

WP2-A9. Izvješće vanjskog stručnjaka o WP2 rezultatima.



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University
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1. UVOD

Ovaj dokument predstavlja rezultate aktivnosti WP2-A9 pod nazivom „Izvešće vanjskog stručnjaka o rezultatima WP2“, koja je dio Radnog paketa 2: „Zajednički europski kurikulum o gospodarenju otpadom primjenom blockchain tehnologija za industriju ukrasnog kamena, s naglaskom na stručnjake u dobi od 45 i više godina.“

Izvešće sažima neovisnu pedagošku i tehničku procjenu koju je proveo vanjski stručnjak za strukovno obrazovanje i osposobljavanje (VET), imenovan putem KSK-a. Evaluacija se usredotočila na kvalitetu, unutarnju koherentnost i europsku relevantnost rezultata WP2, kao i na njihovu praktičnu upotrebljivost za odrasle polaznike i pružatelje osposobljavanja koji djeluju unutar lanca vrijednosti ukrasnog kamena.

Kako bi proveo pregled, ocjenjivač je pregledao cijeli skup rezultata WP2 (od WP2-A1 do WP2-A6, kao i WP2-A8, uključujući sve dostupne jezične verzije).

KSK je surađivao sa stručnjakom iz druge strukovne škole kako bi procijenio ovaj WP2, ističući RockChain kurikulum kao glavni proizvod ovog WP-a.

Povratne informacije prikupljene su pomoću strukturiranog upitnika osmišljenog za validaciju čvrstoće obavljenog posla, utvrđivanje potencijalnih nedostataka ili nedosljednosti te predlaganje praktičnih poboljšanja za sljedeće faze provedbe projekta.

2. EVALUACIJSKI UPITNIK

Upitnik korišten za vanjsku evaluaciju WP2 bio je sljedeći:

RockChain. Evaluation of WP2: European common curricular on Waste Management applying Blockchain technologies for Ornamental Rock Industry focused on professionals over 45 years old

TRANSVERSAL TECHNOLOGICAL SKILLS FOR THE ORNAMENTAL ROCK INDUSTRY
FOCUSING ON THE
APPLICABILITY OF BLOCKCHAIN IN A CIRCULAR ECONOMY
REFERENCE: 2023-1-DE02-KA220-ADU-000166863



Organisation: *

- ☐ Deutscher Naturwerkstein-Verband e.V. (DNV)
- ☐ Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM)
- ☐ Universitatea Transilvania din Brasov (UNITbv)
- ☐ Klesarska skola (KSK)

1. Overall, how satisfied were you with the management and development of the WP2 (Work Package 2): European common curricular on Waste Management applying Blockchain technologies for Ornamental Rock Industry focused on professionals over 45 years old ?

	1	2	3	4	5	
Not satisfied at all	☐	☐	☐	☐	☐	Very satisfied

2. Comparative study of the curricula focused on Blockchain technology in the participating countries. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The comparative study on Blockchain technology in the participating countries was comprehensive.	☐	☐	☐	☐	☐
Differences in Blockchain technology between the participating countries were clearly identified.	☐	☐	☐	☐	☐
The results of the study were useful for adapting the project strategies at the European level.	☐	☐	☐	☐	☐

3. Comparative study of the curricula focused on Waste management of Ornamental Rock Industry and connected industries in the participating countries. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The comparative study was comprehensive.	☐	☐	☐	☐	☐
Differences between the participating countries were clearly identified.	☐	☐	☐	☐	☐
The study provided a clear picture of how curricula are structured in different national contexts.	☐	☐	☐	☐	☐
The results of the study were useful for adapting the project strategies at the European level.	☐	☐	☐	☐	☐

4. Definition of the learning objectives and learning outcomes of the curriculum.
Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The learning objectives defined for the curriculum were clear and adequate for the purposes of the project.

☐ ☐ ☐ ☐ ☐

Learning outcomes were consistent with the project's educational objectives.

☐ ☐ ☐ ☐ ☐

The learning objectives and outcomes were aligned with the needs of the sector.

☐ ☐ ☐ ☐ ☐

The definition of learning objectives was adequate to guide curriculum development.

☐ ☐ ☐ ☐ ☐

5. Determine the most appropriate learning methodology for calculation of stone waste applying Blockchain technology. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The learning methodology selected for the for calculation of stone waste applying Blockchain technology was adequate.	☐	☐	☐	☐	☐
The proposed methodology facilitated the understanding of the key concepts related to calculation of stone waste applying Blockchain technology	☐	☐	☐	☐	☐
The methodological choice was effective in achieving the educational objectives of the project.	☐	☐	☐	☐	☐

6. Field research in each project country on level of human and technological resource capacity for teaching RockChain in mining-related training centres and universities. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

Field research on the level of human and technological resource capacity for teaching RockChain in mining-related training centres and universities in each participating country was exhaustive.

☐ ☐ ☐ ☐ ☐

The level of human and technological resources available for RockChain education was adequately assessed.

☐ ☐ ☐ ☐ ☐

The field research provided a clear picture of the capacities and limitations of each country.

☐ ☐ ☐ ☐ ☐

The results of
the field
research were
useful for
planning future
actions in the
project.

☐ ☐ ☐ ☐ ☐

7. RockChain Curriculum: Production of a rock ornamental waste management curriculum using blockchain technology. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The common
European
curriculum on
the calculation
of rock
ornamental
waste
management
using
blockchain
technology was
clear and
coherent.

☐ ☐ ☐ ☐ ☐

The curriculum
adequately
reflected
European best
practices and
standards in the
area.

☐ ☐ ☐ ☐ ☐

The creation of
the common
curriculum
allowed for an
effective
harmonisation
of educational
approaches in
the participating
countries.

☐ ☐ ☐ ☐ ☐

The common
European
curriculum was
useful for
standardising
learning on
blockchain
technology in
rock ornamental
waste
management..

☐ ☐ ☐ ☐ ☐

8. Production of the different linguistic versions of the curriculum and previous tasks of WP2. Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The quality of
the translations
facilitated the
understanding
of the results in
all participating
countries.

☐ ☐ ☐ ☐ ☐

All translations
were done in a
timely manner
and within the
established
deadlines.

☐ ☐ ☐ ☐ ☐

The translation
of the results
contributed to
better
communication
between the
project partners.

☐ ☐ ☐ ☐ ☐

9. First International Seminar in Pucisca (Croatia). Please rate the following aspects.

Fully disagree Rather disagree Neither agree nor disagree Rather agree Fully agree

The first international seminar in Pucisca was organised effectively.

☐
☐
☐
☐
☐

The topics addressed at the seminar were relevant and aligned with the project objectives.

☐
☐
☐
☐
☐

The organisation and logistics of the seminar were adequate to encourage participation.

☐
☐
☐
☐
☐

10. External expert report of WP2 Results. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The external expert's report on the results of WP2 provided an objective and detailed assessment.	☐	☐	☐	☐	☐
The recommendations of the external expert were clear and applicable for the improvement of the project.	☐	☐	☐	☐	☐
The report highlighted strengths and areas for improvement in the results obtained in WP2.	☐	☐	☐	☐	☐
The external evaluation was useful to validate the quality and effectiveness of the WP2 results.	☐	☐	☐	☐	☐

11. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP2.

Tu respuesta

12. Please, tell us what kind of improvement you can suggest for the WP2:

Tu respuesta



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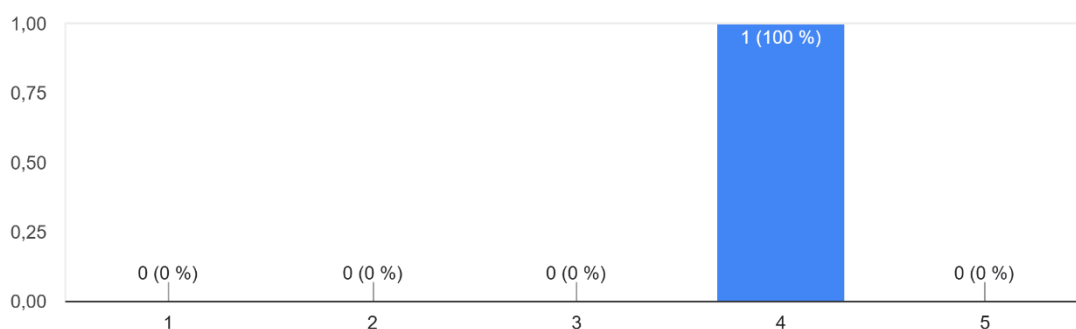
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3. ODGOVORI

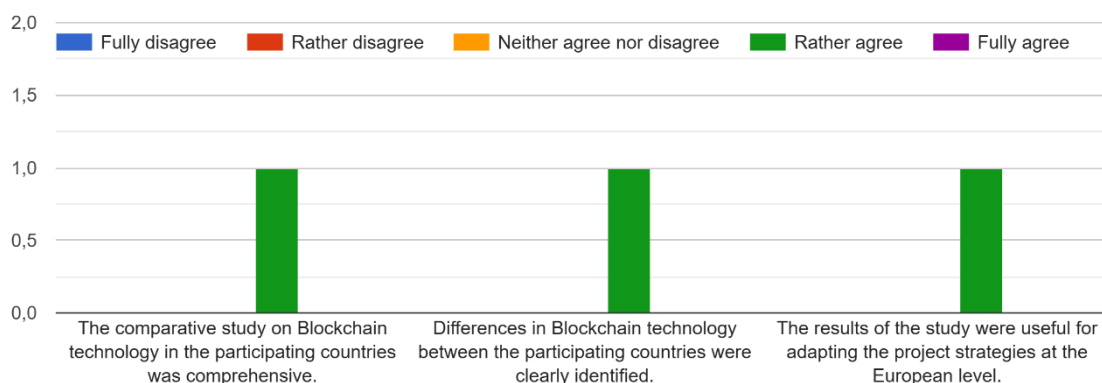
Odgovori iz ankete za WP2 prikazani su u nastavku (snimke zaslona pisanih odgovora i grafički prikaz ocjena):

1. Overall, how satisfied were you with the management and development of the WP2 (Work Package 2): European common curricular on Waste ...try focused on professionals over 45 years old ?

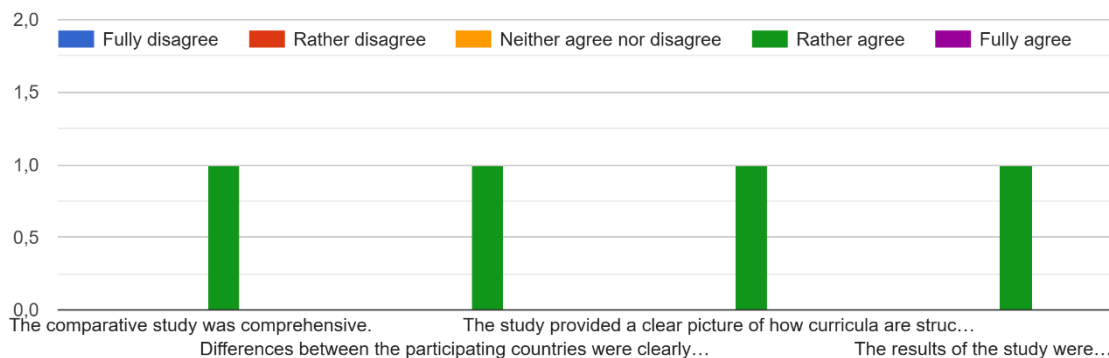
1 respuesta



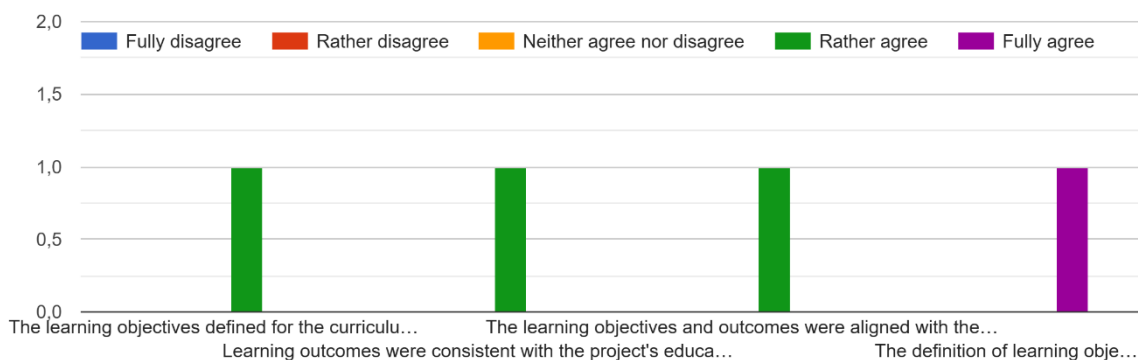
2. Comparative study of the curricula focused on Blockchain technology in the participating countries. Please rate the following aspects.



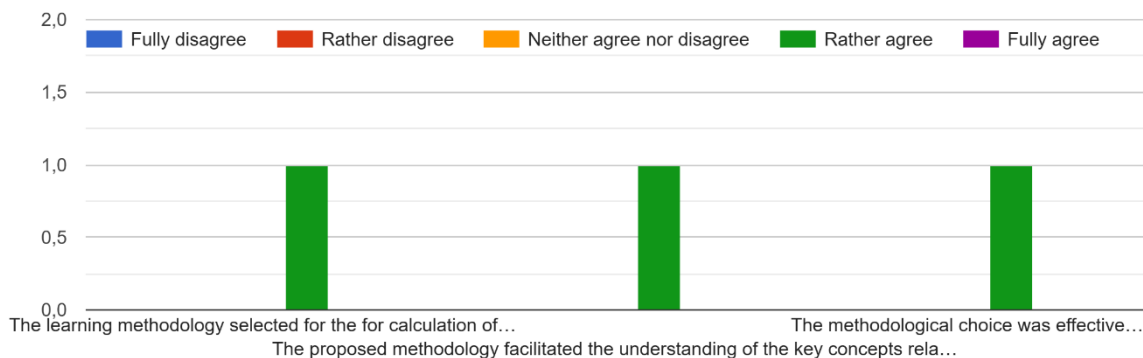
3. Comparative study of the curricula focused on Waste management of Ornamental Rock Industry and connected industries in the participating countries. Please rate the following aspects.



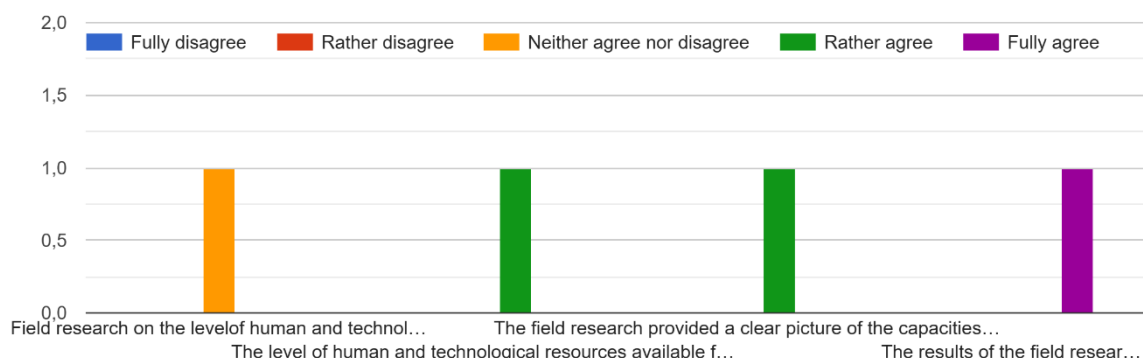
4. Definition of the learning objectives and learning outcomes of the curriculum. Please rate the following aspects.



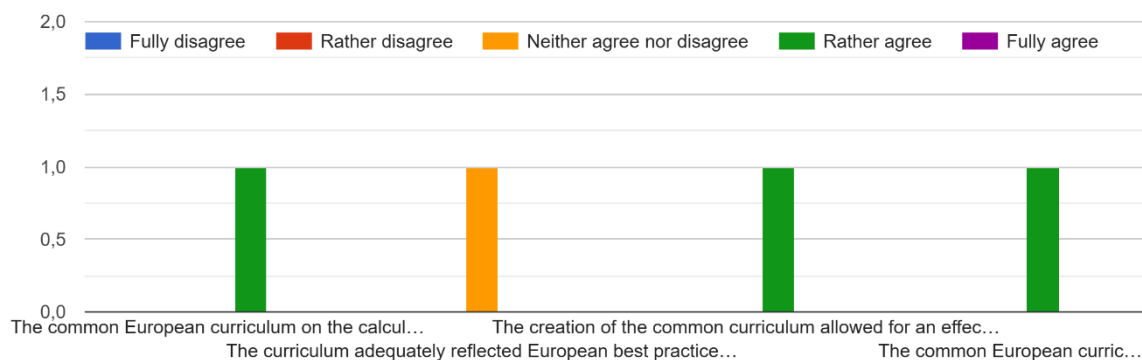
5. Determine the most appropriate learning methodology for calculation of stone waste applying Blockchain technology. Please rate the following aspects.



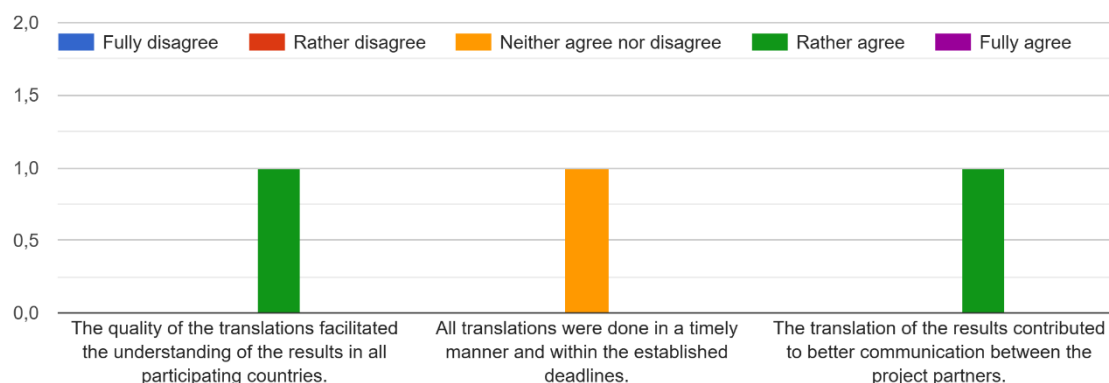
6. Field research in each project country on level of human and technological resource capacity for teaching RockChain in mining-related training centr...nd universities. Please rate the following aspects.



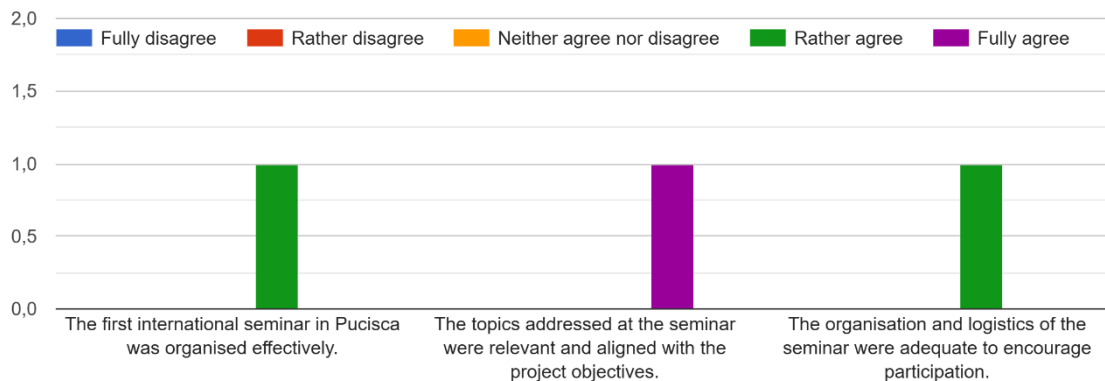
7. RockChain Curriculum: Production of a rock ornamental waste management curriculum using blockchain technology. Please rate the following aspects.



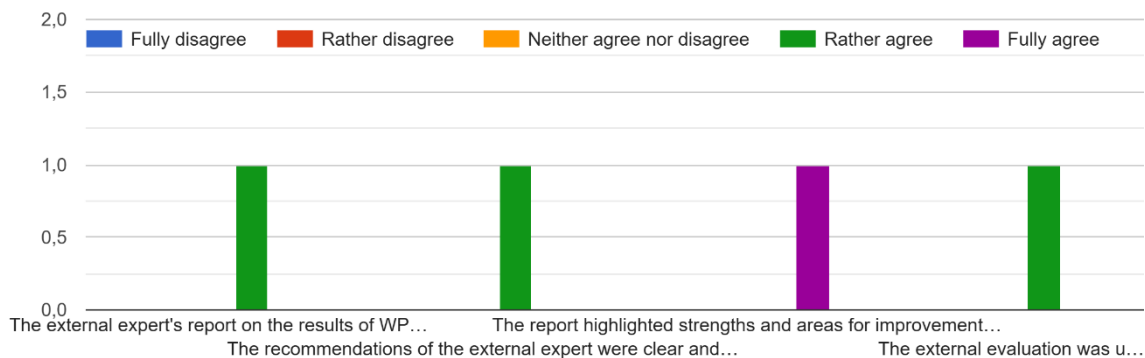
8. Production of the different linguistic versions of the curriculum and previous tasks of WP2. Please rate the following aspects.



9. First International Seminar in Pucisca (Croatia). Please rate the following aspects.



10. External expert report of WP2 Results. Please rate the following aspects.



11. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP2.

1 respuesta

WP2 presents a well-structured logic chain: it starts with comparative studies, defines clear objectives and outcomes, establishes a sound methodology, validates real-world capacity through field research, and concludes with the development of the final curriculum. Its focus on adult learners aged 45 and above, combined with a progressive approach and distributed assessment, makes it well suited for both vocational education and training (VET) and adult education (ADU) contexts.

To further strengthen this work package, the following areas could be improved:

- (i) Reduce the reliance on abstract language when addressing blockchain concepts by incorporating more guided micro-cases that make the content more accessible;
- (ii) Make the alignment with European standards and practices more explicit, going beyond mere mentions to show clear integration; and
- (iii) Translate field research findings into concrete operational measures—such as defining minimum infrastructure requirements, developing a teacher upskilling plan, and offering low-tech alternatives for settings where digital tools are limited.

12. Please, tell us what kind of improvement you can suggest for the WP2:

1 respuesta

To enhance the applicability and impact of WP2, the following improvements are recommended:

Add a curriculum matrix that links learning outcomes, learning activities, expected evidence, and assessment criteria or rubrics. This would help training centers adapt and implement the curriculum more effectively according to their specific needs.

From the field research results (WP2-A5_EN_Field research v3), derive a “minimum viable” implementation framework, outlining:

Essential teaching competencies,

Basic connectivity and device requirements,

A support plan (technical and pedagogical), and

An alternative strategy for centers without dedicated software—such as low-tech or offline adaptations.

Improve accessibility and scaffolding for learners with low digital confidence, by integrating an in-tool glossary, step-by-step guides, and extended onboarding time to ease entry into the experience.

4. ZAKLJUČCI

Izješće o vanjskoj procjeni dobiva ukupnu ocjenu zadovoljstva 4 od 5, što potvrđuje da WP2 pruža koherentnu i europski relevantnu osnovu za RockChain obrazovni put. Napredak od prikupljanja dokaza (putem komparativnih studija i terenskih istraživanja) do pedagoškog dizajna (ishodi učenja, metodologija i zajednički kurikulum) smatra se logičnim i prikladnim za provedbu strukovnog obrazovanja odraslih.

Vanjski stručnjak također je ocijenio WP2 kao snažan i dobro strukturiran paket, ističući jasan „logički lanac“: počinje komparativnim studijama, definira ciljeve i ishode učenja, uspostavlja dobru metodologiju, potvrđuje stvarne kapacitete kroz terenska istraživanja i završava razvojem konačnog kurikuluma. Stručnjak je posebno cijenio fokus na odrasle polaznike u dobi od 45+, u kombinaciji s progresivnim pristupom i distribuiranom procjenom, što WP2 čini prikladnim i za kontekst strukovnog obrazovanja i osposobljavanja (SOO) i za kontekst obrazovanja odraslih (ADU).

Među rezultatima WP2, najjače identificirane točke su:

- relevantnost odabranih tema – kružno gospodarstvo, gospodarenje otpadom i sljedivost – unutar lanca vrijednosti ukrasnog kamena
- unutarnja konzistentnost između definiranih ciljeva učenja, očekivanih ishoda i predložene metodologije
- praktična orijentacija kurikuluma, koja podržava strukturirano, vođeno grupno učenje.
- Međunarodni seminar u Pučišćima također je prepoznat kao vrijedna prekretnica koja je pomogla u usklađivanju partnera i validaciji smjera kurikuluma.

Prioritetne preporuke za budućnost od strane vanjskog stručnjaka WP2:

Što se tiče poboljšanja, stručnjak je preporučio jačanje praktične primjenjivosti i prenosivosti, posebno u pogledu sadržaja vezanog uz blockchain. Ključni prijedlozi bili su:

- smanjiti oslanjanje na apstraktni jezik uvođenjem više vođenih praksi koje olakšavaju razumijevanje koncepata;
- učiniti usklađivanje s europskim standardima i praksama eksplicitnijim, pokazujući jasnu integraciju umjesto kratkih referenci i;
- prevesti nalaze terenskog istraživanja u konkretne operativne mjere, kao što su definiranje minimalnih infrastrukturnih zahtjeva, razvoj plana usavršavanja učitelja i ponuda niskotehnoloških/offline alternativa za okruženja s ograničenim digitalnim alatima.

Provedba preporuka u WP2:

- Smanjenje apstraktnog jezika blockchaina: U samom nastavnom planu i programu, blockchain je definiran kao funkcionalno, primijenjeno razumijevanje (nije potrebno prethodno tehničko znanje), a obuka se provodila putem vođenih simulacija i studija slučaja iz stvarnog života, što je kulminiralo integrativnim projektom koji je pojačao učenje kroz iskustvenu primjenu.
- Eksplicitnije usklađivanje s europskim standardima i praksama: WP2 je usklađivanje s EU učinio eksplicitnim načelom dizajna, a ne implicitnom referencom. Ishodi učenja definirani su s navedenim usklađivanjem. Paralelno s tim, kurikulum je uključio kontekst politike i regulatornog okvira EU (npr. reference na kružno gospodarstvo i upravljanje otpadom) kao dio područja znanja, podržavajući prenosivost u kontekstima zemalja partnera.
- Prevođenje terenskog istraživanja u operativne mjere: Konkretno, terensko istraživanje WP2 signaliziralo je neujednačenu digitalnu spremnost i ograničene alate u nekim centrima, kao što se može vidjeti u zadatku WP2-A5, pa je konzorcij: (1) definirao minimalni održivi skup zahtjeva za isporuku (osnovni uređaji/povezivanje plus pristup RockChain resursima), (2) ugradio model održavanja vođen od strane trenera s vođenom praksom i kontinuiranim povratnim informacijama za podršku niskom digitalnom samopouzdanju i (3) omogućio niskotehnološke/mješovite alternative (demonstracije trenera, podržani grupni rad, fazne aktivnosti) kako bi se obuka i dalje mogla učinkovito odvijati čak i kada je individualni pristup uređajima ili specijaliziranom softveru bio ograničen.

Zaključno, WP2 je validiran kao visokovrijedna i dovoljno zrela komponenta za daljnji razvoj i pilot testiranje - pod uvjetom da se provedu preporučena poboljšanja. Ove prilagodbe su ciljane i ne zahtijevaju veće promjene u strukturi WP2. Umjesto toga, namijenjene su poboljšanju jasnoće, prenosivosti i uključivosti u stvarnim okruženjima obuke.