IDEAL FUTURE

Integrated Digital Educational Leadership for the Future

DELIVERABLE - **R**

D6.3 Report and Academic Publications

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D6.3 Report and Academic Publications - R

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1. Executive Summary

D6.3 presents the final analytical results of WP6 and evaluates the contribution of the IDEAL Futures Teacher Academy to participants' reflective practice, collaborative inquiry, digital competence and digital-educational-leadership-related practice. The mixed-methods evaluation combined matched PRE-POST questionnaire data from 171 participants, additional POST-only indicators, 2,209 written Hub reflections, 43 participant interviews, verified course-completion records for 257 participants who completed at least one course and evidence from national WP6 reports. These sources were triangulated while retaining the distinction between self-reported change, qualitative experience, planned action, reported implementation and verified course completion.

The matched PRE-POST analysis identified seven favourable item-level **changes that remained statistically supported** after correction for multiple testing: three ordinal and four multiple-response changes. These concerned translating reflection into instructional adaptation, collaborative inquiry and sharing of practice, comfort with integrating new digital tools into teaching, inclusive teaching and implementation of inquiry-generated ideas. POST-only questionnaire results indicated a **generally positive learner experience**, with ratings of 4-5 across the six Hub-experience statements ranging from 62.6% to 71.3%. **Transfer** was at different stages: 22.2% reported that they had already applied their learning and 50.3% planned to apply it soon. In addition, 53.8% reported at least some movement towards **integration into classroom or organisational practic**e, including 17.5% reporting formal **implementation at classroom or whole-school level.** These POST-only indicators describe reported outcomes after participation and are not PRE-POST measures of change.

The Mezirow-informed analysis added **evidence on the depth of reflective learning.** Of the 2,209 Hub reflections, 53.1% had knowledge and skill acquisition as their highest evidenced outcome and 38.8% reached action planning or practice integration within the project-specific outcome hierarchy. Explicit perspective transformation was the highest evidenced outcome in 1.5% of reflections, while explicit critical assessment of assumptions without a perspective shift accounted for a further 0.1%. Reported action or practice integration was also examined separately and was identified in nine reflections (0.4%). The results therefore show substantial evidence of learning and intended application, while explicit perspective transformation and documented enactment were considerably less frequent and should not be generalised to all participants.

The Framework-guided thematic interview analysis **supported and contextualised** these findings. Participants most consistently **valued practical relevance, reusable resources, flexible access and structured opportunities for collaboration.** Ten explicit implemented problem-solution pairs were identified using a strict rule that excluded general intentions and unverified future plans. Interview evidence documented **impact at individual or classroom, school and inter-organisational levels.** Individual and classroom-level evidence concerned confidence, pedagogical judgement, purposeful technology use and adaptation of resources; school-level evidence included staff learning, knowledge sharing, digital-leadership structures and policy or planning work. Inter-organisational impact was

more limited and was strongest where mobility, workshops and structured co-creation deliberately facilitated exchange.

The implementation target of approximately 200-250 learners was **achieved** and slightly exceeded: 257 participants completed at least one self-study course, generating 473 verified course completions. Of these participants, 236 completed at least one A1-B2 course and 64 completed at least one C1-C2 course. **Sustainability** evidence was positive but primarily prospective: 62.0% intended to continue professional development in digital education, 57.9% to continue experimenting with new digital tools and 49.7% to **continue using the IDEAL Futures Hub** as a resource. The principal recommendations were shorter and more manageable learning pathways, blended support, deliberately facilitated collaboration, regularly updated content, improved navigation and language support, and integration of learning into routine professional-development structures.

The findings should be interpreted as evidence of contribution rather than causal impact because the evaluation used a one-group design and relied substantially on participant self-report. Within these boundaries, the combined **evidence indicates meaningful professional learning, practical transfer and emerging organisational integration associated with the IDEAL Futures piloting.**Two WP6-related publication outputs have been published or accepted, and a third publication drawing on the final D6.3 evidence will be prepared after the formal end of the project.

2. Introduction

2.1 Purpose and Scope

D6.3 is the final analytical report of WP6. It addresses T6.4, Gathering and Analysing Data, and T6.5, the report on the impact of IDEAL Futures on the digital leadership skills of pre-service and in-service teachers. Its purpose is to consolidate and interpret the evidence generated through the WP6 evaluation concerning participants' reflective practice, collaborative inquiry, digital competence and digital-leadership-related practice, transfer to practice, learner experience and evidence of learning-outcome achievement. The report also records the academic publication outputs arising from this work.

D6.3 completes the WP6 sequence established in the project proposal: the methodology developed under T6.1 informed the piloting of the platform, content, learning activities and pedagogical model under T6.2 and the Study Visits under T6.3; the resulting evidence is brought together and analysed under T6.4 and interpreted in relation to impact under T6.5. Detailed implementation evidence is already provided in D6.1 and D6.2. D6.3 therefore refers to those deliverables only where necessary to define the evidence base or interpret the findings, without repeating their descriptions of courses, activities or Study Visits.

In accordance with the project work plan, WP6 provided the piloting and evaluation stage for outputs developed in WP3, WP4 and WP5. This included the WP3 multi-level pedagogical model, the WP4 professional-development content, learning activities and associated accreditation approach, including micro-credentials, and the WP5 Digital Hub through which much of the learning was delivered. D6.1 documents their implementation in practice, while D6.3 examines the resulting evidence of learning, reflection, transfer and impact.

2.2 Evaluation Commitments

The evaluation framework set out in the project proposal combined quantitative and qualitative evidence. The implemented PRE and POST instruments examine participant-reported change in reflective practice, collaborative inquiry, digital competence and digital-leadership-related practice, while additional POST-only indicators address learner experience, transfer of learning, collaboration, technology integration and intentions for continued professional development and use.

The planned qualitative and practice-based strand included Mezirow-informed analysis of reflective learning activities, learner-experience evidence, participant portfolios or work samples, peer-observation-based evidence of transfer to practice and participant interviews. These sources have distinct analytical purposes and are not treated as interchangeable or as substitutes for one another.

D6.3 therefore distinguishes between evidence that was implemented and analysed as planned and proposal-specified evidence that was only partially or differently realised. The final evidence base draws on matched PRE-POST and validated POST-only questionnaire data, Hub reflections, participant interviews, verified course-completion records and verified national WP6 evidence. Coverage of the planned evaluation commitments, material deviations and the resulting interpretation boundaries are assessed explicitly in Section 4.6.

2.3 Data Protection and Public Reporting

D6.3 presents participant-level evidence only in anonymised or aggregate form, in line with the data-minimisation principle. Names, signatures and other directly identifying records are not reproduced in the public report; where required for verification, they are retained separately in the project's restricted evidence files. This separation enables the report to document the evaluation while protecting participant confidentiality.

3. Evaluation Methodology: Data Collection and Analysis (T6.4)

3.1 Study Design and Common Interpretation Principles

The evaluation used a mixed-methods, one-group PRE-POST design combining questionnaires, Hub reflections, interviews, verified course-completion records and national WP6 evidence. It examined participant-reported change, reflective learning, collaboration, transfer to practice, learner experience and achievement of course-defined learning requirements. Findings were organised around the five thematic areas in Sections 4.1-4.5.

Common interpretation principles applied across all methods. Evidence of **perceived learning, satisfaction, intended action, reported implementation and verified course completion** was distinguished throughout. Without a control group, findings support change associated with the piloting rather than causal attribution. Heterogeneous indicators were not combined into an unvalidated overall competence or impact score. Frequencies retain their source-specific units and denominators: participants, reflections, coded interview examples or course completions. Missing evidence was not interpreted as evidence that learning or transfer had not occurred.

3.2 Data Sources and Analytical Cohorts

The questionnaire cohort comprised **171 participants with matched PRE and POST records**. Validated POST-only indicators were analysed within the same cohort. These data were complemented by **2,209 eligible Hub reflections** from Spain (589), Ireland (58), Latvia (972) and Greece (590), and **43 unique interviews** from Latvia (13), Spain (10), Greece (10) and Ireland (10).

A separate administrative cohort comprised **257 participants with 473 verified course completions**, irrespective of questionnaire availability. Participant counts and course-completion counts were analysed separately because one participant could complete several courses.

National WP6 reports followed a common reporting template. Their verified evidence, including Study Visit follow-up activities and work samples, supported interpretation of learning and transfer. Detailed implementation descriptions remain in D6.1 and D6.2.

3.3 Evaluation Instruments and Construct Mapping

The shared **PRE-POST questionnaire** covered reflective practice (Q1-Q6), collaborative inquiry and Community of Inquiry-related practice (Q7-Q15), and digital competence and digital-leadership-related practice (Q16-Q23). It contained 32 ordinal items, 34 binary multiple-response options, one nominal item (Q20) and one open-text item (Q22). These instrument groupings informed, but did not determine, the five thematic reporting areas.

Additional **POST-only questions** (Q24-Q37) addressed participation, usefulness, Hub experience, application, professional artefacts, collaboration, technology integration, recommendations and future intentions. They differed because they were tailored specifically to the stage following the pilot activities, training sessions, and study visits; it would not have been objective to include them in the PRE-questionnaire.

3.4 Data Preparation and Quality Assurance

Questionnaire records were matched primarily through Project ID. Shared or duplicated Hub User IDs were checked against participant-level source records to prevent incorrect pairing. Partial, non-matching or unverifiable records were excluded, and matching decisions were retained in the quality-assurance log. Missing values were not imputed.

Original response directions were preserved. For shared ordinal items, lower codes indicated more positive responses; multiple-response options were coded as selected or not selected. Q20 remained nominal because its categories did not form a defensible ordered improvement scale.

The Hub corpus was screened from 2,707 forum records. Ineligible activities, exact duplicate responses and blank or unusable text were excluded, leaving 2,209 reflections. Duplicate assessment used the complete normalised response within the same participant and country context; similar wording alone did not justify exclusion. Source-language text and

anonymised record identifiers preserved traceability. Duplicate interview language versions were excluded, and interviewer prompts were not coded as participant evidence.

3.5 Quantitative Analysis and Benjamini-Hochberg Correction

Ordinal PRE-POST items. Descriptive presentation used top-two-box (T2B) percentages: the proportion selecting response codes 1-2, representing the two more-positive categories. Differences were expressed in percentage points. Statistical testing used the full ordinal response scale, rather than the T2B aggregation. Paired changes were assessed with the Wilcoxon signed-rank test; medians, interquartile ranges and rank-biserial correlations described response distributions and effect sizes.

Multiple-response PRE-POST items

Each option was analysed as a paired selected/not-selected outcome using selection rates, percentage-point differences, exact McNemar tests and paired confidence intervals. Q20 was treated separately as nominal category transitions, without assigning improvement scores.

Correction for multiple testing. Testing many outcomes increases the risk of apparently significant findings arising by chance. The Benjamini-Hochberg (BH) procedure therefore adjusted the p-values from the paired tests in two separate families: **32 ordinal comparisons and 34 binary comparisons**. These families remained unchanged when results were reorganised into thematic sections.

BH-adjusted p-values are reported as **q-values**, with **q < .05** identifying findings that remained statistically significant after false-discovery-rate correction. The paired tests assessed evidence of change; BH determined which findings retained statistical support after accounting for the number of comparisons. Findings that did not meet this threshold were reported as descriptive differences. Statistical significance does not establish the practical importance of a change, validate a competence construct or demonstrate that the project caused it.

POST-only indicators

Frequencies and percentages described outcomes after participation. For Q26, ratings 4-5 represented the more-positive categories, reflecting its different coding direction. Denominators distinguish the full cohort from substantive-response subsets, with missing and not-applicable responses identified where relevant. Multiple-response percentages can sum to more than 100%.

3.6 Qualitative Analyses

Questionnaire open-text responses

Q22 responses were analysed in PRE-POST pairs using seven overlapping deductive themes. Existing multilingual lexicon-assisted codes were reviewed and corrected through an AI-assisted reading of the complete original-language responses, retaining anonymised participant IDs and an audit trail of coding changes. The analysis included 163

participants with interpretable responses at both time points, including brief self-assessments. Eight pairs were excluded because PRE only (n = 3), POST only (n = 4), or both responses (n = 1) were blank or non-substantive. No missing responses were imputed. Theme frequencies used the same paired denominator and were interpreted descriptively, considering response length, language and detail. No competence scale, significance tests or BH correction were applied to thematic counts. The review did not include independent second coding.

For POST-only recommendations (Q31_1), non-exclusive thematic coding distinguished specific improvement requests from positive, non-specific or no-improvement responses. Percentages used explicitly stated denominators. Q29 open-text responses were not thematically analysed for this report.

Q30 POST-only responses underwent AI-assisted thematic content analysis using complete original-language answers. Of 171 cohort records, 153 were interpretable, 15 were missing or whitespace-only, and three contained punctuation only; no explicit not-applicable responses were identified. Seven non-exclusive value themes were developed from the responses, with general, negative and qualified accounts retained. Each response was counted once per applicable theme, using 153 as the denominator. Anonymised identifiers and coding decisions were linked to the unchanged source cells. Coding involved one interpretive pass and internal consistency checks, without independent second coding.

Mezirow-informed Hub analysis

Each complete reflection was coded using five non-exclusive indicators: knowledge and skill acquisition, action planning, critical assessment of assumptions, perspective transformation, and reported action or practice integration. Positive content feedback was recorded separately.

A mutually exclusive highest-evidenced-outcome variable summarised the profile, prioritising perspective transformation, critical assessment, action planning or practice integration, and knowledge or skill acquisition. Records without sufficient evidence remained in the denominator. This was a project-specific framework, not a canonical Mezirow scale. Enacted practice was also reported separately to distinguish implementation from intention.

Definitions were calibrated using two complete examples per country. English and Latvian records received manual researcher review; Spanish and Greek records underwent AI-assisted multilingual coding using the same fixed rules, with source text and coding decisions retained. A supplementary thematic analysis examined the 133 reflections coded as positive content feedback.

Sociotechnical-pedagogical analysis

A separate analysis examined the same 2,209 reflections directly from their source-language text, independently of the Mezirow codes. A project-specific codebook operationalised social, technical and pedagogical dimensions. Following calibration with four reflections per country, complete responses were coded for non-exclusive dimensional evidence, valence and principal subtheme, retaining supporting passages. Absence of evidence was distinguished from negative evidence.

Interview analysis

The same 43 interview records were examined through two complementary analytical approaches. Framework-guided thematic analysis combined WP6 evaluation domains with inductive subthemes to organise evidence on learner experience, practical solutions, implemented problem-solution pairs, impact levels and sustainability recommendations. Participant passages were classified as ACTUAL, PLANNED, EXPECTED or UNCLEAR. An implemented problem-solution pair required an explicit link between a concrete need and a solution already used; general benefits, tool mentions and future intentions were excluded from this count. Negative and contrasting cases were retained, and claims were linked to anonymised interview identifiers.

A complementary analysis informed by Braun and Clarke's reflexive thematic analysis developed and refined six meaning-based themes to deepen interpretation of professional learning and the conditions shaping transfer into practice. Two documented coding iterations connected initial case-level codes and interpretive memos with transcript-based refinement, producing a supplementary framework of 67 codes. The six themes were: (1) From collecting tools to exercising pedagogical judgement; (2) Becoming confident by being allowed to learn; (3) Connection becomes learning when people have something to do together; (4) Individual learning travels through relationships and organisational routines; (5) Flexibility opens participation but does not create time; and (6) An academy must remain a living professional resource.

The two approaches provide complementary interpretations of the same interview corpus, rather than independent evidence sources. Hub reflections were analysed separately and were excluded from interview counts. AI supported coding, evidence checking and synthesis under researcher direction; final interpretations remain subject to researcher review.

3.7 Course-Completion and Practice-Based Evidence

Platform records and certification verified course completion. The register distinguished designated A1-B2 and C1-C2 courses; 25 Spanish AI course completions without a level label were reported separately. Successful completion indicated achievement of course-defined assessment requirements. Completion of a designated C1-C2 course was treated operationally as attainment of that course level, rather than independent standardised proficiency.

Practice-based interpretation drew on available Study Visit follow-up records, resource adaptations and submitted work samples. All available submitted transfer records were considered, while distinguishing planning, application and organisational integration. Differences in formats and completeness prevented a uniform cross-visit transfer rate. These sources did not constitute a single harmonised peer-observation dataset or a uniformly assessed portfolio sample.

3.8 Triangulation and Remaining Methodological Limitations

Triangulation compared findings across the five thematic areas for convergence, complementarity, tensions and evidence gaps. Questionnaire results identified reported patterns and statistically supported changes; reflections and interviews explained their meaning and context; completion and Study Visit records added assessment-linked and practice-based evidence. Sources were not pooled into one score, and participant-level linkage across datasets was not assumed. Coverage of planned evidence and deviations is assessed in Section 4.6.

4. Impact of IDEAL Futures (T6.5)

4.1 Development of Digital Competence and Purposeful Digital-Leadership-Related Practice

This section addresses the WP6 commitment to examine development in digital competence and digital-leadership-related practice. The matched PRE-POST evidence covers comfort with integrating digital tools, inclusive teaching practices, support from school leaders, professional learning and participants' understanding of digital education. Results are reported for the matched cohort of 171 participants.

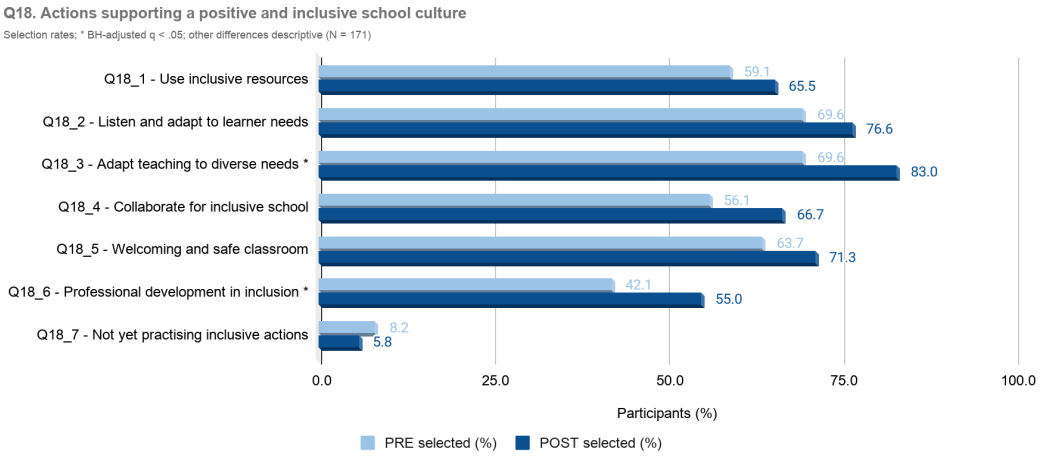
The learning opportunities underlying these outcomes were implemented through Digital Hub courses covering multiple DigCompEdu areas and proficiency levels and through Study Visits focused on digital equality and inclusion, digital literacies and infrastructure, and digital pedagogies and open leadership. D6.1 and D6.2 document this implementation context; the evidence analysed in this section concerns participant-reported change and practice-related outcomes and should not be interpreted as independent proof of competence gain.

For Q19, the proportion feeling very or somewhat comfortable integrating new digital tools into teaching increased from 70.2% at PRE (120/171) to 82.5% at POST (141/171), a rise of 12.3 percentage points. All 171 participants provided valid paired responses. Change on the full five-category scale remained statistically supported after Benjamini-Hochberg correction across the 32 ordinal comparisons (Wilcoxon p = .0015; q = .0218; rank-biserial correlation = .410). This finding indicates increased self-reported comfort with integration, rather than independently demonstrated competence gain or verified implementation.

Inclusive teaching practices

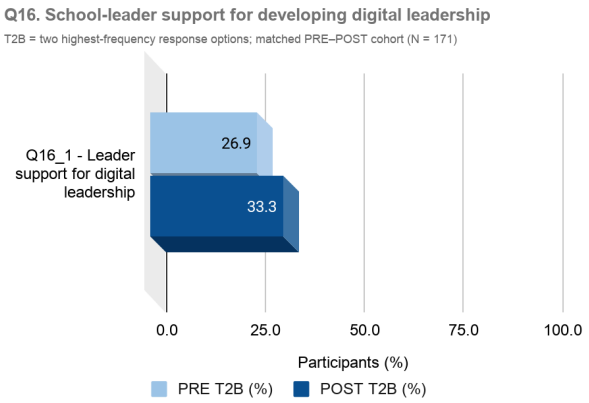
Q18 examined actions supporting a positive and **inclusive school culture.** Two options showed increases that remained statistically supported after correction: treating students with respect and adapting teaching to diverse needs **increased from 69.6% to 83.0%** (+13.5 percentage points; q = .0136), while participation in professional development

focused on inclusive teaching increased from 42.1% to 55.0% (+12.9 percentage points; q = .0466). Changes in these five response options were not statistically significant after Benjamini-Hochberg correction (all q ≥ .05) and are therefore described as descriptive differences. Because Q18 concerns inclusive practice without explicitly requiring digital technology use, its results provide supporting evidence relevant to **purposeful educational practice**, rather than a direct measure of digital competence. Multiple responses were permitted, so percentages across options do not sum to 100%.



School-leader support

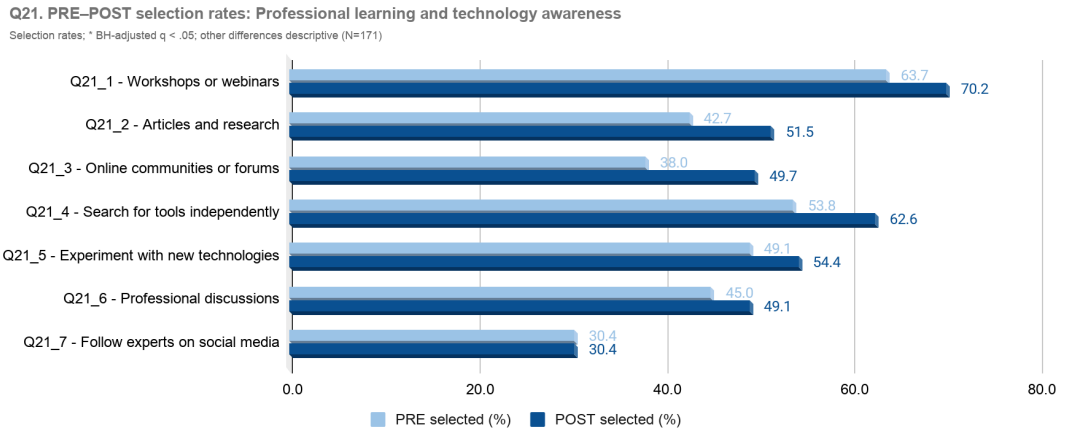
The proportion reporting frequent individualised support from their school leader for developing digital leadership skills **increased from 26.9% to 33.3%** (+6.4 percentage points; Q16). This difference did not remain statistically supported after correction (q = .0916). The result describes participants' reported access to leadership support; it does not measure their own leadership competence.



Professional learning and perceived challenges

Q21 examined how participants kept informed about emerging technologies and digital trends. Selection **increased** descriptively for six of the seven **professional-learning routes** and remained unchanged for following experts on social media. None of these

differences remained statistically supported after correction. These findings describe patterns of professional learning rather than demonstrated competence gains.



Q23 captured perceived **challenges facing teachers as digital leaders.** None of the changes remained statistically supported after correction. At POST, the most frequently selected challenges were balancing traditional teaching methods with digital innovation (66.7%) and keeping up with rapidly changing technology and tools (57.3%). Greater recognition of a challenge is not interpreted as deterioration, nor is reduced selection treated as evidence that the challenge was resolved.

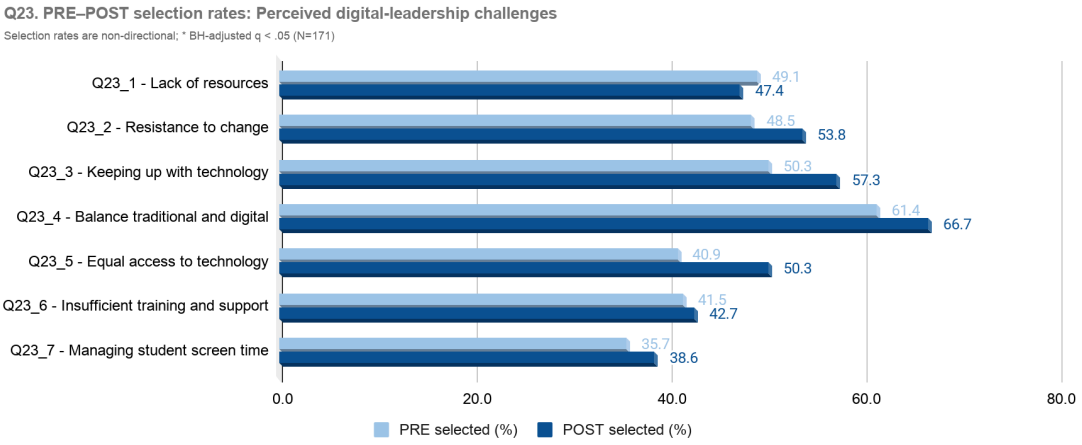


Table 1. Themes in paired descriptions of digital education (Q22)

Theme	PRE n (%)	POST n (%)
Purposeful pedagogical integration	38 (23.3%)	52 (31.9%)
Learner-centred, inclusive and accessible learning	40 (24.5%)	44 (27.0%)
Critical, ethical and safe digital practice	23 (14.1%)	38 (23.3%)
Collaboration, professional learning and digital leadership	26 (16.0%)	36 (22.1%)
Active, creative and interactive learning	27 (16.6%)	25 (15.3%)
Continuous professional learning and adaptation	77 (47.2%)	79 (48.5%)
Systemic and transformational understanding	11 (6.7%)	22 (13.5%)

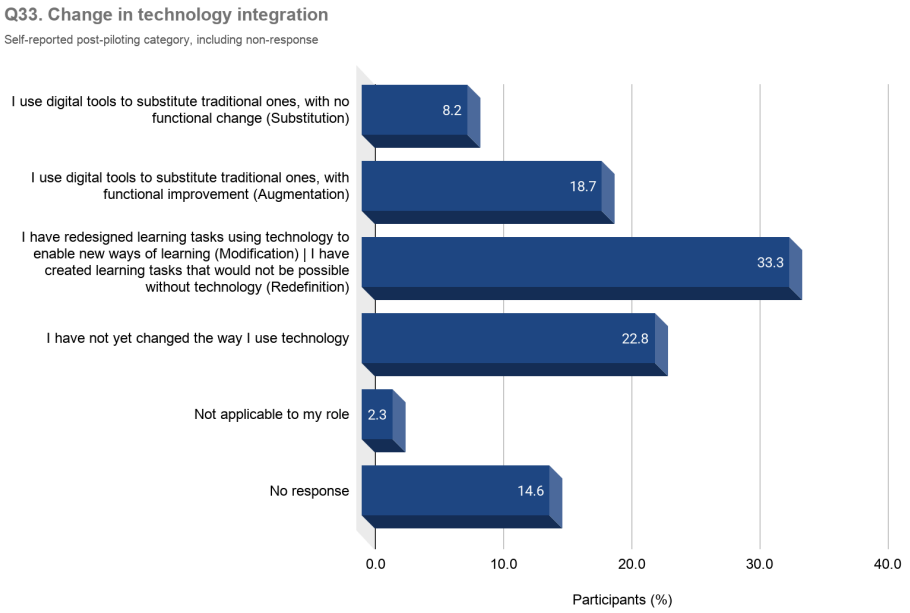
Note. All percentages use the same 163 participants with interpretable Q22 responses at both time points. Eight of the 171 matched participants were excluded because at least one response was blank or non-substantive. Themes overlap; each participant is counted once per theme at each time point.

Q22 asked participants to describe their current understanding of digital education. Within the 163 eligible PRE-POST pairs, POST responses more frequently mentioned critical, ethical and safe practice (+9.2 percentage points), purposeful pedagogical integration (+8.6), systemic and transformational understanding (+6.7), and collaboration, professional learning and digital leadership (+6.1). Continuous professional learning remained the most frequently mentioned theme at both time points, with little difference in frequency. These patterns describe differences in expressed understanding; they are sensitive to response length, language and detail and do not establish individual competence gains or completed changes in practice.

Self-reported technology integration at POST-only questionnaire

Q33* provides a descriptive account of participants' reported **technology integration** at POST. Within the cohort of 171 participants, 14 (8.2%) selected substitution without functional change, 32 (18.7%) selected augmentation with functional improvement, and 57 (33.3%) selected the combined modification/redefinition category. A further 39 participants (22.8%) reported that they had not yet changed the way they used technology. Four responses (2.3%) indicated that the item was not applicable, and 25 participants (14.6%) provided no response.

These findings describe participants' selected categories at POST. They do not establish a measured PRE-POST change or independently assessed improvement in digital competence. Modification and redefinition are reported together because they are combined in the available dataset.



**This POST-only item does not measure paired PRE-POST change.*

The reflexive thematic analysis (RTA) of interviews supports the interpretation of more purposeful digital practice. Learning is described as choosing and adapting technology to learners and pedagogical purposes. Tool familiarity is one element of this change, alongside critical appraisal and responsible use.

Descriptive code frequencies count each interview once per code (n = 43); codes overlap and frequencies do not determine thematic importance or establish competence gains or causal effects. Zero means no qualifying evidence selected for that code, not absence of the skill.

Table 2. Interview evidence RTA

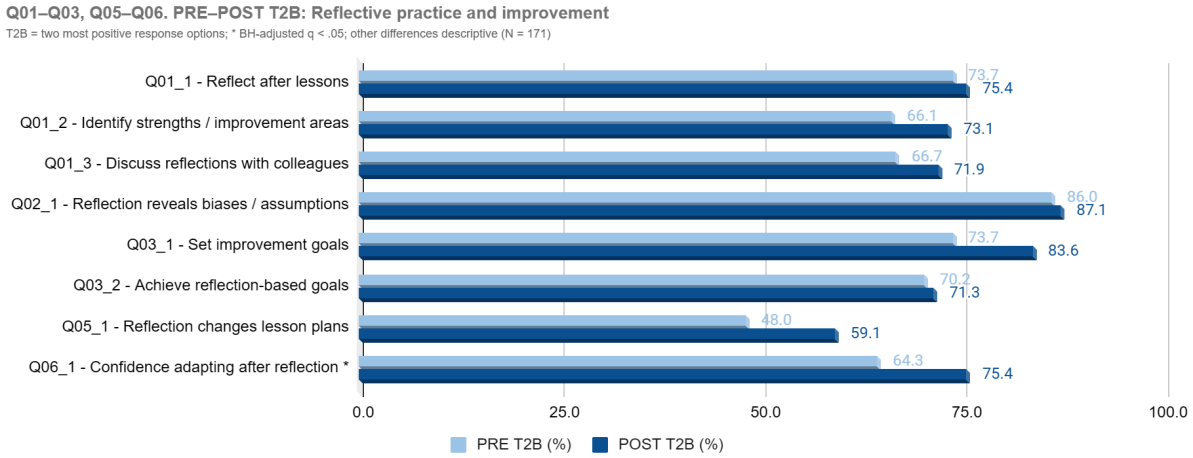
Reviewed code	Interviews (n)	% of 43
Critical pedagogies and purposeful selection	28	65.1
Ethics and responsible digital practice	14	32.6
AI tools	13	30.2
Search techniques	5	11.6
Soft skills	6	14.0
Creating and modifying resources	19	44.2
Prompting and human-AI interaction	0	0.0
Information literacy	13	30.2
Computational thinking	0	0.0
Policy development skills	1	2.3
Holistic digital-education perspective	8	18.6
Assessment and feedback design	11	25.6
Inclusive and differentiated design	14	32.6

4.2 Reflection and Transformative Learning

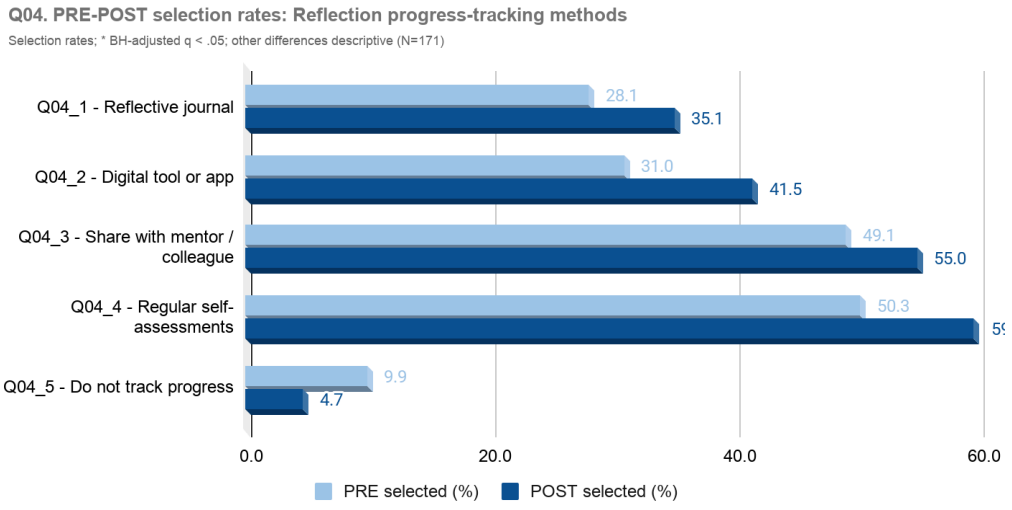
Reflection and application were embedded in the implemented WP6 learning design. D6.1 documents guided reflections, discussion forums, self-assessment and practical tasks within the Hub learning pathways, while D6.2 documents a PRE-During-POST Study Visit sequence combining goal setting, collaborative and experiential learning, and post-visit application or reflection in participants' own contexts. These deliverables establish the implementation context; the outcome evidence below is drawn from the D6.3 questionnaire, Hub-reflection and Framework-guided thematic interview analyses.

Across the matched cohort (N = 171), the PRE-POST questionnaire showed a favourable descriptive pattern across the reflection-related ordinal indicators. The proportion selecting one of the two more-positive response categories (T2B) **increased for all eight indicators** covering reflection after lessons, identification of strengths and areas for improvement, discussion of reflective insights, recognition of biases or assumptions, reflection-based goal setting, achievement of those goals, modification of teaching strategies and confidence in adapting instruction.

The clearest statistically supported change concerned Q06: **confidence in adapting instructional strategies based on reflective insights** **increased** from 64.3% to 75.4% in the T2B presentation (+11.1 percentage points) and remained statistically supported after Benjamini-Hochberg correction (q = .0218; rank-biserial correlation = .373). Q05, concerning how often **reflection leads to modification of lesson plans or teaching strategies**, also **increased** descriptively from 48.0% to 59.1% (+11.1 percentage points), but did not remain statistically supported after correction (q = .0535). The remaining reflection-related ordinal changes were likewise descriptive rather than statistically supported after correction. These findings support an interpretation of strengthened self-reported reflective practice, **particularly confidence in translating reflection into instructional adaptation**.



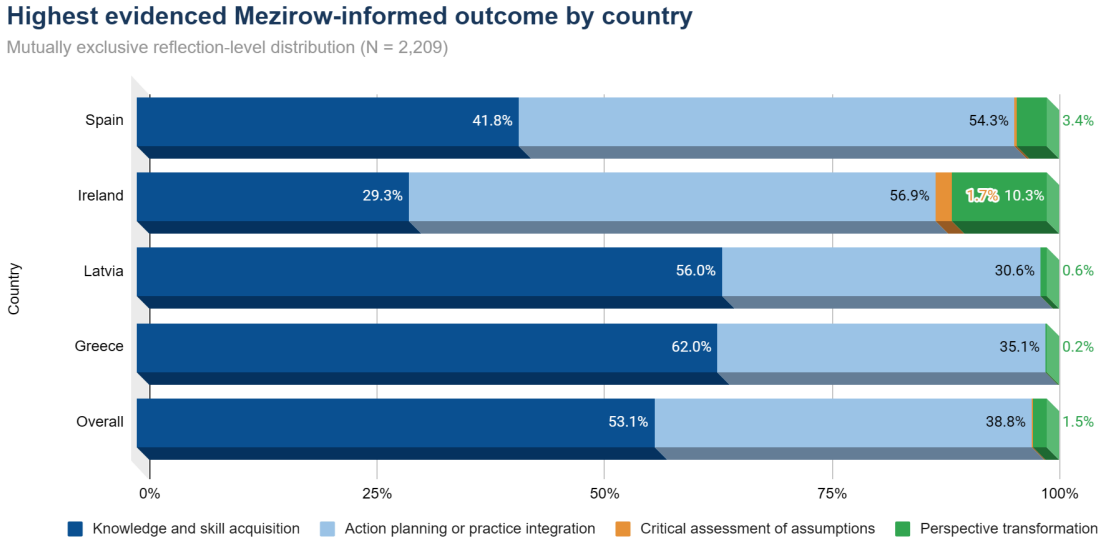
Q04 examined how participants **tracked progress resulting from reflection.** Descriptively, selection **increased** for keeping a reflective journal (28.1% to 35.1%), using a digital tool or app (31.0% to 41.5%), sharing progress with a mentor or colleague (49.1% to 55.0%), and conducting regular self-assessments (50.3% to 59.6%). The proportion reporting that they did not track their progress decreased from 9.9% to 4.7%. None of the five Q04 changes remained statistically supported after Benjamini-Hochberg correction. These results therefore describe changes in reported reflection-tracking practices rather than statistically supported evidence of transformative learning.



Mezirow-informed Hub analysis

The Mezirow-informed Hub analysis complemented the matched-questionnaire findings by examining the depth of learning and change evidenced in the Hub reflections. The consolidated Hub dataset contained 2,707 forum records, of which 2,670 were identified as reflection activities. After application of the predefined inclusion rules, 2,209 reflections were retained in the coding corpus. The retained corpus represents 81.6% of all forum records and 82.7% of the records identified as reflection activities. The analytical denominator therefore concerns eligible reflection records rather than participants. The derived outcome profile is interpreted as evidence associated with the piloting, not as a causal measure of individual transformation.

Using one mutually exclusive highest evidenced outcome per reflection, 1,173 contributions (53.1%) were classified as knowledge and skill acquisition, while 857 (38.8%) reached action planning or practice integration. Explicit perspective transformation was the highest evidenced outcome in 33 reflections (1.5%), and two further reflections (0.1%) showed critical assessment of assumptions without an explicit perspective shift. The remaining 144 contributions (6.5%) did not contain sufficient evidence for any of these outcomes. They were retained in the audit and denominator but omitted from chart below for visual clarity; the displayed categories therefore do not sum to 100%.



The profile indicates that the most common outcome was articulation of acquired knowledge or skills, followed by a substantial body of concrete action planning. Spain and Ireland had the largest shares classified as action planning or practice integration (54.3% and 56.9% respectively). Explicit perspective transformation accounted for 3.4% in Spain and 10.3% in Ireland, compared with 0.6% in Latvia and 0.2% in Greece. Ireland also recorded 1.7% in critical assessment of assumptions, while Spain recorded 0.2%; no reflection in Latvia or Greece had critical assessment as its highest outcome because any co-occurring perspective transformation took precedence. Ireland's percentages are based on only 58 reflections and should not be interpreted as robust national differences. Variation may also reflect differences in prompts, response length, course mix and language-specific expression.

Reported action or practice integration was retained as a separate binary result because it provides evidence of enactment rather than intention. It occurred in nine reflections (0.4%): three from Ireland and six from Latvia, with none meeting the operational threshold in the Spanish or Greek Hub corpus. This low frequency does not demonstrate an absence of transfer; the reflections were generally collected during or immediately after learning and rarely required participants to document sustained implementation. Positive content feedback was recorded separately in 133 reflections (6.0%) and was not included in the Mezirow-informed outcome hierarchy.

The following excerpts illustrate both explicit perspective transformation and action planning. Spanish, Latvian and Greek excerpts were translated into English; Record IDs retain the link to the coding audit trail.

***Spain**. R00047: "I understood that digital resources are not useful by themselves and should not be used only to make classes more 'fun' or modern. Their real value lies in intentionally supporting learning, active participation and educational objectives." R00053: "I realise that technology only makes sense when it is used with a clear purpose and connects directly with what students need to learn. I will integrate digital resources that genuinely help students participate and learn better." The first excerpt evidences a changed professional frame; the second links learning to a course of action.*

***Ireland**. R00789: "This module really shifted how I think about digital learning. I realised that interactivity, AI, and collaboration only work when they sit on top of strong pedagogy." R01236: "I'm going to share this information with our digital learning team. It will inform the ongoing development of our whole-school strategy to integrate AI tools in teaching and learning." These excerpts illustrate perspective transformation and intended organisational application respectively.*

***Latvia**. R00951: "Until now, digital tools often seemed simply interesting or visually attractive, but I now understand better that what matters most is their alignment with the learning objective and learners' needs." R00041: "In future, I will consciously follow copyright requirements, use openly licensed resources, and organise and share teaching materials more effectively." The excerpts show a change in selection criteria and a concrete plan for future practice.*

***Greece**. R01493: "I evaluated my current digital design skills, noting my strength in structuring content and selecting proper formats, while identifying a need to improve in accessibility and interactivity. I now see the value of using advanced tools to create more inclusive, adaptive, and engaging materials." R00332: "I intend to make greater use of open educational repositories and advanced search techniques so that I can find and adapt quality material to students' needs." The excerpts illustrate changed professional understanding and planned application; they are not treated as evidence of completed implementation.*

The Framework-guided thematic interview analysis **added** qualitative context to the reflection findings by showing more deliberate professional judgement about **why and how digital technologies should be used**, including consideration of learner needs, ethics, risk, transparency and appropriate-use conditions.

Table 3. Interview (FGTA) evidence relevant to reflective professional judgement

Broader interview theme	*Relevance to reflective/transformative learning*	*Example IDs*
Purposeful pedagogy over tool novelty	*Participants describe selecting technology for learner needs and objectives, rather than focusing primarily on learning or using digital tools.*	*LU06; GR07; IE10; SP01*
AI, ethics, copyright and safety	*Interview accounts highlight consideration of risk, transparency, licensing and acceptable-use conditions, adding an ethical and critical dimension to participants' professional judgement about technology use.*	*LU06; GR07; IE06; IE08; IE10*

The RTA interview findings complement the reflection-related results by illustrating how participants described the development of confidence. Confidence develops through manageable experimentation, self-reflection and opportunities to work through difficulty. Participants enter with different experience and draw on learning beyond IDEAL.

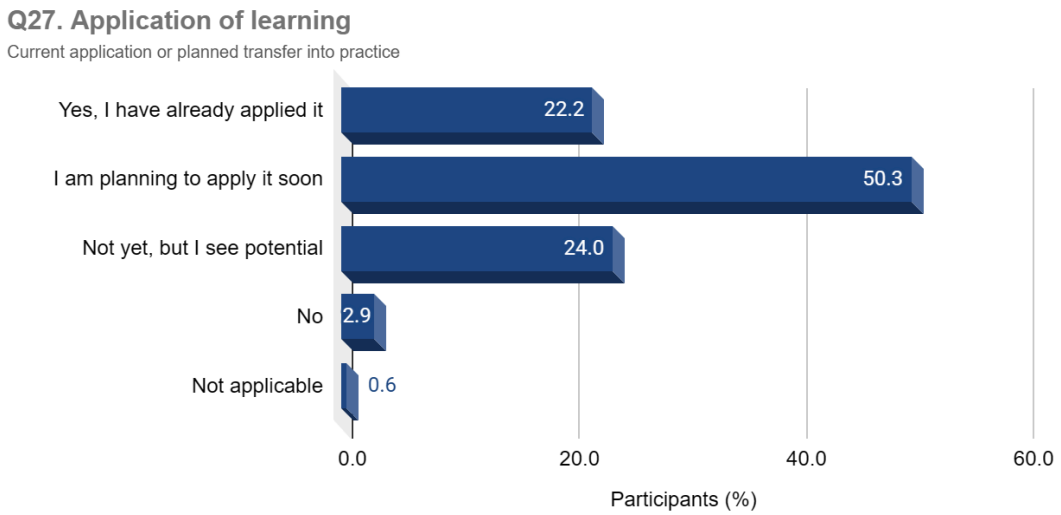
4.3 Transfer to Practice at Individual, School and Inter-Organisational Levels

Transfer to practice was examined as a staged process, distinguishing reported enactment, planned application, perceived potential and formal integration. The matched PRE-POST evidence most directly relevant to transfer concerns participants' implementation of ideas or strategies generated through collaborative inquiry. The **share** of responses in categories 1-2 (T2B) for implementation at the individual level **increased** from 71.9% to 76.6% (+4.7 percentage points) and remained statistically supported after Benjamini-Hochberg correction (q = .0218; rank-biserial effect = .352). Descriptive **increases** were also observed at:

- school level, from 48.5% to 56.7% (+8.2 percentage points),
- organisational level, from 25.7% to 33.9% (+8.2 points),
- wider educational-community level, from 12.9% to 18.7% (+5.8 points),
- national level, from 8.2% to 11.7% (+3.5 points).

Although these changes did not remain statistically supported after correction, the pattern indicates that reported **enactment was strongest in participants' immediate individual and school contexts**, while transfer to broader organisational and system levels was less common during the piloting period.

The POST-only results provide a more direct indication of participants' stage of **transfer after the piloting.** For Q27, 38 participants (22.2% of N = 171) reported that they had **already applied** knowledge, a strategy, tool or resource from IDEAL Futures in their own teaching or professional context. A further 86 participants (50.3%) were **planning** to apply their learning soon, while 41 (24.0%) had not yet applied it but saw **potential** for doing so. Five participants (2.9%).



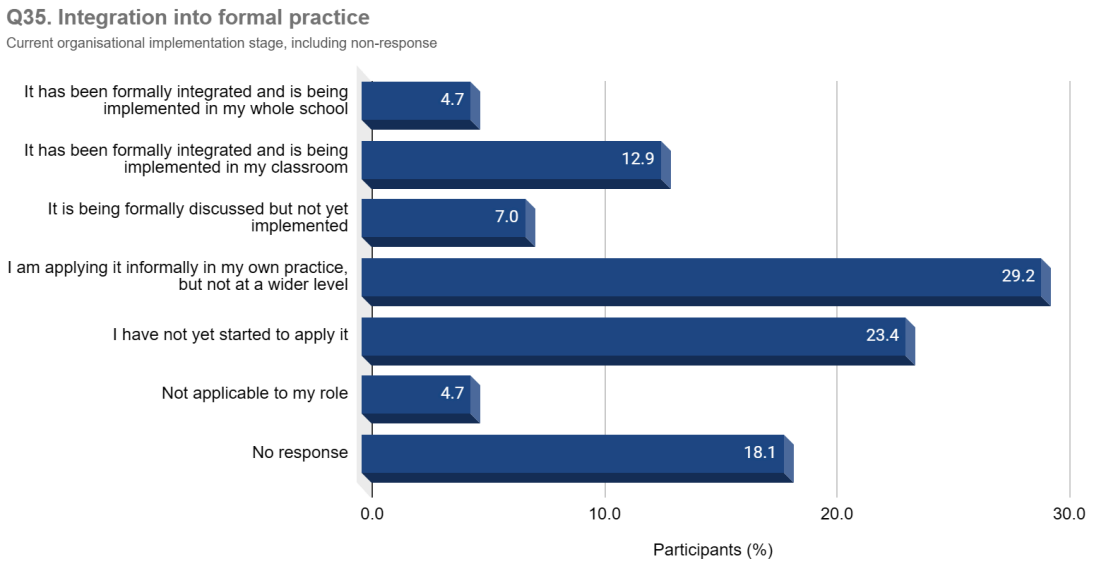
Q28 provides complementary evidence on the professional outputs associated with participation. All 171 participants provided a categorical response. The most frequently reported activity was **adapting an existing resource** (21.6%), followed by **sharing a resource with colleagues** (17.0%). Participants also reported **creating new digital resources, developing or adapting pedagogical plans, completing reflection or portfolio activities, and participating in discussion-based activities.** These responses indicate different forms of self-reported professional production and sharing; they are not treated as a uniform portfolio assessment.

Table 4. Self-reported professional artefact activity after IDEAL Futures piloting (Q28, N = 171)

Reported activity	n	%
Adapted an existing resource	37	21.6
Shared a resource with colleagues	29	17.0
Did not create or share any artefact	28	16.4
Created a new digital learning resource	19	11.1
Completed a reflection or portfolio activity	19	11.1
Other	16	9.4
Participated in a discussion/forum/wiki activity	12	7.0
Developed or adapted a pedagogical plan	11	6.4

Q35 further differentiated the stage at which **learning had entered professional or organisational practice.** Across the full POST cohort (N = 171), 50 participants (29.2%) reported **applying** the learning informally in their own practice without wider integration. Formal **implementation** was reported in the classroom by 22 participants (12.9%) and across the whole school by eight (4.7%), while 12 participants (7.0%) reported that integration was being formally discussed but had not yet been implemented. Forty participants (23.4%) had not yet started to apply it, eight (4.7%) selected “Not applicable to my role”, and 31 (18.1%) provided no response. When restricted to the 132 substantive responses in categories 1-5, 30 participants (22.7%) reported formal **integration** at

classroom or whole-school level. The findings therefore distinguish informal individual application from more advanced institutionalisation and from discussion or planning that had not yet resulted in implementation.



The **Mezirow-informed Hub findings** reported in Section 4.2 reinforce this staged interpretation of transfer. In the mutually exclusive highest-outcome profile, 857 of 2,209 reflections (38.8%) reached the **level of action planning or reported practice integration.** Under the separate and stricter binary criterion requiring an explicit statement that course-related learning had already been applied or tested, reported action or practice integration was identified in nine reflections (0.4%). This difference should be interpreted in relation to the timing of the evidence collection: Hub reflections were generally completed during or immediately after learning, leaving substantially less opportunity to implement and document changes in professional practice than to formulate a concrete course of action. The much larger action-planning component therefore represents an important intermediate stage of transfer, while the smaller enacted-practice count captures the stricter evidence of implementation already completed within the available piloting period.

Framework-guided thematic interview analysis evidence provides a stricter qualitative test of enacted transfer because an implemented problem-solution pair was counted only when a participant explicitly linked a concrete professional problem or need to a response that had already been put into practice. Ten such implemented problem-solution pairs were identified, while three additional solutions remained planned and were excluded from the implemented count. **Implemented examples included** collaborative real-life problem-solving activities, interactive revision and feedback, creation and use of digital and video resources, ethical boundaries for classroom AI use, a school digital-leadership team, staff-learning resources created with NotebookLM, digital portfolio practices, revision of acceptable-use policy and digital planning, AI risk-evaluation tools, and dissemination through recurring staff meetings and training. These are auditable evidence examples rather than estimates of participant prevalence.

Table 5. Interview evidence (Framework-guided thematic analysis) of transfer by level

Impact level	Actual examples	Planned/expected examples	Evidence interpretation
Individual and classroom practice	9	1	Strong
School	6	2	Strong, but role-concentrated
Inter-organisational	2	1	Mixed / context-dependent

At individual and classroom-practice level, **transfer was visible in more** purposeful pedagogical judgement, resource creation and adaptation, inclusive practice, reflection and learner engagement. At school level, the **evidence included** staff learning, recurring knowledge sharing, digital-leadership teams, resource adoption, policy development and school digital planning. These examples **indicate** that learning was beginning to enter organisational routines, although the strongest cases were concentrated among participants already holding leadership or coordination responsibilities. Inter-organisational transfer was less **extensive and was clearest where mobility, international workshops and structured co-creation deliberately created opportunities** for joint work and exchange.

The RTA interview findings support the interpretation of transfer as a socially and organisationally situated process. Reported classroom use and sharing show how learning can travel beyond the individual. Organisational influence is uneven and often depends on colleagues, leadership roles and existing routines.

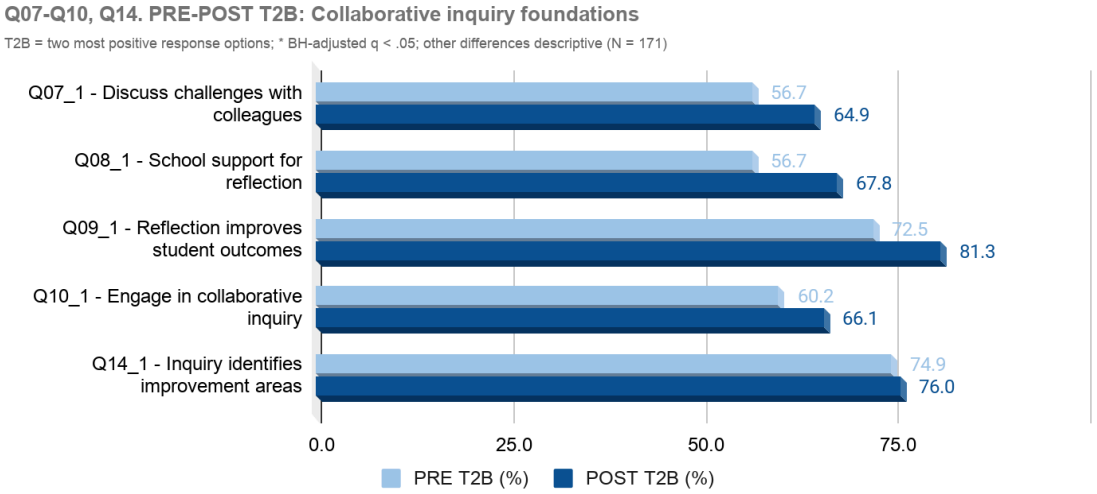
Study Visit evidence provides **complementary practice-based evidence** of transfer. Across the three delivered visits, all available submitted transfer records were analysed rather than sampled, exceeding the planned 50% analysis threshold. The evidence documented adaptations following peer or colleague feedback, **professional planning and contextual adaptation, practical application of AI and digital resources, resource development, dissemination and selected school-level implementation.** The strongest evidence was observed where participants were required to adapt or apply visit-related learning in a defined educational context. Particularly concrete follow-up evidence was available after the Limerick Study Visit, where adapted resources were applied across defined educational contexts rather than remaining solely at the level of future intention. Because evidence formats and completeness varied across visits and partners, these findings demonstrate documented transfer in selected settings rather than a uniform cross-visit transfer rate or causal effect.

4.4 Communities of Inquiry, Collaboration, Transformative Dialogue and Virtual Exchange

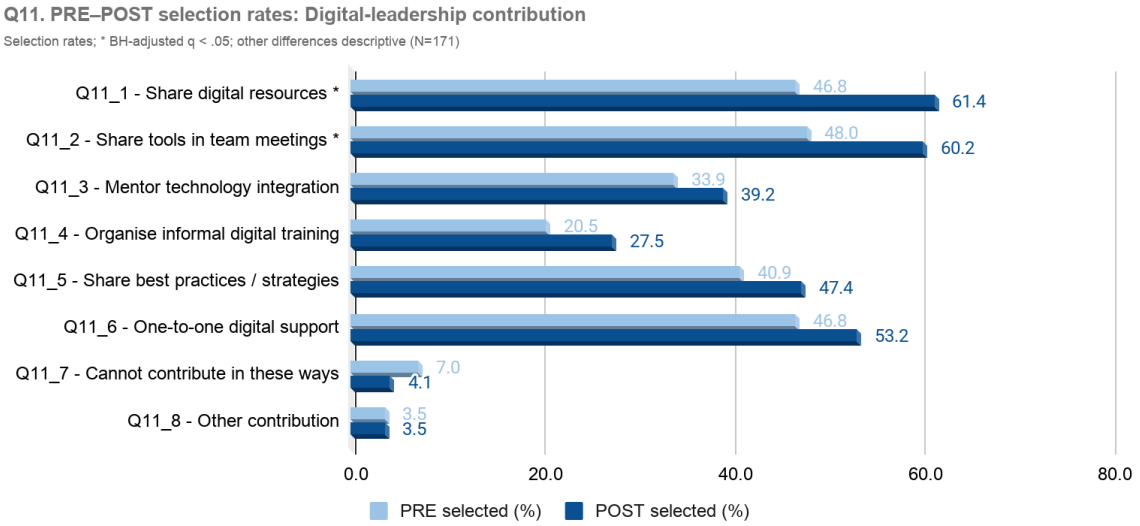
This section examines collaborative-inquiry processes, professional sharing and evidence relevant to dialogue and virtual exchange. The questionnaire provides item-level indicators of these processes; the results are not interpreted as a validated Community of Inquiry scale. Transformative dialogue and virtual exchange were likewise not measured as separate validated constructs, and the evidence below is therefore interpreted through observable patterns of discussion, contribution, sharing and interaction.

Across Q7-Q10 and Q14, all five indicators describing foundations for collaborative inquiry moved descriptively in a favourable direction. The largest changes concerned

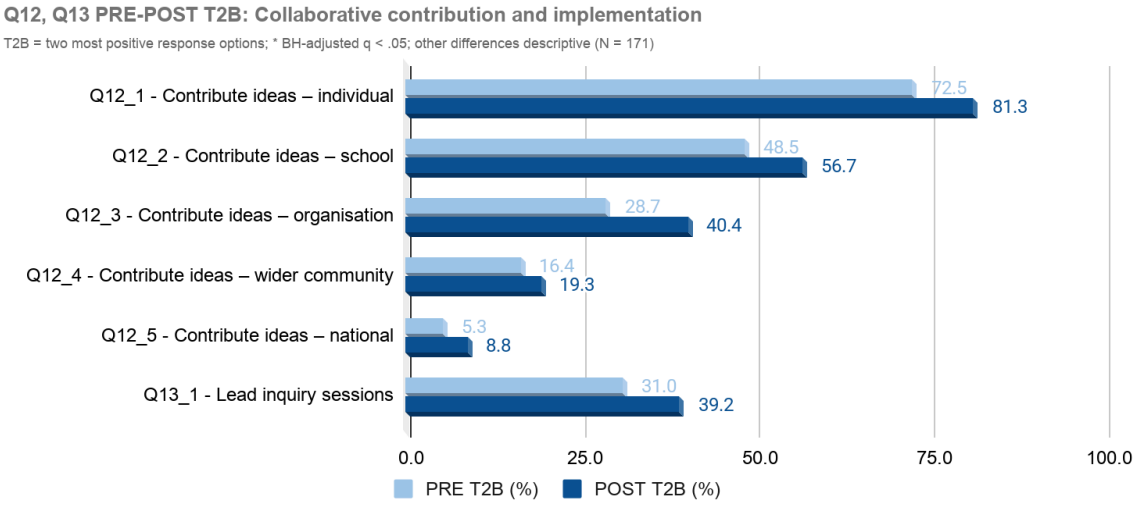
perceived school support for **reflective practice**, which **increased** from 56.7% to 67.8% (+11.1 percentage points), the perception that reflection leads to **better student outcomes**, which **increased** from 72.5% to 81.3% (+8.8 points), and discussion of reflective insights or challenges with colleagues, which increased from 56.7% to 64.9% (+8.2 points). Reported **engagement** in collaborative inquiry **increased** from 60.2% to 66.1%, while the proportion indicating that collaborative inquiry helped them identify areas for improvement in teaching **increased** from 74.9% to 76.0%. None of these changes remained statistically supported after Benjamini-Hochberg correction, so they are interpreted as descriptive evidence of strengthening collaborative conditions rather than confirmed item-level change.



Stronger statistical evidence was found for concrete forms of **professional sharing.** The proportion of participants reporting that they shared digital resources **increased** from 46.8% to 61.4% (+14.6 percentage points; q = .0136), while sharing useful digital tools or resources during team meetings **increased** from 48.0% to 60.2% (+12.3 points; q = .0466). Both changes remained statistically supported after correction for multiple testing. Other Q11 practices, including **mentoring colleagues, organising informal digital training, sharing best practices and providing one-to-one support**, also **increased** descriptively but did not remain statistically supported after correction. The results therefore provide the clearest quantitative evidence of development in resource exchange and knowledge sharing within participants' immediate professional communities.

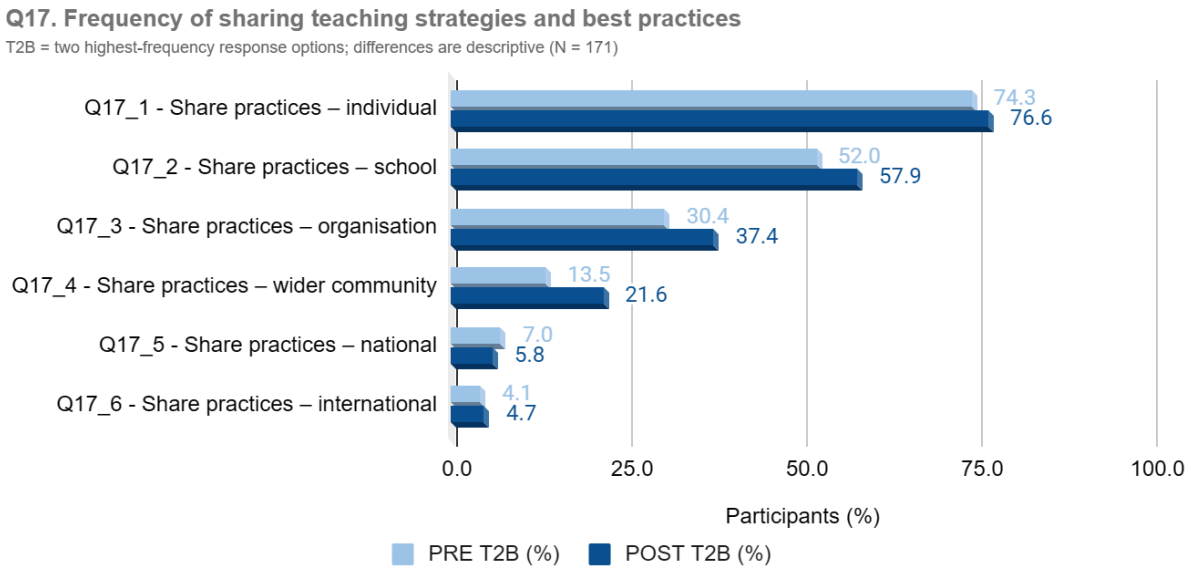


Contribution to collaborative inquiry also broadened descriptively across professional levels. The largest increase was at organisational level, from 28.7% to 40.4% (+11.7 percentage points), followed by individual-level contribution from 72.5% to 81.3% (+8.8 points) and school-level contribution from 48.5% to 56.7% (+8.2 points). Reported leadership in collaborative-inquiry sessions also increased from 31.0% to 39.2% (+8.2 points). None of these Q12-Q13 differences remained statistically supported after correction; they therefore describe the direction and distribution of collaborative participation rather than statistically confirmed change.

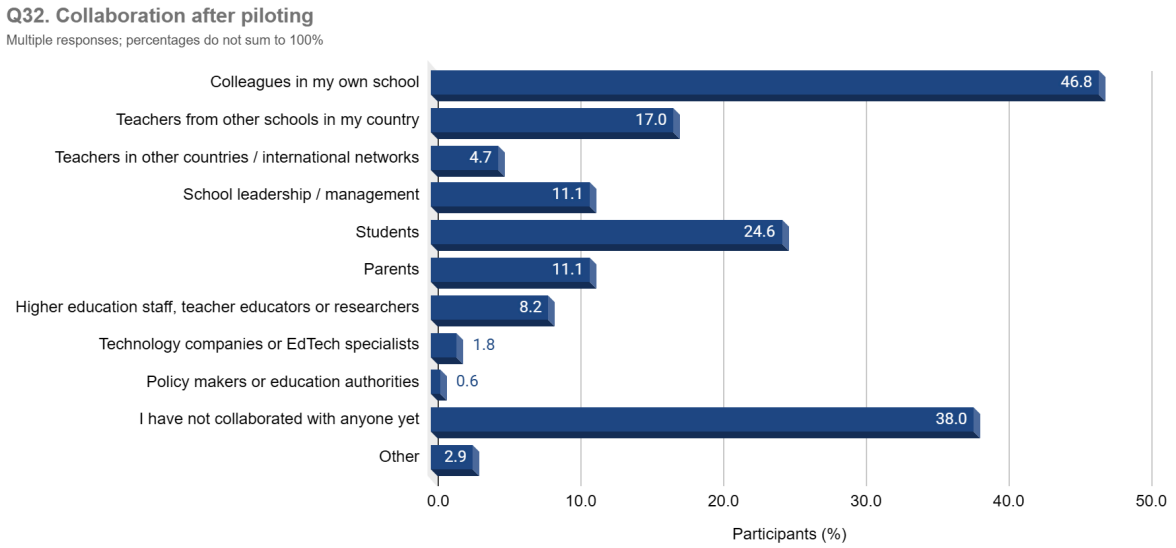


Q17 provides a complementary view of how frequently participants shared teaching strategies and best practices across different professional levels. Sharing remained most frequent at individual and school levels. The share in the two more-positive response categories increased from 52.0% to 57.9% at school level, from 30.4% to 37.4% at organisational level, and from 13.5% to 21.6% across the wider educational community. By contrast, national-level sharing changed from 7.0% to 5.8%, while international-level sharing remained low, changing from 4.1% to 4.7%. None of the Q17 changes remained statistically supported after correction. The pattern therefore suggests broader reported sharing in

participants' nearer professional environments, but does not demonstrate a general increase in national or international exchange.



The POST-only collaboration indicator (Q32) similarly shows that **collaboration following piloting** was concentrated primarily within participants' immediate professional environments. Collaboration was **reported** most often with colleagues in the same school (46.8%), followed by students (24.6%) and teachers from other schools in the same country (17.0%). Collaboration with school leadership and parents was each reported by 11.1%, while 8.2% reported collaboration with higher-education staff, teacher educators or researchers. Collaboration with teachers in other countries or international networks was reported by 4.7%. At the same time, 38.0% indicated that they had not yet collaborated with anyone. Because Q32 was POST-only and permitted multiple responses, these percentages describe collaboration partners after participation and are not measures of PRE-POST change or of the intensity or duration of collaboration.



The Hub reflection screening provides additional process-level context for **online interaction.** Of the 2,707 forum records reviewed during construction of the Mezirow-informed corpus, 498 were excluded from the final reflection analysis. Within these exclusions, 144 records fell into two existing screening categories that **included general agreement with other hub users' opinions** - explicitly consisted of brief agreement with another contribution, thanks or praise, or similarly non-substantive responses. These entries were appropriately excluded from the Mezirow-informed outcome analysis because they did not provide substantive evidence of learning, reflection, action planning or perspective transformation. Their presence nevertheless shows that Hub activity involved peer reaction rather than isolated posting.

Framework-guided thematic interview analysis reinforces this distinction between access to an online learning space and active collaborative exchange. Participants **valued flexible and self-paced access** because it allowed learning to take place around professional and personal schedules and was not tied to a single time or place. However, flexibility and visibility of other participants did not automatically produce interaction: the cross-case analysis identified online collaboration as uneven, and one limiting case explicitly described seeing other participants' contributions without communicating with them separately. Collaboration was experienced most positively where peer exchange was deliberately structured and facilitated through **workshops, mobility, co-creation and opportunities to demonstrate and discuss work.** The RTA interview findings reinforce the distinction between access to others' ideas and active collaborative learning. Participants value access to other perspectives; reciprocal learning becomes more concrete around shared tasks. Exposure, reading others' reflections and sustained collaboration represent different levels of participation.

Study Visit evidence provides **complementary evidence** of this facilitated form of professional exchange. Across the three implemented visits, participants worked in cross-country groups through **co-design, knowledge sharing, professional discussion and observation of educational practice.** In Rennes, **positive** responses were recorded for knowledge sharing by 34 of 35 respondents (97.1%) and for co-design by 30 of 35 (85.7%). In Madrid, both co-design and knowledge sharing received positive responses from 27 of 28 respondents (96.4%), while in Limerick both were positively rated by 25 of 26 respondents (96.2%). Open feedback also highlighted **cross-cultural and international professional exchange as a valued component**, although language, timing, differences in prior knowledge and the pace of collaborative work sometimes made interaction more demanding. These findings show that **cross-context exchange was strongest** when interaction was intentionally designed and facilitated; they should not be used to infer that passive access to the Hub generated an equivalent level of virtual exchange.

4.5 Learner Experience and Evidence of Learning-Outcome Achievement

This section examines participants' experience of the IDEAL Futures learning provision, the perceived professional usefulness of the Hub content, and verified course-based evidence of learning-outcome achievement. Learner-experience findings are

drawn from validated **POST-only questionnaire items**, interviews and supplementary Hub-reflection evidence, while course completion and designated level attainment are reported for the separate verified completion cohort. These sources are complementary: satisfaction and perceived usefulness describe participants' experience, whereas verified completion provides evidence that course-defined learning and assessment requirements were met. Neither is treated as a causal measure of competence gain.

Q25 showed a very high level of **perceived professional usefulness.** Of the 171 respondents, 91 (53.2%) rated the **IDEAL Futures Hub learning content** as **very useful** for their professional practice and 73 (42.7%) as **somewhat useful**. Together, 164 participants (95.9%) selected one of these two positive categories. Six respondents (3.5%) were neutral and one (0.6%) selected the least positive category. These results indicate perceived value rather than demonstrated competence.

Q26 provided a broader assessment of the **Hub learning experience.** Across the six statements, ratings of 4-5 ranged from 62.6% to 71.3%. The highest positive ratings concerned the **understandability of learning tasks and support for independent learning**, both rated 4-5 by 71.3% of respondents. Clearly structured learning content was rated positively by 70.8%, understanding what needed to be completed to reach the learning goals by 69.0%, and ease of navigation by 65.5%. Feedback and self-check activities received the lowest, although still majority-positive, rating at 62.6%. The pattern indicates a generally positive experience while also identifying feedback and navigation as comparatively weaker elements.

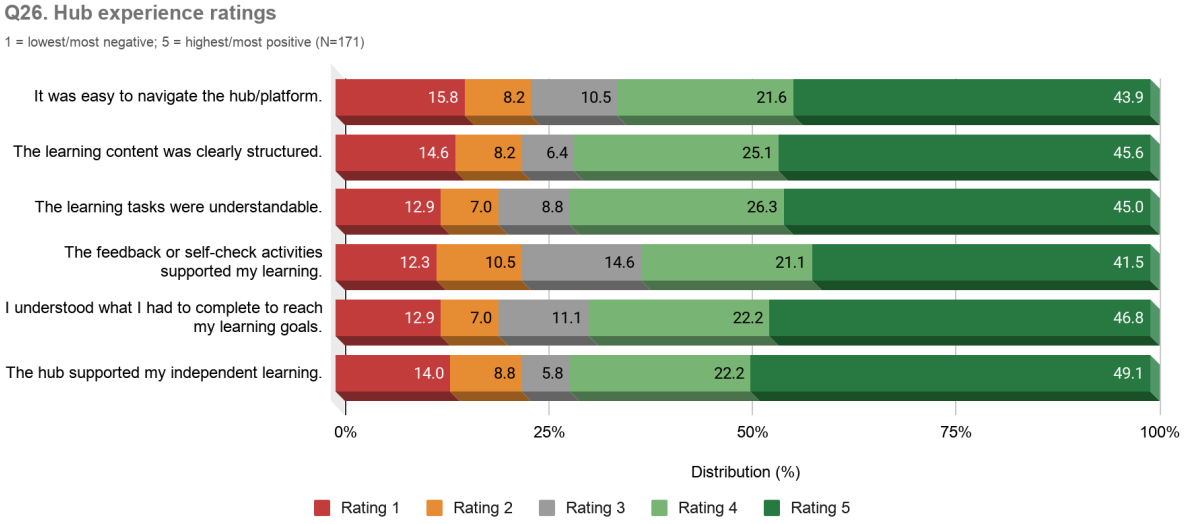


Table 6. Q30. Perceived value of the IDEAL Futures piloting experience

Theme or response category	n	% of substantive responses
Pedagogical relevance and design	82	53.6
Digital tools and resources	78	51.0
Collaboration and professional exchange	42	27.5
Learning format, support and materials	39	25.5
Reflection, confidence and professional direction	38	24.8
Responsible and inclusive digital practice	31	20.3
School-level digital leadership	20	13.1
General value or information only	5	3.3
No value identified	1	0.7

Note. Denominator: 153 substantive responses. The seven value themes overlap; percentages do not sum to 100%. General and negative responses remain in the denominator. Fifteen missing responses and three punctuation-only entries were excluded.

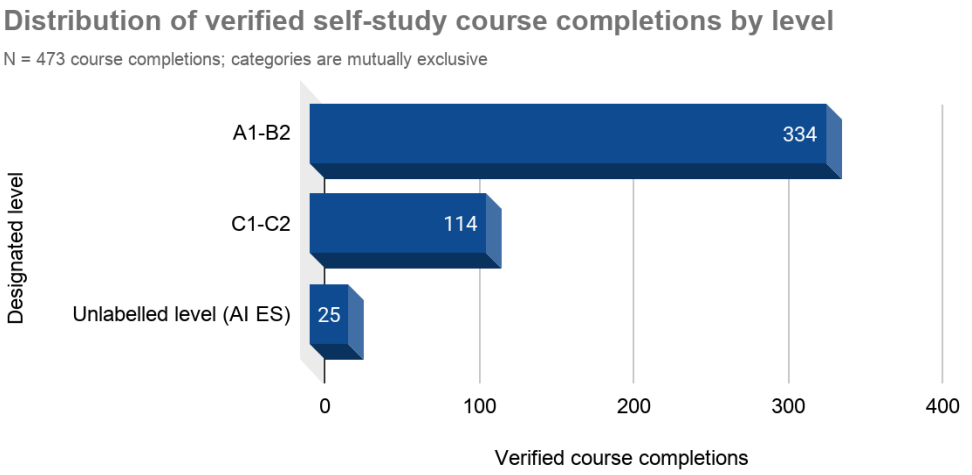
Q30 added qualitative detail to the usefulness and Hub-experience ratings. Among 153 substantive responses, pedagogical relevance and design (53.6%) and digital tools and resources (51.0%) were the most frequently identified sources of value. Participants also valued professional exchange, the learning format and support, reflection and confidence, responsible and inclusive practice, and school-level digital leadership. Qualified accounts highlighted limited time, extensive content and complex terminology; one respondent identified no valuable aspect. Some responses described intended application or tools still to be explored. These findings indicate perceived professional value and self-reported learning, rather than verified competence or implementation.

Framework-guided thematic interview analysis findings contextualised these questionnaire results. Participants generally described the learning experience positively, with practical relevance as the clearest and most consistent source of perceived value. They valued concrete examples, reusable resources, varied interactive and reflective activities, and learning tasks connected directly to educational needs. Flexible and self-paced access supported participation around professional schedules, while certificates or other visible forms of recognition strengthened motivation and professional value in some accounts. The principal recurring constraint was workload and time pressure, followed by uneven experiences with platform navigation, technical links and language or translation support. The RTA interview findings support this qualified interpretation of learner experience: positive overall assessments can coexist with specific difficulties.

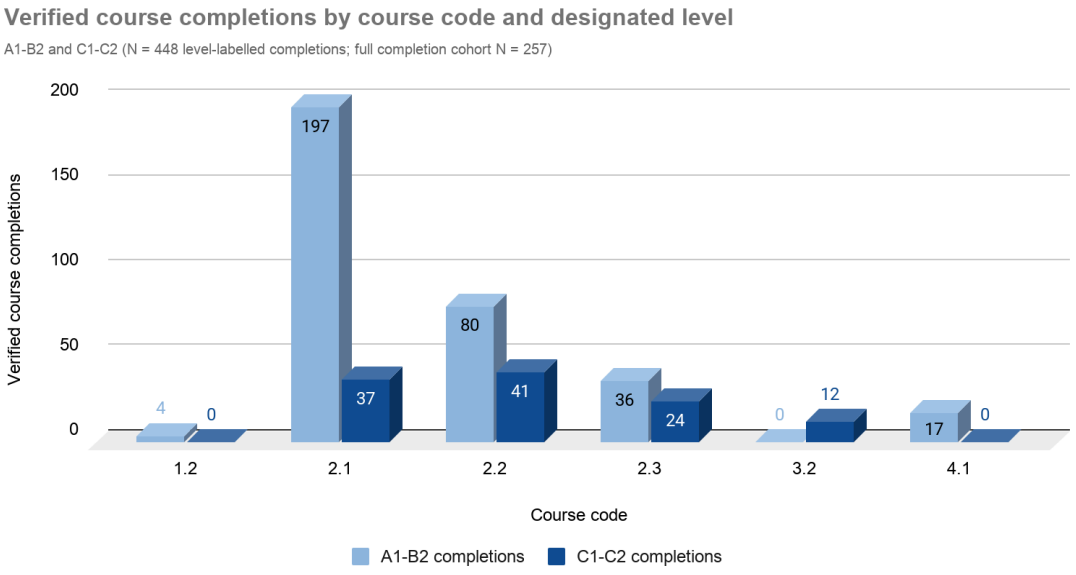
A supplementary non-exclusive content analysis of the 133 Hub reflections already coded as positive content feedback identified five recurring areas of value: practical usefulness and applicability to teaching or other professional work; reusable and downloadable resources such as criteria, checklists, tables and guidance materials; exposure to concrete digital tools, including AI-related applications; clear, structured and understandable presentation of content; and support for more purposeful selection and design of digital resources in relation to learning goals and learner needs. Responsible digital practice, including copyright, licensing, data protection and security, was also positively noted in a smaller group of reflections. These results concern reflections rather than unique participants, and the positive-feedback records were unevenly distributed across countries; they are therefore used as supplementary qualitative evidence rather than prevalence estimates.

Learner experience within the international Study Visits is reported extensively in D6.2. D6.3 therefore does not reproduce visit-specific satisfaction results, but treats the Study Visit evidence as complementary contextual evidence within the wider interpretation of the IDEAL Futures professional-learning experience.

Verified course-completion records provide a separate assessment-linked complement to the learner-experience evidence. Across 257 individual participants, 473 self-study course completions were verified.



All 257 participants completed at least one course; 98 completed two or more courses, 43 completed three or more, and 21 completed all six courses. Of the 473 verified completions, 334 (70.6%) were at designated A1-B2 level, 114 (24.1%) at C1-C2 level, and 25 (5.3%) Spanish Artificial Intelligence course completions had no proficiency level assigned. At participant level, 236 of 257 participants (91.8%) completed at least one A1-B2 course and 64 (24.9%) completed at least one C1-C2 course; these participant-level categories overlap because the same participant could complete courses at both levels.



Within the project, successful completion of a designated C1-C2 course is treated operationally as achievement of that course's C1-C2 level because completion required the relevant course-specific final test or assessed task. This is a course-based attainment indicator rather than a separate standardised proficiency test. The **257 verified course completers** also show that the planned WP6 piloting scale of approximately 200-250 learners was **achieved and slightly exceeded** at the verified-completion level.

4.6 Coverage of Planned Evaluation Evidence, Deviations and Interpretation Boundaries

The extent to which the proposal-specified WP6 evaluation evidence was implemented, together with the principal deviations and interpretation boundaries, is summarised below.

Table 7. Coverage of Planned WP6 Evaluation Evidence and Deviations

Planned evaluation evidence	Status	Evidence / implementation note
PRE-POST evaluation of digital competence and digital-leadership-related practice	**Achieved**	Matched PRE-POST analysis completed for N = 171 participants.
Interviews with a sample of 25% of learners	**Achieved**	43 unique interviews were analysed, equivalent to 25.1% of the validated N = 171 evaluation cohort.
Analysis of at least 50% of learner activities using a Mezirow-informed framework	**Achieved**	2,209 Hub reflections were analysed using the project-specific Mezirow-informed framework.
Post-course evaluation of learner experience	**Achieved**	Learner-experience evidence was analysed through the validated POST questionnaire cohort (N = 171).
Sociotechnical-pedagogical content analysis of a sample of learner activities	**Achieved**	Analysis of learner activities has now been addressed through a separate analysis of all 2,209 included Hub reflections.
Content analysis of a sample of individual portfolios/work samples to assess learning outcomes	**Achieved**	Learning-outcome evidence was analysed through course assessments and practical activities, Hub reflections and Study Visit POST work samples. In addition, 257 participants achieved 473 verified self-study course completions.
Analysis of 50% of peer-observation records to assess transfer to practice	**Achieved with deviation**	Available submitted transfer records were analysed, but the evidence format evolved across the three Study Visits and did not constitute one harmonised peer-observation dataset.
Global Transformational Leadership (GTL) scale	**Not adopted as a measurement tool**	GTL was not adopted as a measurement tool, and an alternative approach better suited to the project's timeframe and developmental focus was pursued instead

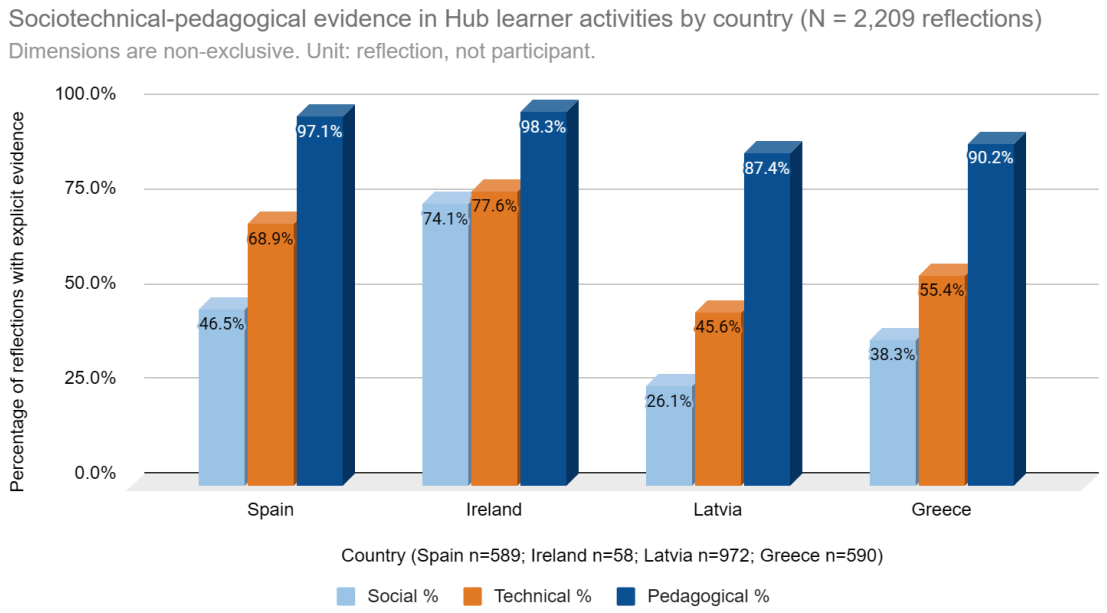
4.7 Sociotechnical-Pedagogical Analysis of Hub Learner Activities

Pedagogical evidence was identified in 2,011 reflections (91.0%), technical evidence in 1,221 (55.3%) and social evidence in 797 (36.1%).

Table 8. Sociotechnical-Pedagogical Analysis

Country	Reflections N	Social n (%)	Technical n (%)	Pedagogical n (%)
Spain	589	274 (46.5%)	406 (68.9%)	572 (97.1%)
Ireland	58	43 (74.1%)	45 (77.6%)	57 (98.3%)
Latvia	972	254 (26.1%)	443 (45.6%)	850 (87.4%)
Greece	590	226 (38.3%)	327 (55.4%)	532 (90.2%)
Overall	**2,209**	**797 (36.1%)**	**1,221 (55.3%)**	**2,011 (91.0%)**

Dimensions are non-exclusive. The unit is a reflection/learner activity, not a participant.



Pedagogical evidence predominated in every country. Recurring principal subthemes concerned purposeful resource selection and instructional alignment, perceived learning usefulness, and adaptation to learner needs. **Technical** commentary centred on content-creation functions, accessibility and ease of use, and search efficiency. **Social** evidence concerned inclusion, professional exchange, collaboration and resource sharing. Technical and **pedagogical** evidence co-occurred in 1,100 reflections (49.8%); all three dimensions appeared in 483 (21.9%).

Positive appraisals predominated, but these included endorsed principles, perceived affordances and intended uses. They should not be interpreted as Hub satisfaction rates or verified implementation. Technical coding retained 70 negative and 63 mixed reflections;

pedagogical coding retained 32 negative and 78 mixed reflections, preserving constraints alongside perceived benefits.

Country differences remain descriptive because corpus sizes, course mix, prompts and response characteristics differ. Technical evidence often concerns tools discussed during learning rather than the Hub itself; limited commentary cannot establish poor usability. The analysis identifies explicit textual evidence and does not establish participant-level prevalence, causal impact or independently observed competence.

4.8 Cross-Source Triangulation of Findings

Triangulation compared questionnaire results, Hub reflections analysed through Mezirow-informed and sociotechnical-pedagogical approaches, participant interviews examined through framework-guided thematic analysis and reflexive thematic analysis, verified course-completion records and Study Visit evidence across the five thematic areas. It examined convergence, complementarity, tensions and evidence gaps (the D6.3 Data Triangulation Matrix in Chapter 8 Annexes). The two interview approaches provided complementary interpretations of the same 43 interviews, while both Hub analyses examined the same 2,209 reflections; these analytical approaches were not treated as independent data sources.

The combined evidence supports strengthened reflective professional judgement, more purposeful digital practice and increased professional resource sharing. Questionnaire findings identify specific statistically supported changes, while interviews and Hub reflections explain their pedagogical meaning. Increased self-reported comfort with digital integration and changes in expressed understanding complemented the qualitative emphasis on pedagogical judgement. The sociotechnical-pedagogical analysis highlighted purposeful alignment between tools, learning goals and learner needs, while RTA clarified how supported experimentation, shared tasks and organisational routines shaped professional learning and transfer. Evidence of learning and action planning was substantially more common than explicit perspective transformation. Transfer was documented through participant accounts and Study Visit follow-up records, particularly at individual/classroom and selected school levels; inter-organisational transfer was more limited and depended on deliberately facilitated exchange. Positive learner-experience findings converged around practical relevance, reusable resources and flexible access. Separately, verified course completions confirmed achievement of course-defined assessment requirements.

Triangulation also retained differences between sources. Positive experiences coexisted with workload, navigation and language barriers, while highly valued facilitated collaboration contrasted with uneven online interaction. The small number of Hub reflections explicitly documenting implementation did not contradict broader reported application: the sources differed in timing, prompts and units of analysis.

The evidence did not establish causal impact, a generalised or independently tested increase in digital competence, widespread perspective transformation, sustained implementation across the cohort, or sustained international communities of inquiry. Satisfaction, intentions and course completion were not treated as interchangeable evidence of competence or transfer. Overall, the findings support a contribution to professional learning and emerging

practice change, with the strength and scope of conclusions remaining specific to each evidence source. The RTA interview analyses suggest that confidence developed through manageable experimentation and reflection, while transfer depended partly on professional relationships, leadership roles and organisational routines.

5. Recommendations and Sustainability

Recommendations for future implementation were derived from two complementary qualitative evidence sources: the POST-only open-text question on improvements (Q31_1) and the Framework-guided thematic interview analysis. Sustainability was additionally considered in relation to participants' reported intentions for the next 6-12 months (Q34). Together, these sources identify both immediate improvements to the IDEAL Futures learning offer and the conditions required to support continued use beyond the piloting period.

5.1 Recommendations from POST-only participant feedback

Of the 171 participants in the POST dataset, 154 (90.1%) provided a non-blank response to Q31_1: *"What should be improved in the IDEAL Futures content, hub, or piloting process before future implementation?"* Of these, 109 responses contained at least one specific improvement-oriented recommendation, while the remaining non-blank responses either indicated that no improvement was needed, provided a positive or non-specific comment, or did not identify a concrete change.

The responses were coded into non-exclusive higher-order themes; consequently, one participant could contribute to more than one theme and the percentages do not sum to 100%. The five most frequently identified priorities were:

1. **Hub usability, navigation and technical/assessment reliability** - 50 participants (32.5% of the 154 non-blank responses; 29.2% of the full POST cohort). Recommendations concerned clearer navigation and course sequencing, more transparent progress and completion status, and resolution of recurring technical issues affecting tests, self-check activities, links, videos, downloadable resources and activity completion.
2. **More practical, real-life and context-specific examples and resources** - 44 participants (28.6%; 25.7% of the full cohort). Participants requested additional classroom examples, hands-on activities, ready-to-use resources and examples adapted to different subjects, educational stages and professional contexts.
3. **Language quality and multilingual/local-language access** - 32 participants (20.8%; 18.7%). Responses identified inconsistent or inaccurate translations, terminology and grammatical issues, as well as incomplete local-language availability

of videos and other resources. Future implementation should therefore include systematic multilingual quality assurance and consistent provision of translated or subtitled learning resources.

4. **Clearer content structure, sequencing and manageable density** - 27 participants (17.5%; 15.8%). Participants recommended clearer instructions and progression between learning units, reduced theoretical or text density in some sections, clearer completion expectations and a more manageable organisation of content while retaining the substantive depth of the courses.
5. **More structured collaboration, feedback, mentoring and live support** - 24 participants (15.6%; 14.0%). Participants called for more opportunities for facilitated experience exchange, feedback, peer interaction and synchronous support rather than relying primarily on optional or self-directed interaction.

These findings indicate that future implementation should not primarily focus on adding substantially more content. Instead, priority should be given to improving the accessibility, usability and practical transferability of the existing learning offer: strengthening platform and assessment quality assurance, increasing the proportion of directly applicable resources, ensuring consistent language access, organising content into clearer learning pathways, and embedding structured opportunities for interaction and support.

5.2 Recommendations from the interview analysis

The Framework-guided thematic interview analysis findings reinforce and extend the POST-only recommendations by identifying the implementation conditions under which the IDEAL Futures approach is most likely to remain usable and sustainable. Several of the strongest interview-derived recommendations converge directly with the Q31_1 findings.

First, participants recommended **manageable modular pathways**, with content divided into shorter, clearly sequenced units and realistic completion windows. This responds to Framework-guided thematic interview analysis evidence that time burden and dense content can reduce participation even when the content itself is perceived as relevant. Flexibility should therefore be retained, but self-paced learning should be combined with **scheduled live check-ins, workshops or other forms of facilitated support**. A recurring sequence of self-study, facilitated interaction, application in practice and follow-up would preserve the accessibility of asynchronous learning while addressing the need for clarification, motivation and exchange.

Second, the interviews emphasised **structured collaboration and co-creation**. Collaboration was particularly valuable when it was deliberately organised through peer tasks, joint creation, discussion or sharing of applied examples; optional or weakly facilitated online interaction generated less consistent engagement. Future delivery should therefore integrate peer exchange into scheduled learning activities, professional learning communities, staff meetings or cross-school workshops rather than treating collaboration as an optional supplementary activity.

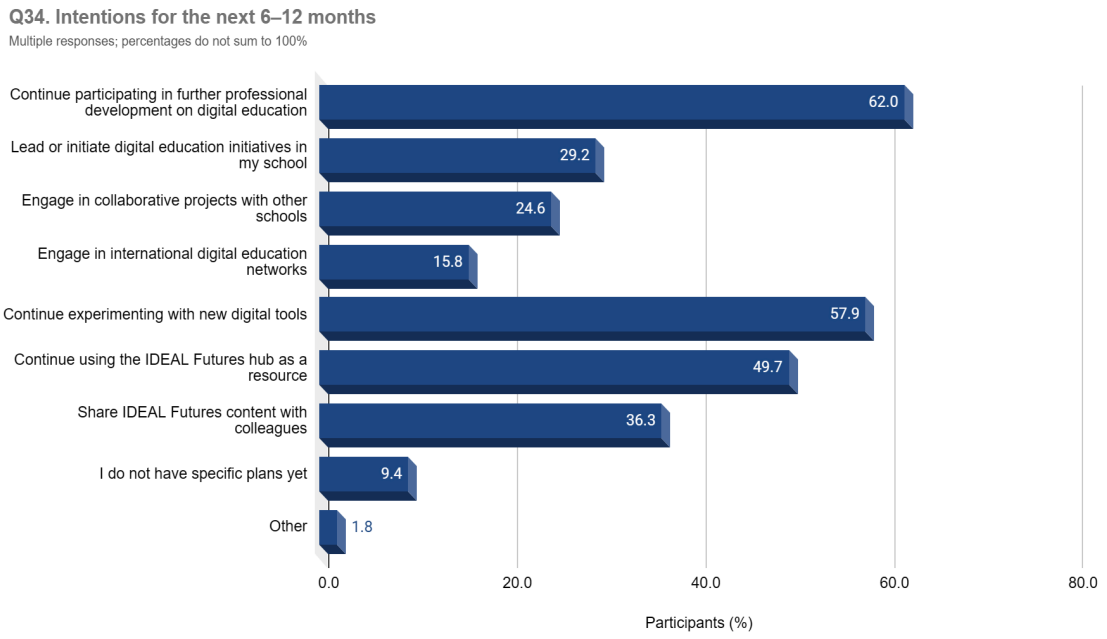
Third, participants recommended **ongoing content renewal**, particularly in rapidly changing areas such as artificial intelligence, ethics, copyright, accessibility and emerging digital tools. A defined review cycle and clear ownership of content maintenance would be required if the

Hub is to remain relevant beyond the project period. Interviewees also supported **context- and role-sensitive pathways**, allowing participants to work with examples and applied assignments that correspond more directly to their learner group, organisational role or educational context while retaining a common core framework.

The interview analysis also reinforces the need for **systematic usability, navigation and language quality assurance**, including regular platform checks, link maintenance and consistent multilingual support. In addition, participants identified mentoring, digital leadership roles and continuing communities of practice as mechanisms for transferring individual learning into wider organisational practice. Certificates and other forms of visible recognition should be retained and, where appropriate, linked to existing professional-development or progression structures.

5.3 Sustainability beyond the piloting period

POST-only data provide evidence of substantial intention to continue using and extending learning after the pilot. Participants' intentions for the following 6-12 months provide evidence relevant to the **project's sustainability commitments.** The most frequently selected intentions were continued **professional development** in digital education (62.0%), **continued experimentation with new digital tools** (57.9%) and **continued use of the IDEAL Futures Hub as a resource** (49.7%). In addition, 36.3% intended to share IDEAL Futures content with colleagues, 29.2% to lead or initiate digital education activities in their school, and 24.6% to engage in collaborative projects with other schools. These results indicate potential for continued use, peer dissemination and leadership beyond the formal piloting period.



These results indicate potential for continuation at both individual and organisational levels, but intentions should not be interpreted as evidence of sustained implementation. The

Framework-guided thematic interview analysis evidence identifies several mechanisms that could help convert these intentions into more durable practice. IDEAL Futures learning can be incorporated into annual professional-development plans, with protected and staged completion time rather than relying solely on voluntary participation alongside normal workload. Mentors, digital leaders or digital-leadership teams can support classroom application and provide continuity after course completion. Staff meetings and professional learning communities can be used for recurring discussion, peer demonstration and exchange of resources, while regular content, technical and language-quality reviews can maintain the relevance and usability of the Hub.

A further recommendation emerging from the interviews is to introduce a **post-course implementation follow-up**, for example 6-12 weeks after completion. Such follow-up should distinguish between practices that participants have actually implemented, those that remain planned, and cases where additional support is required. This would provide a more credible basis for assessing sustained transfer than immediate post-course intentions alone and would also create an opportunity for mentoring and organisational learning.

Overall, the WP6 evidence suggests that sustainability depends less on maintaining a one-off piloting structure and more on integrating IDEAL Futures resources and learning processes into recurring professional-development and organisational routines. Key enabling conditions are manageable learning pathways, practical and context-sensitive resources, reliable and multilingual access, structured peer and mentoring support, regular content renewal, continued recognition of learning, and systematic follow-up of implementation.

The RTA interview findings complement the sustainability discussion by identifying what participants consider necessary for the Academy's continuing value. Future value is imagined through current content, practical examples, continued exchange and reliable access. Participants' requests connect sustainability to maintenance and an active professional community. Recommendations describe desired provision, not features already delivered or commitments to future participation.

These recommendations represent the contribution of WP6 piloting and participant evidence to sustainability planning. They should not be interpreted as a complete project-level sustainability model or as evidence that long-term institutionalisation has already occurred. Broader sustainability arrangements, responsibilities and continuation mechanisms remain within the scope of WP7.

6. Academic Publications

Three publication outputs are associated with WP6. The journal article "Reflective Prompt Engineering for Assessment Rubric Optimization: An Empirical Study of Human-AI Alignment" has been **published** (DOI: 10.1007/s10758-026-00979-2). The book chapter "AI Generated Text Detection in Student Theses as a Pedagogical Tool for Academic Integrity in a Low-Resource Language" has been **accepted** for publication in the Springer volume Artificial Intelligence in Higher Education Framed by a Pedagogy First Approach. A third publication on the impact of developing transformative leadership skills in a digital era will draw on the final evidence and analyses presented in D6.3 and **will be prepared after the formal end of the project.**

Table 9. Academic Publications

Real title	Progress	Type	Time frame	Info
Reflective Prompt Engineering for Assessment Rubric Optimization: An Empirical Study of Human-AI Alignment	Published	Journal article	M36	https://link.springer.com/article/10.1007/s10758-026-09979-2 Published on 25 April 2026 DOI https://doi.org/10.1007/s10758-026-09979-2
Springer book: "Artificial Intelligence in Higher Education Framed by a Pedagogy First Approach" Chapter: "AI Generated Text Detection in Student Theses as a Pedagogical Tool for Academic Integrity in a Low-Resource Language"	Accepted	Book chapter	M36	Publisher: Springer Cham 11 October 2026 ISBN 978-3-032-30458-2.

7. Conclusions

The WP6 evaluation indicates that IDEAL Futures supported more purposeful digital practice, stronger reflective professional judgement and increased sharing of digital resources. Across the five thematic areas, the evidence suggests that the Academy's contribution lay in helping participants connect digital tools with pedagogical goals, learner needs and collaborative professional learning.

Reflection supported instructional adaptation, while Hub contributions predominantly demonstrated learning and action planning. Explicit perspective transformation was less frequent. Transfer was documented in classroom practice and selected school-level initiatives, including resource adaptation, staff learning and digital-leadership structures. Wider organisational exchange was strongest where collaboration was deliberately facilitated through workshops, Study Visits and co-creation.

Participants valued practical relevance, reusable resources and flexible access. Verified course completion demonstrated achievement of course-defined assessment requirements, and the planned piloting scale was achieved and slightly exceeded. However, positive learner experience coexisted with workload, navigation and language barriers. Flexible online access supported participation, while meaningful collaboration required structured interaction and support.

Taken together, the findings support a contribution to professional learning and emerging practice change associated with the piloting. The evaluation does not establish causal impact, a generalised increase in independently assessed digital competence or sustained transformational leadership. Self-reported outcomes, planned application and documented implementation remain distinct, and longer-term follow-up is needed to assess continuity and organisational integration.

Future development should prioritise manageable learning pathways, practical application, reliable multilingual access and facilitated peer and mentoring support. Embedding these elements within recurring professional-development routines would help translate the learning and intentions documented in D6.3 into sustained practice.

8. Annexes

During piloting Mezirow-informed outcome - Forum records summary

									Mezirow-Informed Operational Codebook					
Country_Analysis	**Forum records**	**Reflection activity**	**Working Include**	**Review**	**Exclude**	**Exact duplicates**	**Repeated text**	**Records coded**	**Knowledge and skill acquisition**	**Critical assessment of assumptions**	**Perspective transformation**	**Planning a course of action**	**Reported action or practice integration**	**Positive content feedback**
Spain	718	715	589	0	129	79	145	589	587	12	20	334	0	7
Ireland	141	114	58	0	83	66	107	58	56	6	6	33	3	6
Latvia	1082	1081	972	0	110	63	121	972	809	5	6	296	6	111
Greece	766	760	590	0	176	65	146	590	574	0	1	208	0	9
Unassigned (N/S)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unverified (GB)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other / verify	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**2707**	**2670**	**2209**	**0**	**498**	**273**	**519**	**2209**	**2026**	**23**	**33**	**871**	**9**	**133**

Post piloting interviews - Impact by level

ID	Country	Impact level	Evidence state	Outcome/example	Analytic note
LU06	Latvia	Individual and classroom practice	ACTUAL	More purposeful use of technology and clearer pedagogical rationale.	Professional judgement
LU06	Latvia	Individual and classroom practice	ACTUAL	Created and used new digital learning and video materials; discussed AI ethics.	Classroom transfer
SP01	Spain	Individual and classroom practice	ACTUAL	Introduced collaborative real-life problem-solving activities.	Classroom transfer
SP01	Spain	Individual and classroom practice	ACTUAL	Reported greater confidence integrating digital tools.	Individual competence
SP08	Spain	Individual and classroom practice	PLANNED	Planned visual supports and reflection activities adapted to young learners.	Not yet observed
GR03	Greece	Individual and classroom practice	ACTUAL	Linked theory to educational needs and reported increased confidence.	Individual competence
GR03	Greece	Individual and classroom practice	ACTUAL	Created an Educaplay revision activity with immediate feedback.	Classroom transfer
GR07	Greece	Individual and classroom practice	ACTUAL	Adopted a more systematic approach to selecting digital resources.	Professional judgement
GR07	Greece	Individual and classroom practice	ACTUAL	Applied copyright and licensing considerations when using/adapting resources.	Safe and ethical practice
IE06	Ireland	Individual and classroom practice	ACTUAL	Professional exchange contributed to knowledge and confidence.	Individual competence
LU01	Latvia	School	PLANNED	Planned a school technology audit linked to accreditation.	Not yet completed
LU07	Latvia	School	PLANNED	Planned changes to school processes and recommendations to colleagues.	Not yet completed
LU12	Latvia	School	ACTUAL	Shared project learning in weekly meetings and organised practical staff training.	Knowledge dissemination
IE03	Ireland	School	ACTUAL	Moved toward a shared professional learning culture with staff as contributors and leaders.	Organisational change
IE03	Ireland	School	ACTUAL	Created a digital leadership team and peer-support structures.	Distributed leadership
IE06	Ireland	School	ACTUAL	Used practical AI risk-evaluation materials to inform school-team work.	Policy/practice support
IE08	Ireland	School	ACTUAL	Disseminated Canva and NotebookLM; tools were adopted by staff.	School-wide transfer
IE10	Ireland	School	ACTUAL	Reflection informed an acceptable-use policy and the school's digital plan.	Policy and planning
LU06	Latvia	Inter-organisational	ACTUAL	International workshops enabled exchange across countries and educational contexts.	International professional learning
IE08	Ireland	Inter-organisational	ACTUAL	International co-creation sessions supported joint experimentation and exchange.	Co-creation
IE08	Ireland	Inter-organisational	PLANNED	Recommended more structured collaboration and show-and-tell time.	Future design recommendation

Post piloting interviews - Learner satisfaction

Domain	Assessment	Analytical conclusion	What participants valued	Limiting / negative cases	Evidence IDs	Level link	D6.3-safe wording
Overall learning experience	**POSITIVE**	The programme was generally experienced as relevant, useful and professionally meaningful.	Practical orientation; connection to real educational needs; usable outputs.	Some positive accounts coexist with workload and platform friction.	*LU07, LU12, SP01, SP08, GR03, GR07, IE06, IE08*	**Individual**	Participants generally described the learning experience positively, especially where content was practical and directly applicable.
Practical relevance	**STRONG POSITIVE**	Applied examples and concrete tasks were a central source of satisfaction.	Resources, classroom activities, checklists, policy work and reflection leading to outputs.	Value was weaker when content felt dense or insufficiently contextualised.	*LU06, SP01, GR03, IE06, IE08, IE10*	**Individual; school**	Practical relevance was the clearest and most consistent source of perceived value.
Flexibility and self-paced access	**POSITIVE**	Flexible access supported participation around work and personal schedules.	Freedom from a fixed time/place; ability to progress independently.	Flexibility did not fully offset the overall time burden.	*LU01, LU07, SP08, IE02, IE06*	**Individual**	Flexibility supported access, although time pressure remained a recurring constraint.
Content and learning activities	**POSITIVE WITH NUANCE**	Multimodal resources, examples and reflective tasks helped participants connect theory to practice.	Videos, interactive activities, reflection, real-life tasks and immediately reusable materials.	Some participants wanted shorter, more modular or role-specific pathways.	*LU06, SP01, SP08, GR03, IE06, IE10*	**Individual**	Participants valued varied and applied learning activities, while recommending more manageable and differentiated pathways.
Collaboration and co-creation	**MIXED / CONTEXT-DEPENDENT**	Collaboration was highly valued when structured and facilitated, especially in mobility and co-creation settings.	Peer exchange, international workshops, joint experimentation and show-and-tell.	Platform visibility alone did not generate interaction; online collaboration was uneven.	*LU01, LU06, IE03, IE06, IE08*	**All three levels**	Collaborative learning was valuable when deliberately structured; passive online spaces were insufficient.
Recognition and completion	**POSITIVE**	Certificates or visible recognition strengthened motivation and perceived professional value.	Formal recognition and evidence of completion.	Recognition mechanisms were not equally prominent in all interviews.	*SP08, GR03, IE02, IE08*	**Individual; school**	Recognition supported motivation and should be retained in future delivery.
Platform, navigation and access	**MIXED**	The digital environment enabled access but usability, links, navigation or language occasionally reduced satisfaction.	Access to resources and progress tracking.	Technical friction, navigation and translation/language issues appeared as recurring improvement needs.	*LU01, LU07, SP08, GR07, IE02*	**Individual**	Digital access was useful, but usability and language support require continued improvement.
Workload and timing	**NEGATIVE RECURRING CONDITION**	Time demand was the main cross-cutting source of dissatisfaction and a risk to participation or completion.	Participants still valued depth and content.	Busy weeks, course volume and synchronous timing competed with work duties.	*SP08, IE02, IE06*	**Individual; school**	Workload and scheduling should be treated as the principal participation risk.

Post piloting interviews - solutions used in practice and documented problems addressed

No.	Evidence ID	Country	Level	Problem / need	Implemented solution	Reported or intended result	State	Counted?
1	SP01	Spain	**INDIVIDUAL / CLASSROOM**	Need for stronger engagement and real-life relevance.	Collaborative activities in which adult learners solved real-life problems.	More active participation and teamwork in learning.	ACTUAL	YES
2	GR03	Greece	**INDIVIDUAL / CLASSROOM**	Need for engaging revision and immediate feedback.	Interactive revision activity created in Educaplay.	Interactive practice with an immediate-feedback mechanism.	ACTUAL	YES
3	LU06	Latvia	**INDIVIDUAL / CLASSROOM**	Need for more engaging and contemporary learning materials.	New digital learning materials and video resources were created and used.	Concrete transfer into teaching resources.	ACTUAL	YES
4	LU06	Latvia	**INDIVIDUAL / CLASSROOM**	Uncertainty about appropriate and ethical classroom use of AI.	Clear boundaries and ethical considerations were incorporated into practice.	More purposeful and responsible technology use.	ACTUAL	YES
5	IE03	Ireland	**SCHOOL**	Top-down professional development limited staff ownership and peer support.	A digital leadership team and shared professional-learning culture were established.	Staff became contributors and leaders, not only recipients.	ACTUAL	YES
6	IE08	Ireland	**SCHOOL**	Staff needed accessible ways to process and discuss complex content or policy.	NotebookLM was used to create summaries, podcasts and questions for staff learning.	Materials became easier to disseminate and discuss.	ACTUAL	YES
7	IE08	Ireland	**INDIVIDUAL / CLASSROOM**	Need for student digital creation and portfolio practices.	Canva, Teams and Book Creator were used for digital outputs and portfolios.	Immediate classroom and school transfer.	ACTUAL	YES
8	IE10	Ireland	**SCHOOL**	Existing acceptable-use policy and digital planning needed renewal.	Reflection was converted into an updated policy/framework and practical digital plan.	A concrete organisational output was produced.	ACTUAL	YES
9	IE06	Ireland	**INDIVIDUAL / SCHOOL**	Need to evaluate AI tools and associated risks systematically.	Practical checklists and risk-evaluation tools were applied in school work.	More structured decisions about appropriate AI use.	ACTUAL	YES
10	LU12	Latvia	**SCHOOL**	Need to disseminate learning beyond the individual participant.	Knowledge was shared in weekly meetings and through staff training.	Learning entered recurring staff-development routines.	ACTUAL	YES

Planned solutions - excluded from the solved-problem count

No.	Evidence ID	Country	Level	Need / problem	Planned solution	Expected result	Why excluded	State
1	LU01	Latvia	SCHOOL	**Need for a structured view of school digital practice.**	Conduct a digital audit.	Evidence to inform school planning.	Not yet implemented at interview time.	PLANNED
2	LU07	Latvia	SCHOOL	**Need to formalise organisational application of learning.**	Apply learning in school processes.	Institutional transfer.	Participant explicitly said formal application had not yet occurred.	PLANNED
3	SP08	Spain	INDIVIDUAL / CLASSROOM	**Need for more inclusive support for young learners.**	Increase visual support and adapted reflection activities.	More accessible participation.	Future intention rather than observed action.	PLANNED

Post piloting interviews - participant recommendations

Recommendation theme	Priority	Recommended action	Interview-based rationale	Integration into routine professional development	Level(s)	Evidence IDs	Evidence strength	Boundary / note
Manageable modular pathways	**HIGH**	Break content into shorter, clearly sequenced units with realistic completion windows.	Time burden and dense content can reduce participation despite strong perceived relevance.	Offer modules within annual CPD calendars, with protected time and staged completion.	**Individual; school**	*SP08, IE02, IE06*	STRONG	Preserve depth while reducing overload.
Blended delivery	**HIGH**	Combine self-paced access with scheduled live check-ins or workshops.	Flexibility supports access; structured contact supports clarification, motivation and exchange.	Use a repeating cycle: self-study, facilitated session, classroom application, follow-up.	**Individual; school**	*LU01, LU07, IE02, IE06, IE08*	STRONG	Scheduling must accommodate working participants.
Structured collaboration and co-creation	**HIGH**	Provide facilitated peer tasks, show-and-tell time and joint creation rather than relying on passive forums.	Collaboration was high-value when deliberately organised but weak where interaction was optional or unstructured.	Embed peer exchange in staff meetings, learning communities and cross-school workshops.	**All three levels**	*LU01, LU06, IE03, IE06, IE08*	STRONG WITH LIMITING CASE	Online collaboration needs facilitation.
Ongoing content renewal	**HIGH**	Update content regularly, particularly AI, ethics, copyright, accessibility and emerging tools.	Participants valued current practical content and identified rapidly changing areas.	Schedule an annual content review and short update modules.	**Individual; school**	*LU06, GR07, IE06, IE10*	STRONG	Requires named ownership and review dates.
Mentoring and communities of practice	**HIGH**	Support implementation through mentors, digital leaders and continuing peer communities.	School-level transfer was strongest where learning was shared and leadership distributed.	Assign mentors or digital leadership teams; include implementation cases in recurring meetings.	**School; inter-organisational**	*LU12, IE03, IE08*	STRONG, ROLE-CONCENTRATED	School evidence is strongest among participants with leadership influence.
Recognition and progression	**MEDIUM-HIGH**	Retain certificates and consider stackable recognition or micro-credentials.	Recognition reinforces motivation and professional value.	Link completed modules and applied tasks to formal CPD records and progression pathways.	**Individual; school**	*SP08, GR03, IE02, IE08*	MODERATE	Recognition preferences vary by context.
Usability, navigation and language	**HIGH**	Simplify navigation, maintain links and provide consistent language/translation support.	Technical and language friction can reduce otherwise positive learning experiences.	Include routine platform checks, multilingual QA and a clear support route in every delivery cycle.	**Individual**	*LU01, LU07, SP08, GR07, IE02*	MODERATE-STRONG	Problems were uneven, so fixes should be monitored by context.
Context- and role-sensitive pathways	**MEDIUM-HIGH**	Differentiate examples and tasks by learner group, role and organisational context.	Practical relevance rises when participants can directly map content to their responsibilities.	Let participants select role-based cases and applied assignments within a common core.	**Individual; school**	*SP01, SP08, IE03, IE06, IE10*	STRONG	Avoid fragmenting the common framework.
Post-course implementation follow-up	**HIGH**	Add a follow-up point to document what was used, what remained planned and what support is needed.	Interviews distinguish clear implementation from intentions that had not yet become practice.	Review implementation after 6-12 weeks in mentoring or team meetings; record actual/planned status.	**Individual; school**	*LU01, LU07, SP08, IE03, IE08*	STRONG	Essential for credible impact reporting.
Embed in organisational routines	**HIGH**	Connect learning to annual plans, weekly meetings, staff training, policy review and digital leadership structures.	Repeated routines convert individual learning into school-level continuity.	Name responsible roles, schedule recurring review points and integrate outputs into school development plans.	**School; inter-organisational**	*LU12, IE03, IE08, IE10*	STRONG, ROLE-CONCENTRATED	This is the clearest WP6 interview contribution to sustainability; the broader plan belongs to WP7.

Post-Piloting Interview Questions

1. How would you describe your overall experience of participating in the IDEAL Futures project?
2. Which learning activities did you participate in, including study visits, face-to-face sessions and online courses, and which topics did you explore?
3. Who did you collaborate with during the project or courses? How did you meet these people, why did you choose to collaborate with them, and which collaborations did you find most useful?
4. Can you give an example of how you have applied, or plan to apply, what you learned through the IDEAL Futures Teacher Academy in your professional context?
5. What impact has this experience had, or could it have, on students' learning, other educators or parents?
6. What did you enjoy most about participating in the IDEAL Futures Teacher Academy?
7. What did you find most challenging during your participation in the IDEAL Futures Teacher Academy?
8. How could the IDEAL Futures Teacher Academy support your future professional practice?
9. Did you have an opportunity to explore the competence framework, and did you find it useful? If so, how did you use it? If not, why did you find it unhelpful?
10. Do you think the competence framework adequately reflects teachers' digital professional development needs? What improvements, additions or new skills and competences would you suggest?
11. How could the IDEAL Futures Teacher Academy develop to better support teachers' changing professional needs? What would you like to see more of, less of or changed?
12. How did you find the self-study courses, and how did they complement or support your face-to-face learning experiences?
13. How easy was it to navigate the online platform?
14. Would you prefer the courses to remain self-paced, or to run over a set period with regular live online sessions?

PRE Piloting Questionnaire

1. Self Reflection

Response scale for each item: Always / Often / Sometimes / Rarely / Never

- How often do you take time to reflect on your teaching practices after a lesson?
- When you reflect on a lesson, how frequently do you identify specific strengths and areas for improvement?
- Do you feel comfortable discussing your reflective insights with colleagues or supervisors?

2. How effectively do you believe your self-reflection helps you understand your own biases or assumptions in teaching?

- ○ Very effectively
- ○ Somewhat effectively
- ○ Neutral
- ○ Somewhat in effectively
- ○ Very ineffectively

3. Goal setting and Improvement

Response scale for each item: Always / Often / Sometimes / Rarely / Never

- Do you set specific goals for improvement after reflecting on your teaching practices?
- How frequently do you achieve the goals you set as a result of reflective practice?

4. How do you track the progress of your improvement goals? (You can select multiple answers)

- ○ Writing in a reflective journal
- ○ Using a digital tool or app
- ○ Sharing with a mentor or colleague
- ○ Regular self-assessments
- ○ I do not track my progress

5. How often does reflection lead you to modify your lesson plans or teaching strategies?

- ○ Always
- ○ Often
- ○ Sometimes

- ○ Rarely
- ○ Never

6. How confident are you in your ability to adapt instructional strategies based on reflective insights?

- ○ Very confident
- ○ Confident
- ○ Neutral
- ○ Somewhat not confident
- ○ Extremely not confident

7. How frequently do you discuss reflective insights or challenges with colleagues?

- ○ Weekly
- ○ Monthly
- ○ Occasionally
- ○ Rarely
- ○ Never

8. How supported do you feel by your school in engaging in reflective practice?

- ○ Very supported
- ○ Somewhat supported
- ○ Neutral
- ○ Somewhat unsupported
- ○ Very unsupported

9. How often do you feel that reflection on your teaching practices leads to better student outcomes?

- ○ Always
- ○ Often
- ○ Sometimes
- ○ Rarely
- ○ Never

10. How frequently do you engage in collaborative inquiry with your colleagues (e.g., team meetings, co-planning sessions, study groups)?

- ○ Weekly
- ○ Monthly
- ○ Occasionally
- ○ Rarely
- ○ Never

11. In what ways do you contribute to shaping your school's approach to digital transformation and help other teachers develop their digital competencies? (You can select multiple answers.)

- ○ I share digital resources
- ○ I share useful digital tools and resources during team meetings
- ○ I mentor colleagues by offering support with integrating technology into their lessons
- ○ I organize informal training sessions to help teachers explore new digital platforms
- ○ I encourage collaboration by sharing best practices and digital strategies
- ○ I provide one-on-one assistance to teachers who need help with digital tools
- ○ I do not feel that I can do that
- ○ Other

12. To what extent do you actively contribute ideas, resources, or feedback during collaborative inquiry sessions?

Response scale for each item: Always / Often / Sometimes / Rarely / Never

- • At the individual level
- • At the school level
- • At the organisational level
- • At the wider educational community
- • At the national level

13. Do you take on leadership roles within collaborative inquiry sessions (e.g., facilitating discussions, organizing sessions)?

- ○ Always
- ○ Often
- ○ Sometimes

○ Rarely
○ Never

14. To what extent does collaborative inquiry help you identify areas for improvement in your teaching?

○ To a great extent
○ Somewhat
○ Neutral
○ Not much
○ Not at all

15. How frequently do you implement ideas or strategies from collaborative inquiry sessions?

Response scale for each item: Always / Often / Sometimes / Rarely / Never

• At the individual level
• At the school level
• At the organisational level
• At the wider educational community
• At the national level

16. How often does your school leader provide individualized support to help you professionally develop your digital leadership skills?

○ Weekly
○ Monthly
○ Seasonally
○ Yearly
○ Never

17. How often do you share teaching strategies and best practices?

Response scale for each item: Always / Often / Sometimes / Rarely / Never

• At the individual level
• At the school level
• At the organisational level
• At the wider educational community

- At the national level
- At the international level

18. How do you support a positive, inclusive school culture through your actions? (You can select multiple answers)

- ○ I use inclusive resources and activities in my lessons
- ○ I actively listen to students' needs and adapt my approach to support everyone
- ○ I treat each student with respect and adapt my teaching to meet diverse needs
- ○ I collaborate with colleagues to create an inclusive environment across all classes
- ○ I maintain a welcoming, safe classroom where all students feel valued and heard
- ○ I engage in professional development focused on inclusive teaching practices
- ○ I do not currently practice inclusive education actions, as I am still focused on refining other aspects of my teaching

19. How comfortable are you with integrating new digital tools into your teaching?

- ○ Very comfortable
- ○ Somewhat comfortable
- ○ Neither comfortable or uncomfortable
- ○ Somewhat uncomfortable
- ○ Very uncomfortable

20. How would you assess your current leadership skills in promoting and implementing digital learning initiatives?

- ○ I have strong leadership skills in promoting and implementing digital learning, with experience leading transformation projects.
- ○ My skills are developing; I have some experience and am working to expand my leadership in digital learning.
- ○ My leadership is effective but could improve. I'm comfortable with digital initiatives and eager to learn more.
- ○ I am building my skills in this area, open to digital strategies but gaining more experience.
- ○ I'm confident in promoting and implementing digital learning, with successful projects and a focus on continuous improvement.

21. How do you stay informed about emerging technologies and digital trends relevant to education? (You can select multiple answers)

- ○ By attending workshops or webinars
- ○ By reading relevant articles and research
- ○ By engaging in online communities or forums
- ○ By searching new tools by myself

- ○ By experimenting with new tools and technologies independently
- ○ By engaging in discussions with colleagues or professional networks
- ○ By following industry experts and influencers on social media

22. How would you describe your current understanding of digital education?

Open-text response.

23. In your opinion, what are the biggest challenges for teachers as digital leaders today? (You can select multiple answers)

- ○ Lack of resources
- ○ Resistance to change
- ○ To staying updated with rapidly changing technology and digital tools
- ○ Balancing traditional teaching methods with digital innovation can be difficult for many teachers
- ○ Ensuring equal access to technology for all students remains a significant challenge
- ○ Lack sufficient training and support to fully embrace digital leadership
- ○ Managing students' screen time while still promoting effective digital learning

Part A - POST = PRE Piloting Questionnaire

1. Self Reflection

Response scale for each item: Always / Often / Sometimes / Rarely / Never

- How often do you take time to reflect on your teaching practices after a lesson?
- When you reflect on a lesson, how frequently do you identify specific strengths and areas for improvement?
- Do you feel comfortable discussing your reflective insights with colleagues or supervisors?

2. How effectively do you believe your self-reflection helps you understand your own biases or assumptions in teaching?

- ○ Very effectively
- ○ Somewhat effectively
- ○ Neutral
- ○ Somewhat in effectively
- ○ Very ineffectively

3. Goal setting and Improvement

Response scale for each item: Always / Often / Sometimes / Rarely / Never

- Do you set specific goals for improvement after reflecting on your teaching practices?
- How frequently do you achieve the goals you set as a result of reflective practice?

4. How do you track the progress of your improvement goals? (You can select multiple answers)

- ○ Writing in a reflective journal
- ○ Using a digital tool or app
- ○ Sharing with a mentor or colleague
- ○ Regular self-assessments
- ○ I do not track my progress

5. How often does reflection lead you to modify your lesson plans or teaching strategies?

- ○ Always
- ○ Often
- ○ Sometimes

- ○ Rarely
- ○ Never

6. How confident are you in your ability to adapt instructional strategies based on reflective insights?

- ○ Very confident
- ○ Confident
- ○ Neutral
- ○ Somewhat not confident
- ○ Extremely not confident

7. How frequently do you discuss reflective insights or challenges with colleagues?

- ○ Weekly
- ○ Monthly
- ○ Occasionally
- ○ Rarely
- ○ Never

8. How supported do you feel by your school in engaging in reflective practice?

- ○ Very supported
- ○ Somewhat supported
- ○ Neutral
- ○ Somewhat unsupported
- ○ Very unsupported

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- ○ Always
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- ○ Rarely
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10. How frequently do you engage in collaborative inquiry with your colleagues (e.g., team meetings, co-planning sessions, study groups)?

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- ○ Ensuring equal access to technology for all students remains a significant challenge
- ○ Lack sufficient training and support to fully embrace digital leadership
- ○ Managing students' screen time while still promoting effective digital learning

Part B - Only-POST questions

24. Which IDEAL Futures content did you complete or engage with in the hub?

- ○ One full course
- ○ More than one course
- ○ Individual thematic blocks only
- ○ Learning resources without completing a full course
- ○ Only self-check activities or quizzes
- ○ Only autonomous tasks
- ○ Forum or discussion activities
- ○ I am not sure
- ○ Other

25. After completing the IDEAL Futures content in the hub, how useful was the learning content for your professional practice?

- ○ Very useful

○ Somewhat useful
○ Neutral
○ Not very useful
○ Not useful at all
○ Cannot evaluate

26. How would you evaluate your experience of using the IDEAL Futures hub?

Response scale for each item: 1 / 2 / 3 / 4 / 5

• It was easy to navigate the hub/platform.
• The learning content was clearly structured.
• The learning tasks were understandable.
• The feedback or self-check activities supported my learning.
• I understood what I had to complete to reach my learning goals.
• The hub supported my independent learning.

The source PDF shows numeric scale labels only; no verbal anchors are provided.

27. After participating in the piloting activities, have you applied any knowledge, strategy, tool, or resource from IDEAL Futures in your own teaching or professional context?

○ Yes, I have already applied it
○ I am planning to apply it soon
○ Not yet, but I see potential
○ No
○ Not applicable

28. During or after the IDEAL Futures piloting activities, did you create, adapt, or share any digital learning resource, pedagogical plan, reflection, portfolio element, or other professional artefact?

○ I created a new digital learning resource
○ I adapted an existing resource
○ I shared a resource with colleagues
○ I developed or adapted a pedagogical plan
○ I completed a reflection or portfolio activity

- ○ I participated in a discussion/forum/wiki activity
- ○ I did not create or share any artefact
- ○ Other

29. Please briefly describe one example of how you have applied or plan to apply what you learned in your teaching or professional context. In your description, please include:

(a) what changed

(b) who you worked with

(c) how you worked together

Open-text response.

30. What was the most valuable aspect of the IDEAL Futures piloting experience for your professional development?

Open-text response.

31. What should be improved in the IDEAL Futures content, hub, or piloting process before future implementation?

Open-text response.

32. After participating in the IDEAL Futures piloting activities, with whom have you collaborated to apply what you learned? Please select all that apply.

- ○ Colleagues in my own school
- ○ Teachers from other schools in my country
- ○ Teachers in other countries / international networks
- ○ School leadership / management
- ○ Students
- ○ Parents
- ○ Higher education staff, teacher educators or researchers
- ○ Technology companies or EdTech specialists
- ○ Policy makers or education authorities
- ○ I have not collaborated with anyone yet
- ○ Other

33. After participating in the IDEAL Futures piloting activities, how would you describe the way you now use technology in your teaching or professional practice?

- ○ I use digital tools to substitute traditional ones, with no functional change (Substitution)
- ○ I use digital tools to substitute traditional ones, with functional improvement (Augmentation)
- ○ I have redesigned learning tasks using technology to enable new ways of learning (Modification) | I have created learning tasks that would not be possible without technology (Redefinition)
- ○ I have not yet changed the way I use technology
- ○ Not applicable to my role
- ○ No answer

The source PDF presents Modification and Redefinition together as one response option.

34. What do you intend to do regarding digital education in your practice over the next 6-12 months? Please select all that apply.

- ○ Continue participating in further professional development on digital education
- ○ Lead or initiate digital education initiatives in my school
- ○ Engage in collaborative projects with other schools
- ○ Engage in international digital education networks
- ○ Continue experimenting with new digital tools
- ○ Continue using the IDEAL Futures hub as a resource
- ○ Share IDEAL Futures content with colleagues
- ○ I do not have specific plans yet
- ○ Other

35. To what extent has what you learned in IDEAL Futures been integrated into the formal practice of your school or organisation (e.g. school development plan, curriculum, formal procedures or routines)?

- ○ It has been formally integrated and is being implemented in my whole school
- ○ It has been formally integrated and is being implemented in my classroom
- ○ It is being formally discussed but not yet implemented
- ○ I am applying it informally in my own practice, but not at a wider level
- ○ I have not yet started to apply it
- ○ Not applicable to my role

○ No answer

36. Which IDEAL Futures piloting activities have you participated in? Please select all that apply. If you participated in more than one activity, select all relevant options.

○ I completed IDEAL Futures content in the hub/platform.

○ I participated in the Rennes study visit.

○ I participated in the Madrid study visit.

○ I participated in the Limerick study visit.

○ I participated in one or more IDEAL Futures Learning Events, workshops, webinars, or live sessions.

○ I participated in other IDEAL Futures piloting activities.

○ I am not sure.

37. The IDEAL Future project was based on an adapted version of the Digcompedu framework. Do you think that this meets all of the skills needs for educational leaders in the area of digital education? In your description, please include:

(a) Is this relevant to the needs of educational leaders

(b) how easy was it to engage with the competency model

(c) how would you adapt it?

(d) What other skills, competencies or courses would you like to see made available

Open-text response.

D6.3 Data Triangulation Matrix

Current D6.3 thematic area	Questionnaire evidence (PRE-POST / POST-only; N = 171)	Interview evidence: FGTA and RTA (same 43 interviews)	Hub: Mezirow / sociotechnical-pedagogical; course-completion and Study Visit	Triangulated finding	Cross-source relationship
4.1 Development of Digital Competence and Purposeful Digital-Leadership-Related Practice	PRE-POST: Q19 comfort integrating digital tools increased from 120/171 (70.2%) to 141/171 (82.5%), +12.3 pp; full-scale Wilcoxon p = .0015, q = .0218, rank-biserial r = .410; no missing pairs. Q18 inclusive adaptation rose from 69.6% to 83.0% (q = .0136); inclusive professional development from 42.1% to 55.0% (q = .0466). Q16/Q21/Q23 changes were descriptive. Q22 (163 interpretable pairs; 8 excluded): purposeful integration 23.3%→31.9%; ethical/safe practice 14.1%→23.3%; systemic understanding 6.7%→13.5%. Overlapping, descriptive themes. POST-only Q33: modification/redefinition 57/171 (33.3%); augmentation 32 (18.7%); substitution 14 (8.2%); no change 39 (22.8%); N/A 4 (2.3%); missing 25 (14.6%). Source: D6.3 Section 4.1	FGTA: purposeful pedagogy and ethical judgement explain technology selection in relation to learner needs (D6.3 Section 4.2, Table 3: LU06, GR07, IE10, SP01; IE06, IE08). RTA T1: “From collecting tools to exercising pedagogical judgement.” Reviewed codes include purposeful selection (28/43), ethics/responsible practice (14/43) and resource creation/modification (19/43). GR02 questions aspects of framework usefulness. These are descriptive code counts, not theme prevalence or tested competence. Sources: D6.3 Section4.1, Table 2; RTA Conclusions!A2:H2; Counts!A2:F14.	Mezirow: selected reflections R00047, R00789 and R00951 describe changed pedagogical selection criteria; R00053 and R00041 describe intended use (Section4.2). Sociotechnical-pedagogical: pedagogical evidence in 2,011/2,209 reflections (91.0%), technical evidence in 1,221 (55.3%); co-occurrence in 1,100 (49.8%). Subthemes include purposeful selection, instructional alignment and learner adaptation (Section 4.7). Study Visits establish relevant learning opportunities; course completion adds course-defined attainment, not general competence testing (SectionSection4.1, 4.5).	Questionnaires, interviews and Hub reflections support increased self-reported comfort and more purposeful, inclusive and ethically considered digital practice. Q22 adds changes in expressed understanding; RTA and Hub analyses explain pedagogical judgement. Q33 retains differing stages of reported integration.	Convergence: purposeful and responsible practice across questionnaires, interviews and Hub text. Complementarity: Q19 quantifies reported comfort; Q22 and qualitative analyses explain meaning. Tension: favourable accounts coexist with no reported change and framework reservations. Gap: no independent general competence measure.
4.2 Reflection and Transformative Learning	PRE-POST (N = 171): all eight reflection-related ordinal indicators improved descriptively. Q06 confidence in reflection-based instructional adaptation increased from 64.3% to 75.4% (+11.1 pp; q = .0218; rank-biserial correlation = .373). Q05 rose from 48.0% to 59.1% but was not supported after correction (q = .0535). Q04 reflection-tracking changes were descriptive only. Source: Section 4.2	FGTA: accounts explain reflective judgement about pedagogical purpose, learner needs, ethics, risk and acceptable-use conditions (LU06, GR07, IE10, SP01; IE06, IE08). RTA T2: “Becoming confident by being allowed to learn.” Manageable experimentation, reflection and working through difficulty help explain confidence. Prior experience and other training complicate attribution; GR05 reports no substantial challenge. Sources: D6.3 Section4.2; RTA Conclusions!A3:H3.	Hub (2,209 reflections): highest outcome was knowledge/skill acquisition in 1,173 (53.1%); action planning/practice integration in 857 (38.8%); perspective transformation in 33 (1.5%); critical assessment without perspective shift in 2 (0.1%); no evidenced outcome in 144 (6.5%). Separate binary enactment: 9 (0.4%). Study Visit PRE-During-POST design embedded goal setting, collaborative/experiential learning and application/reflection (Section4.2); this is implementation context. Course completion is not a measure of reflective depth.	The sources support strengthened reflective practice, particularly confidence in translating reflection into instructional adaptation. RTA explains supported experimentation and differing starting points. The Mezirow profile distinguishes acquired understanding and intended action from the much rarer explicit critical reassessment and perspective transformation.	Convergence: reflection informs pedagogical judgement and intended adaptation. Complementarity: RTA explains confidence development; Mezirow distinguishes the depth of written evidence. Tension: favourable self-report coexists with rare explicit transformation and differing prior experience. Gap: neither confidence nor reported reconsideration demonstrates perspective transformation across participants.

4.3 Transfer to Practice at Individual, School and Inter-Organisational Levels	PRE-POST (N = 171): individual implementation of collaborative-inquiry ideas rose from 71.9% to 76.6% (+4.7 pp; q = .0218; effect = .352); wider-level changes were descriptive. POST-only Q27: applied 38/171 (22.2%); planned soon 86/171 (50.3%); saw potential 41/171 (24.0%). Remaining categories are not fully stated in the current paragraph. Q28: adapted resources 37/171 (21.6%); shared resources 29/171 (17.0%); no artefact 28/171 (16.4%). Q35: informal use 50/171 (29.2%); formal classroom use 22/171 (12.9%); whole-school use 8/171 (4.7%); discussion only 12/171 (7.0%); not started 40/171 (23.4%); N/A 8/171 (4.7%); missing 31/171 (18.1%). Formal integration: 30/132 substantive responses (22.7%). Source: Section 4.3	FGTA: 10 explicit implemented problem-solution pairs; 3 planned pairs excluded. Impact examples: individual/classroom 9 actual and 1 planned/expected; school 6 actual and 2 planned/expected; inter-organisational 2 actual and 1 planned/expected (Section4.3). RTA T4: "Individual learning travels through relationships and organisational routines." Colleagues, leadership roles and routines help explain uneven transfer. Resource production need not mean use; SP09 chronology is unclear and IE10 policy work does not establish formal adoption. Sources: D6.3 Section4.3; RTA Conclusions!A5:H5.	Hub: 857/2,209 (38.8%) reached action planning/practice integration in the highest-outcome profile; only 9 (0.4%) met the separate explicit enacted-practice criterion. Study Visits: Section 4.3 reports analysis of all available submitted transfer records across three visits, including feedback-led adaptation, planning, resource application, dissemination and selected school implementation; Limerick provided concrete applied follow-up examples. Formats and completeness varied. Course completion verifies assessed pathways, not sustained transfer.	Transfer is evidenced at different stages, especially in individual/classroom and selected school settings. Questionnaires distinguish application, plans and potential; FGTA identifies strict implemented examples, while RTA explains relational and organisational conditions. Hub reflections mainly document learning and intended action; Study Visit records add selected practice-based examples.	Convergence: individual/classroom and selected school transfer. Complementarity: FGTA identifies explicit enacted examples; RTA explains the conditions shaping transfer within the same interview corpus; Study Visit records add contextual detail. Tension: 22.2% reporting application and 0.4% explicitly enacted Hub reflections are not comparable rates because units, timing and prompts differ. Gap: no uniform cohort-wide sustained-transfer or harmonised peer-observation measure.
4.4 Communities of Inquiry, Collaboration, Transformative Dialogue and Virtual Exchange	PRE-POST (N = 171): Q11 sharing digital resources rose from 46.8% to 61.4% (+14.6 pp; q = .0136); sharing tools/resources in team meetings from 48.0% to 60.2% (+12.3 pp; q = .0466). Q7-Q10, Q12-Q14 and Q17 changes did not remain supported after correction. POST-only Q32 (N = 171; multiple responses): same-school colleagues 46.8%; students 24.6%; other schools nationally 17.0%; international teachers/networks 4.7%; no collaboration yet 38.0%. Source: Section 4.4	FGTA: online collaboration was uneven; viewing contributions did not always lead to direct exchange. Workshops, mobility and co-creation offered stronger facilitated opportunities (Section 4.4). RTA T3: "Connection becomes learning when people have something to do together." Shared tasks distinguish reciprocal learning from exposure. LU03 read reflections without direct Hub dialogue; GR07 reported no ongoing collaboration; IE08 continuation was unconfirmed. Sources: D6.3 Section4.4; RTA Conclusions!A4:H4.	Hub screening: 144 excluded brief reactions provide process context, not substantive Mezirow outcomes (Section4.4). Sociotechnical-pedagogical: social evidence in 797/2,209 reflections (36.1%); subthemes include inclusion, exchange, collaboration and sharing. All three dimensions co-occurred in 483 (21.9%); this does not establish sustained dialogue (Section 4.7). Study Visits: positive knowledge-sharing/co-design ratings were 34/35 (97.1%)/30/35 (85.7%) in Rennes; 27/28 (96.4%) for both in Madrid; 25/26 (96.2%) for both in Limerick (Section 4.4).	The clearest shared finding is professional resource exchange within immediate school communities. Both interview approaches explain why purposeful shared tasks and facilitation matter. Study Visit feedback supports the value of structured cross-country exchange; Hub social evidence supplies textual context without demonstrating sustained collaboration.	Convergence: professional sharing and facilitated exchange. Complementarity: RTA distinguishes exposure, joint activity and continuing contact; Study Visits identify enabling settings. Tension: highly rated facilitated exchange coexists with low international POST collaboration and uneven Hub dialogue. Gap: no cohort-wide validated CoI measure or demonstrated sustained international community.
4.5 Learner Experience and Evidence of Learning-Outcome Achievement	POST-only: Q25 positive usefulness 164/171 (95.9%): very useful 91 (53.2%), somewhat useful 73 (42.7%); neutral 6 (3.5%), least positive 1 (0.6%). Q26 ratings 4-5 ranged from 62.6% to 71.3%; task clarity and independent-learning support 71.3% each, navigation 65.5%, feedback/self-check 62.6%. Q30: 153 substantive responses; 15 missing and 3 punctuation-only excluded. Pedagogical relevance/design 82/153 (53.6%); tools/resources 78/153 (51.0%); exchange 42/153 (27.5%). Themes overlap; one response identified no value, and qualified accounts retained time/content constraints. Source: D6.3 Section4.5.	FGTA: practical relevance, reusable resources, concrete examples, varied activities and flexible access were valued; recognition motivated some participants. Time pressure, navigation, links and language support qualified positive experiences (Section4.5). RTA T5: "Flexibility opens participation but does not create time." Flexible provision supports access while workload and technical/language friction remain; positive overall appraisals coexist with specific difficulties (LU10, LU12, SP10, GR01). Sources: D6.3 Section4.5; RTA Conclusions!A6:H6.	Hub: 133 positive-feedback reflections (6.0% of 2,209) valued usefulness, resources, tools and clarity; this selected subset is not a satisfaction rate (Section4.5). STP retains negative/mixed evidence: technical 70/63 reflections; pedagogical 32/78. Appraisals may concern learning tools, principles or intended uses rather than Hub usability (Section4.7). Completion: separate 257 participants; 473 verified completions: 334 A1-B2 (70.6%), 114 C1-C2 (24.1%), 25 unlabelled (5.3%). Participant bands overlap (Section 4.5). Study Visits provide complementary experience context.	Questionnaire ratings and Q30 accounts, both interview approaches and Hub feedback converge on practical relevance and usable resources, while retaining workload and usability constraints. RTA explains why flexible access does not remove time pressure. Verified completions separately document achievement of course-defined assessment requirements.	Convergence: professional relevance, usable resources and positive but qualified experience. Complementarity: Q30 explains perceived value; RTA explains participation constraints; completion records add assessment-linked evidence. Tension: favourable overall appraisals coexist with limited time, navigation/language problems and a negative Q30 account.