



# WP2-A9. Informe de expertos externos sobre los resultados del WP2.



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Transilvania  
University  
of Brasov





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## 1. INTRODUCCIÓN

Este documento presenta los resultados de la actividad WP2-A9, titulada «Informe de expertos externos sobre los resultados del WP2», que forma parte del paquete de trabajo 2: «Plan de estudios común europeo sobre gestión de residuos mediante la aplicación de tecnologías blockchain para la industria de la roca ornamental, centrado en profesionales de 45 años o más».

El informe resume la evaluación pedagógica y técnica independiente realizada por un experto externo en educación y formación profesional (EFP), designado a través de KSK. La evaluación se centró en la calidad, la coherencia interna y la relevancia europea de los resultados del WP2, así como en su utilidad práctica para los alumnos adultos y los proveedores de formación que operan en la cadena de valor de la piedra ornamental.

Para llevar a cabo la revisión, el evaluador examinó el conjunto completo de resultados del WP2 (desde el WP2-A1 hasta el WP2-A6, así como el WP2-A8, incluidas todas las versiones lingüísticas disponibles).

KSK colaboró con un experto de otra escuela de FP para evaluar este WP2, destacando el plan de estudios RockChain como el principal producto de este WP.

Se recopilaron comentarios mediante un cuestionario estructurado diseñado para validar la solidez del trabajo realizado, identificar posibles lagunas o incoherencias y proponer mejoras viables para las siguientes fases de la ejecución del proyecto.



## 1. CUESTIONARIO DE EVALUACIÓN

El cuestionario utilizado para la revisión externa del WP2 fue el siguiente:

**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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Differences in Blockchain technology between the participating countries were clearly identified.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The results of the study were useful for adapting the project strategies at the European level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Differences between the participating countries were clearly identified.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The study provided a clear picture of how curricula are structured in different national contexts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The results of the study were useful for adapting the project strategies at the European level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning outcomes were consistent with the project's educational objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The learning objectives and outcomes were aligned with the needs of the sector.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The definition of learning objectives was adequate to guide curriculum development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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 calculation of stone waste applying Blockchain technology was adequate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The proposed methodology facilitated the understanding of the key concepts related to calculation of stone waste applying Blockchain technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The methodological choice was effective in achieving the educational objectives of the project.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The level of human and technological resources available for RockChain education was adequately assessed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The field research provided a clear picture of the capacities and limitations of each country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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
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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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The topics addressed at the seminar were relevant and aligned with the project objectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organisation and logistics of the seminar were adequate to encourage participation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The recommendations of the external expert were clear and applicable for the improvement of the project.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The report highlighted strengths and areas for improvement in the results obtained in WP2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The external evaluation was useful to validate the quality and effectiveness of the WP2 results.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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

Tu respuesta

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

Tu respuesta

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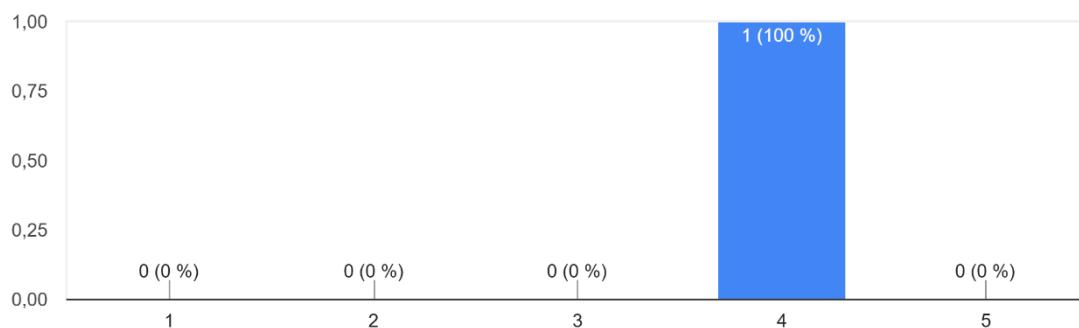
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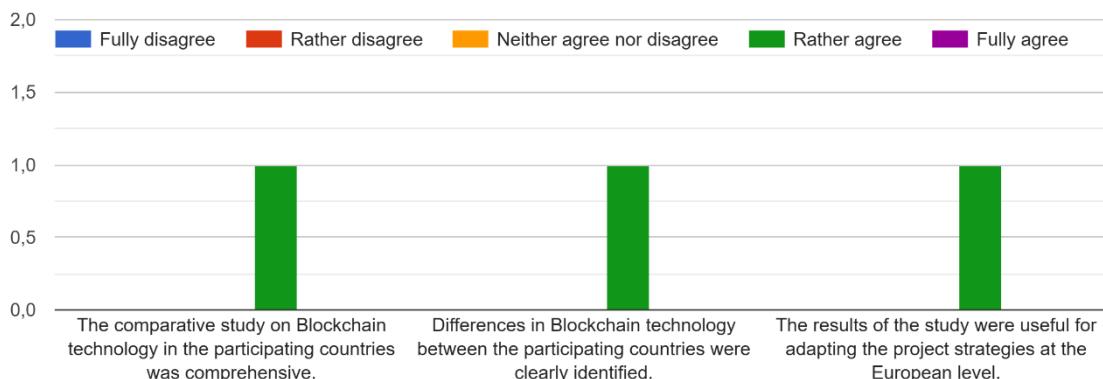
## 2. RESPUESTA

A continuación se presentan las respuestas de la encuesta para el WP2 (capturas de pantalla de las respuestas escritas y representación gráfica de las calificaciones):

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

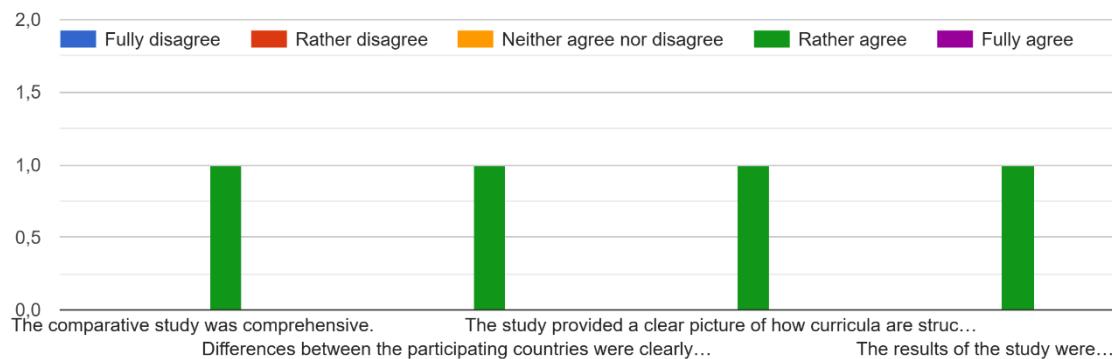


2. Comparative study of the curricula focused on Blockchain technology in the participating countries. Please rate the following aspects.

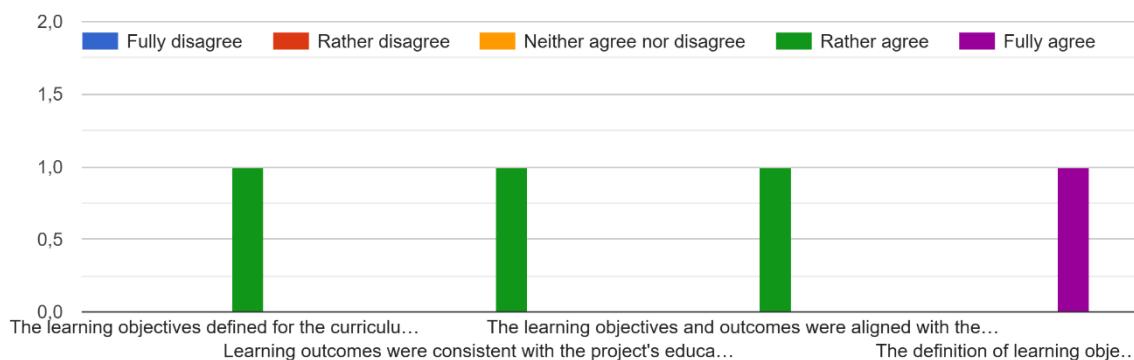




3. Comparative study of the curricula focused on Waste management of Ornamental Rock Industry and connected industries in the participating countries. Please rate the following aspects.

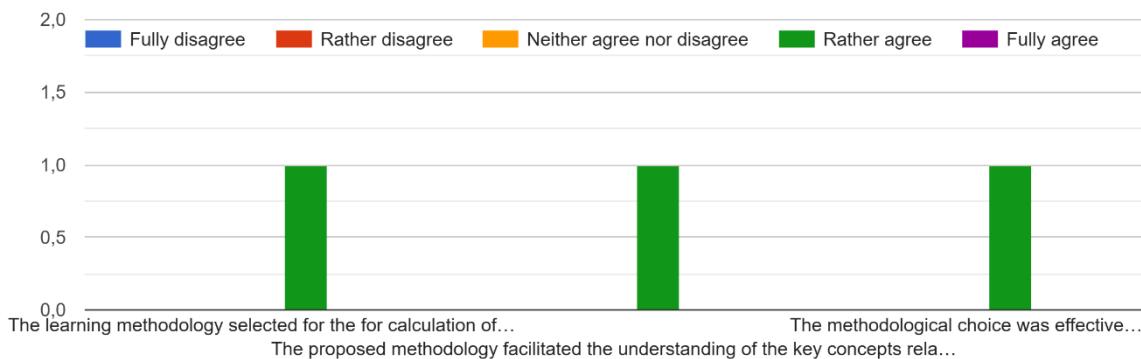


4. Definition of the learning objectives and learning outcomes of the curriculum. Please rate the following aspects.

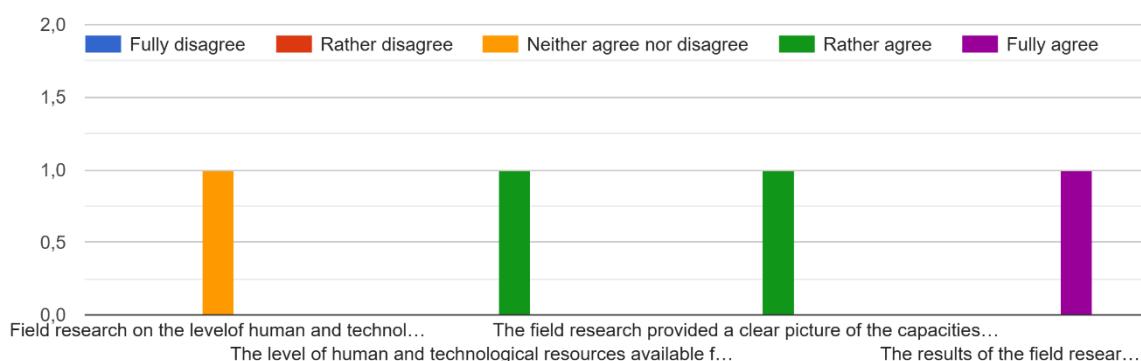




5. Determine the most appropriate learning methodology for calculation of stone waste applying Blockchain technology. Please rate the following aspects.

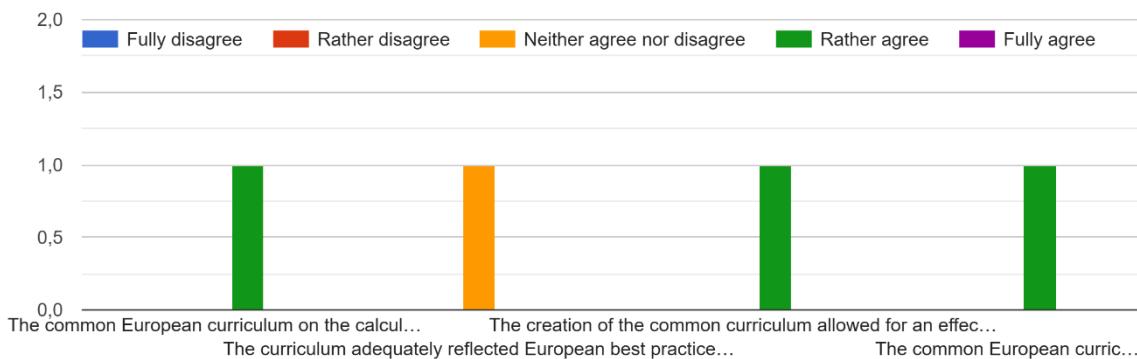


6. Field research in each project country on level of human and technological resource capacity for teaching RockChain in mining-related training cent...nd universities. Please rate the following aspects.

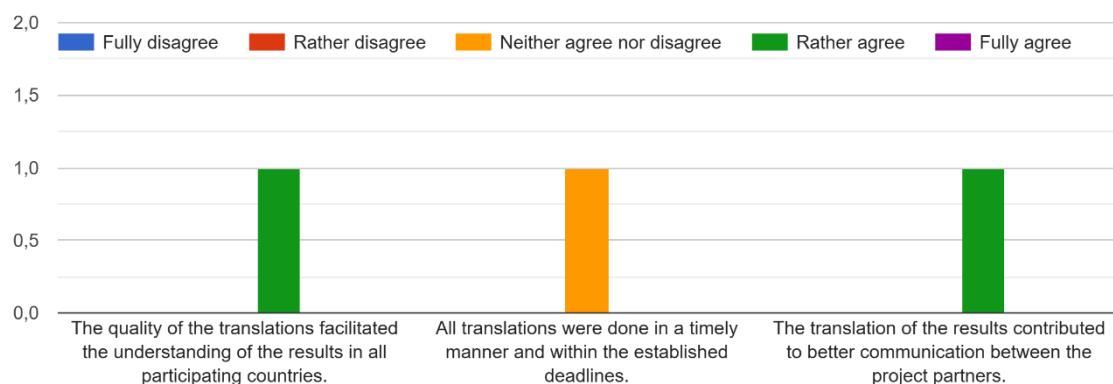




7. RockChain Curriculum: Production of a rock ornamental waste management curriculum using blockchain technology. Please rate the following aspects.

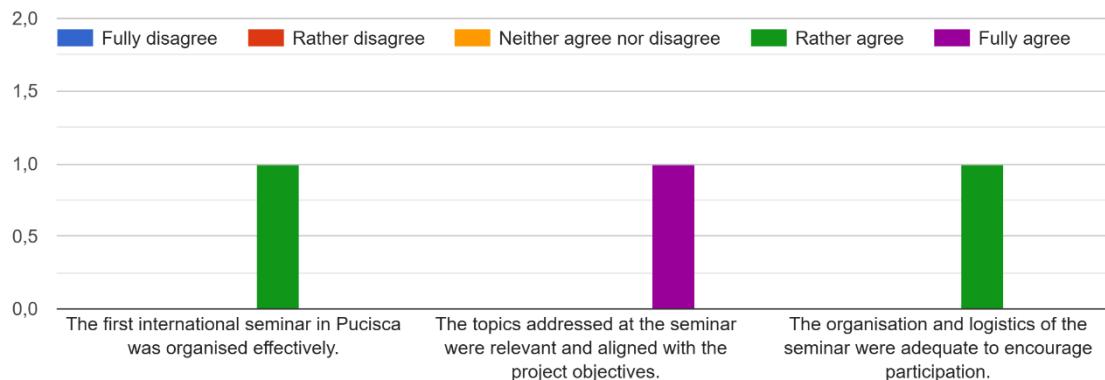


8. Production of the different linguistic versions of the curriculum and previous tasks of WP2.  
Please rate the following aspects.

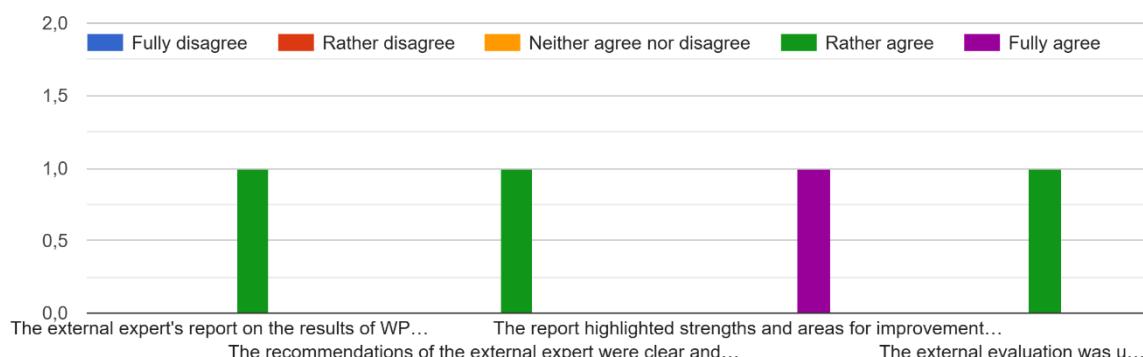




9. First International Seminar in Pucisca (Croatia). Please rate the following aspects.



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.



### 3. CONCLUSIONES

El informe de evaluación externa obtiene una puntuación global de satisfacción de 4 sobre 5, lo que confirma que el WP2 proporciona una base coherente y relevante a nivel europeo para la trayectoria formativa de RockChain. La progresión desde la recopilación de pruebas (a través de estudios comparativos e investigación de campo) hasta el diseño pedagógico (resultados del aprendizaje, metodología y plan de estudios compartido) se considera lógica y adecuada para la impartición de formación profesional para adultos.

El experto externo también evaluó el WP2 como un paquete sólido y bien estructurado, destacando una clara «cadena lógica»: comienza con estudios comparativos, define los objetivos y resultados del aprendizaje, establece una metodología sólida, valida la capacidad en el mundo real a través de la investigación de campo y concluye con el desarrollo del plan de estudios final. El experto valoró especialmente el enfoque en los alumnos adultos mayores de 45 años, combinado con un enfoque progresivo y una evaluación distribuida, ya que hace que el WP2 sea muy adecuado tanto para el contexto de la EFP como para el de la educación de adultos (ADU).

En todos los resultados del WP2, los puntos más destacados son:

- La relevancia de los temas seleccionados (economía circular, gestión de residuos y trazabilidad) dentro de la cadena de valor de la piedra ornamental
- La coherencia interna entre los objetivos de aprendizaje definidos, los resultados esperados y la metodología propuesta
- La orientación práctica del plan de estudios, que favorece el aprendizaje estructurado y facilitado en grupo.
- El seminario internacional celebrado en Pucisca también se consideró un hito importante que contribuyó a armonizar a los socios y validar la orientación del plan de estudios.

Recomendaciones prioritarias para el futuro del experto externo del WP2:

En cuanto a las mejoras, el experto recomendó reforzar la aplicabilidad práctica y la transferibilidad, especialmente en lo que respecta al contenido relacionado con la cadena de bloques. Las sugerencias clave fueron:

- Reducir la dependencia del lenguaje abstracto introduciendo prácticas más guiadas que faciliten la comprensión de los conceptos.
- Hacer más explícita la alineación con las normas y prácticas europeas, demostrando una integración clara en lugar de breves referencias.
- Traducir los resultados de la investigación de campo en medidas operativas concretas, como definir los requisitos mínimos de infraestructura, desarrollar un



plan de mejora de las competencias de los docentes y ofrecer alternativas de baja tecnología/sin conexión para entornos con herramientas digitales limitadas.

#### Aplicación de las recomendaciones del WP2:

- Reducción del lenguaje abstracto sobre la cadena de bloques: en el propio plan de estudios, la cadena de bloques se enmarcó como un conocimiento funcional y aplicado (sin necesidad de conocimientos técnicos previos), y la formación se impartió mediante simulaciones guiadas y estudios de casos reales, que culminaron en un proyecto integrador que reforzó el aprendizaje a través de la aplicación experiencial.
- Hacer más explícita la alineación con las normas y prácticas europeas: el WP2 convirtió la alineación con la UE en un principio de diseño explícito, y no en una referencia implícita. Los resultados del aprendizaje se definieron con una alineación declarada. Paralelamente, el plan de estudios incorporó el contexto normativo y político de la UE (por ejemplo, referencias a la economía circular y la gestión de residuos) como parte de los ámbitos de conocimiento, lo que favoreció la transferibilidad entre los contextos de los países socios.
- Traducir la investigación de campo en medidas operativas: Concretamente, la investigación de campo del WP2 puso de manifiesto una preparación digital desigual y unas herramientas limitadas en algunos centros, como se puede ver en la tarea WP2-A5, por lo que el consorcio: (1) definió un conjunto mínimo viable de requisitos para la entrega (dispositivos básicos/conectividad más acceso a los recursos de RockChain), (2) incorporó un modelo de facilitación dirigido por formadores con prácticas guiadas y retroalimentación continua para apoyar la baja confianza digital, y (3) habilitó alternativas de baja tecnología/mixtas (demostraciones de los formadores, trabajo en grupo con apoyo, actividades por fases) para que la formación pudiera seguir funcionando eficazmente incluso cuando el acceso individual a los dispositivos o al software especializado fuera limitado.

En conclusión, el WP2 se validó como un componente de gran valor y suficientemente maduro para avanzar hacia el desarrollo y las pruebas piloto, siempre que se implementen las mejoras recomendadas. Estos ajustes son específicos y no requieren cambios importantes en la estructura del WP2. Por el contrario, su objetivo es mejorar la claridad, la transferibilidad y la inclusividad en entornos de formación del mundo real.