainability, Transfer and Scaling

11.1 Plan sustainability before the first run

Sustainability is stronger when the first run is designed as the beginning of a local offer rather than a one-off event. The implementation owner should identify the post-project owner, likely participant pipeline, educator capacity, facility access, annual content-review need and a realistic financing route before delivery.

11.2 Sustainability dimensions

Sustainability requires more than keeping training materials available online. The adopting organisation should assign responsibility for maintaining the programme content, educator capacity, equipment and software compatibility, stakeholder relationships and access to the SkillNest resources. It should also identify how future delivery, material costs, technical support and educator preparation will be resourced.

Dimension	Key question	Evidence of durability
Strategic	Does the programme support the organisation's mission and regional need?	Named owner and inclusion in an annual plan
Operational	Can staff, machines, rooms and materials support repetition?	Reserved capacity and replenishment process
Pedagogical	Can another educator deliver the format consistently?	Versioned guide, co-delivery and facilitator handover
Financial	How will preparation, educator time and consumables be covered?	Budget line, fee, sponsor or programme funding
Digital	Will links, files, accounts and assessments remain maintained?	Content owner and review schedule
Network	Who provides recruitment, expertise, challenges or progression?	Active school, employer, FabLab or policy partner

Sustainability measures should be reviewed periodically using practical evidence such as the number of training runs, active educators, participants reached, stakeholder involvement, feedback received and reuse or adaptation of the programme. Outdated links, files, software instructions and safety information should be corrected, while substantial programme changes should be versioned and documented so that educators can identify the current approved materials.

11.3 Transfer to another territory or target group

Transfer does not require identical implementation. Successful transfer is achieved when the core learning mechanism and intended learning outcomes are preserved while delivery arrangements are adapted to local conditions. Differences in language, institutional context, participant characteristics, available equipment and regional labour-market needs should be addressed transparently and documented to support future comparison and continuous improvement.

Document the original context and the reason for transfer.
Compare target-group characteristics, institutional setting and labour-market relevance.
Identify regulatory, language, safety, equipment and accessibility differences.
Preserve the learning mechanism and revise examples, pacing and support.
Pilot with one cohort and collect the common assessment core.
Review with the original programme owner where adaptation is substantial.
Publish or record the local variant and its evidence.

11.4 Scaling without quality loss

Scaling should be viewed as a gradual process of increasing reach while maintaining the quality and consistency of learning outcomes. Experience from the pilot implementations showed that sustainable growth is typically achieved through repeated delivery, educator development and continuous improvement rather than by immediately increasing participant numbers. Maintaining a common quality core and collecting comparable evidence remain important as the programme expands.

- Repeat before expanding.
- Increase facilitator capacity before cohort size.
- Use observed co-delivery and a facilitator checklist.
- Keep core resources versioned and local add-ons identifiable.
- Monitor waiting time, equipment access and practical participation as scale increases.
- Retain a small common assessment core across locations.
- Share transferable improvements through SkillNest and the FabLab network.

11.5 Recommended sustainability and scaling indicators

Long-term uptake should be monitored using a small set of practical indicators that can be collected consistently over time. The purpose of these indicators is not only to measure activity levels, but also to identify whether the programme remains operational, relevant to its target groups and capable of sustainable delivery. Organisations may complement the indicators below with additional measures reflecting local priorities or funding requirements.

Indicator	Minimum record
Repeatability	Date or decision for the next run
Educator capacity	Number able to lead and co-facilitate
Resource continuity	Equipment, software, materials and budget status
Content currency	Last review date and responsible owner
Adoption	Organisation, territory, selected solution and delivery status
Reach	Participants, target group and delivery hours

Indicator	Minimum record
Quality	Assessment response, output completion and improvement actions
Transfer	Local adaptations and evidence from the first transferred run

11.6 Post-project governance

The D3.3.1 governance model identifies BUT as the long-term maintainer of SkillNest and distributes programme-content responsibility among the partners.

12. Conclusions

D3.2.1 provides the operational bridge between the validated content of D3.3.1 and its successful use by organisations beyond the original pilots. Its central contribution is a complete but proportionate adoption pathway: define the need, check readiness, select and adapt a solution, prepare people and resources, configure SkillNest and assessment, deliver, evaluate, repeat and scale.

The guide protects a common quality core without forcing identical delivery. Adopters may change language, examples, duration, equipment and local partnerships when they preserve the learning mechanism, safety, practical evidence, assessment purpose and documented improvement cycle.

IMPLEMENTATION RESULT

A locally relevant, safely delivered and evidence-informed re/upskilling programme that can be repeated, improved and connected back to the wider DiSTT and SkillNest ecosystem.

Annex A – Organisational Readiness Checklist

Domain	Readiness statement	Score	Evidence / gap action
Strategic fit	Target skill gap is evidenced and aligned with organisational mission.	0 / 1 / 2	
Ownership	Implementation owner and sponsor are named.	0 / 1 / 2	
Educators	Technical and facilitation competence is available.	0 / 1 / 2	
Facilities	Rooms, machines, software and materials are available and tested.	0 / 1 / 2	
Safety	Risk, safeguarding, PPE and incident arrangements are approved.	0 / 1 / 2	
Recruitment	A realistic route to the intended participants is confirmed.	0 / 1 / 2	
Assessment	Pre/post and practical evidence can be administered.	0 / 1 / 2	
Accessibility	Likely participation barriers and adjustments have been reviewed.	0 / 1 / 2	
Finance	Preparation, delivery and consumable costs can be covered.	0 / 1 / 2	
Sustainability	A credible repeat or continuation route is identified.	0 / 1 / 2	

Scoring: 0 = not ready / unresolved; 1 = partially ready with a feasible gap action; 2 = ready and evidenced. Safety or safeguarding at 0 blocks delivery.

Annex B – Implementation Canvas

Canvas field	Content to complete
Implementation case	Target group, skill gap, intended value and evidence of need
Selected solution	Solution, version, fallback and selection rationale
Learning outcomes	Three to eight observable outcomes
Practical output	Prototype, file, demonstration, pitch, portfolio or process evidence
Essential elements	Elements that create the intended learning
Local adaptations	Language, examples, timing, equipment, accessibility and partnerships
Implementation team	Owner, educator, technical, safety, assessment and SkillNest roles
Resources	Facility, machines, software, files, materials, PPE and contingencies
Assessment	Pre/post items, matching, practical criteria, observation and feedback

Canvas field	Content to complete
Recruitment	Channels, prerequisites, participant information and onboarding
Risks	High risks, controls, contingencies and owners
Sustainability	Next run, financing, educator development and content review

Annex C – Session Planning Template

Time	Learning outcome	Activity	Participant action	Educator / technical action	Resources / evidence

Annex D – Risk Register Template

Risk	Likelihood	Impact	Prevention	Contingency	Owner / status

Annex E - Assessment and After-Action Review

E.1 Common pre/post statements

- I understand the complete workflow covered by this programme.
- I can prepare the required digital data for the selected process.
- I can use the relevant tool or machine according to the required safety procedure.
- I can select or adjust the main parameters that influence the result.
- I can identify a common error and test a suitable correction.
- I can apply the process to create a functional or communicable output.
- I can explain my technical decisions to another person.
- I know where to find further support, facilities or learning resources.

E.2 After-action review questions

- What was planned and what was actually delivered?
- Which evidence shows that the learning outcomes were addressed?
- Where did participants wait, disengage or require unexpected support?
- Which adaptation improved local relevance?
- Which adaptation weakened the learning mechanism or comparability?
- What safety, equipment, software or logistics issue must be corrected?
- What should be kept, stopped, changed or tested next time?
- Who owns each change and by when?

Annex F - First-Run Implementation Record

Record item	Value
Adopter organisation and territory	
Responsible person and contact	
Selected solution and resource version	
Target group and recruitment route	
Delivery dates, format and hours	
Registered / attended / completed participants	

Record item	Value
Adaptations and reasons	
Pre / post / matched response counts	
Practical outputs and observation evidence	
Participant and stakeholder feedback	
Incidents, deviations and limitations	
Changes before next run	
Next-run or scaling decision	

Annex G – Web Step-by-Step Publication Register

Follow https://skillnest.app/how-to

Annex H – Source and Traceability Matrix

Guide element	Primary source	Implementation use
Output definition and two-format requirement	Approved DiSTT Application Form / D3.2.1 definition	Chapters 1, 2 and 4
Programme packages and toolkit architecture	D3.3.1 Digital Skills Transformation Toolkit	Chapters 2, 6, 9 and 11
Implementation lessons	D2.2.1 partner Pilot Run Reports	Chapters 3, 5, 7 and 8
Common evaluation findings	D2.3.1 Joint Evaluation Report	Chapters 3 and 8
Programme design	D2.1.1 partner RE/UPskilling programmes	Chapter 6 and adaptation logic
Digital implementation	SkillNest public interface	Chapter 9