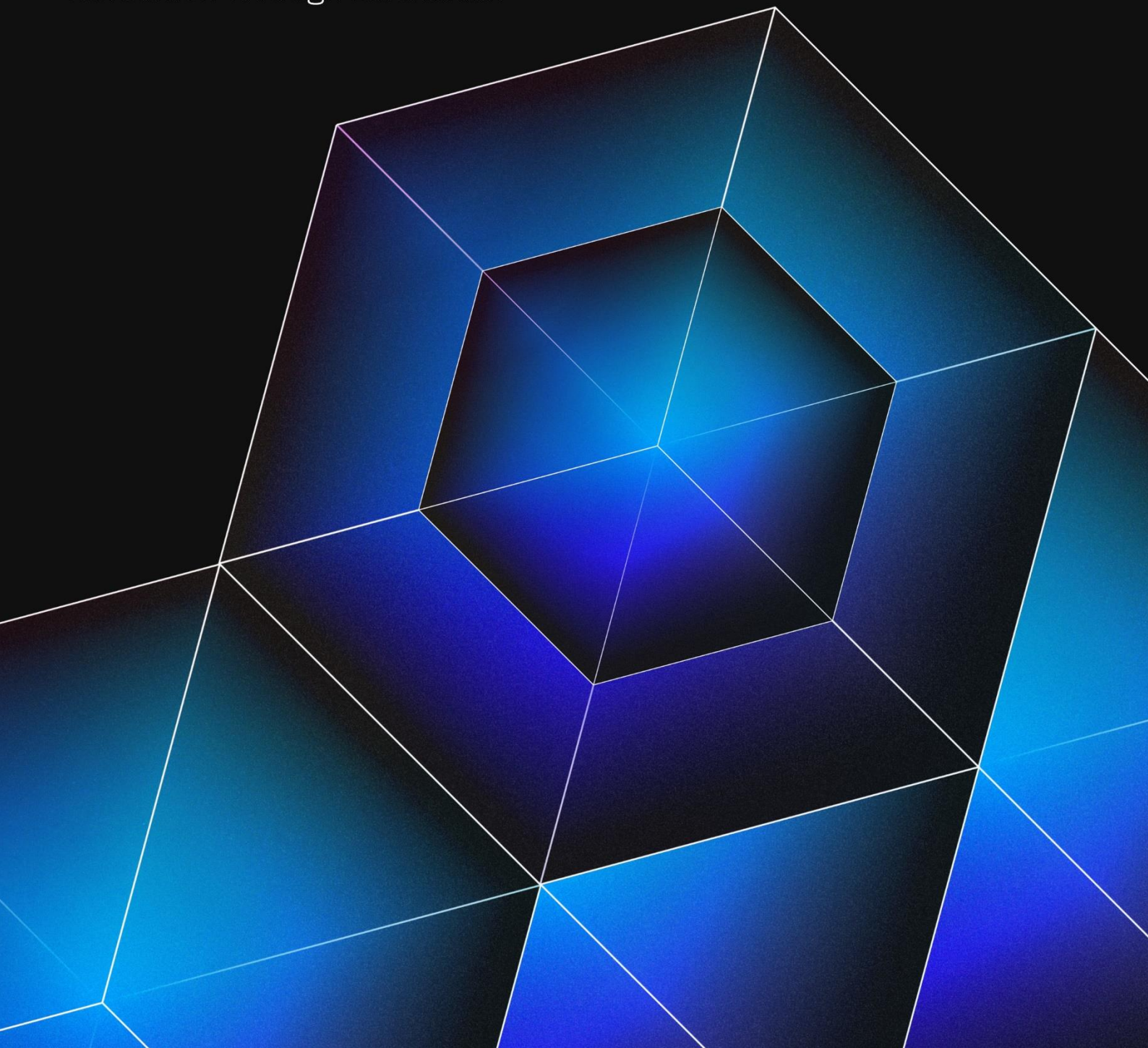
BLAST!

Fostering Youth Social Inclusion through Blockchain for Sustainability

INTELLECTUAL OUTPUT 2

BLAST! Methodology for the Implementation of the Curriculum for Sustainable Revolution Through Blockchain



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2020-3-IE01-KA205-082899
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Introduction

Welcome to the Methodology for the Implementation of the Curriculum. This handbook is designed to help you navigate the BLAST! curriculum and resources and teach you techniques and methods for the implementation of the resources to best connect with your learners. This handbook has been created to assist youth workers, youth trainers and youth educators in introducing and implementing the training content with learners. The handbook gives a brief description of the curriculum and its resources, as well as an introduction to the topics of blockchain and sustainable action through blockchain.

The BLAST! project aims at fostering social inclusion through a non-formal learning programme on the Sustainable Revolution, through blockchain and DTL emergent technologies. The project objectives are to develop a state-of-the-art non-formal learning programme (the Curriculum), complemented with video-based digital learning to enhance youth engagement.

The aim of this document is to provide an overview of the methodology of non-formal learning and education, a brief background into the concepts of blockchain and sustainability and how they interact, a look at dialogic assessment methods, and an overview of how to use the curriculum resources you can find in the Curriculum Handbook. The purpose of this document is to support youth workers/educators/social workers when implementing the BLAST! curriculum with the target group, as well as provide a brief background into the methodology and core concepts of the project itself.

Overview of the Curriculum

The BLAST! Curriculum for Sustainable Revolution through Blockchain aims at supporting Youth Educators/Workers/Leaders in guiding youth participants into acquiring knowledge and skills in the Sustainable Revolution topics and finding out how they can contribute to achieving the Sustainable Development Goals (SDGs) using blockchain. The learning programme's objective is to empower young people (15-22 years old) to take control of their lives by becoming agents of change.

The BLAST! curriculum comprises of four core elements:

1. The learning programme's aims and objectives.
2. The learning outcomes.
3. The "BLAST! Non-Formal Education Methodology for Sustainable Revolution" with a Model of Dialogic Evaluation" and,
4. The learning materials.

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For the curriculum, the BLAST! project consortium developed six learning units:

1. Climate change.
2. Natural disasters.
3. Biodiversity loss.
4. Ocean-health deterioration.
5. Air pollution; and,
6. Water scarcity.

Each learning unit contains at least 12 hours of learning content consisting of videos, articles, activities, group discussions, roleplaying activities, debates, and group research activities.

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Background to the BLAST! Curriculum

The aim of this section is to provide a brief background to blockchain as a concept, and how it can help sustainability efforts. The purpose of this section is to provide a launching platform for youth educators/trainers/workers to use to build their knowledge on the source topic before using the curriculum with young people. In this section, we will look at what blockchain is and how it is used, sustainability as a concept, and how blockchain can be used to support sustainability. By understanding these concepts, it allows educators to have a more in-depth understanding of the course material before implementing the learning content with participants.

What is Blockchain?

Blockchain is a decentralised digital ledger technology (DTL) that records transactions across multiple computers in a way that ensures security, transparency, and immutability. It consists of a chain of 'blocks', where each block contains a list of transactions. In simple terms, it is a digital record book where transactions or pieces of information are stored in blocks which are linked together in a chain. The information is secure, because if one of the blocks is infiltrated, it breaks the chain. Blockchain is used for a variety of different purposes, including cryptocurrencies, smart contracts, supply chain management, cross-border payments, voting systems, and identity verification.

Here is a simple breakdown of the aim of blockchain and why it is secure:

Digital Transactions	Blocks	Decentralised	Security	Transparency	Trust
• People can use blockchain to record transactions, such as buying and selling goods or transferring money.	• These transactions are grouped together into blocks. Each block contains a set of transactions, kind of like a page in a ledger.	• Instead of being stored in one central location, copies of the blockchain are distributed across a network of computers. This decentralisation makes it harder for anyone to control or manipulate the data.	• Each block has a unique code (hash) and contains a reference to the previous block, creating a secure and chronological chain. Changing one block would require changing all subsequent blocks, which is extremely difficult.	• Transactions on a blockchain are often public and can be viewed by anyone, adding transparency to the process.	• The security and transparency of blockchain make it a trustworthy way to record and verify transactions without the need for a central authority, like a bank or government.

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In essence, blockchain is a technology designed to ensure the integrity and transparency of digital transactions while eliminating the need for a central authority to oversee them. It's the underlying technology behind cryptocurrencies like Bitcoin, but its applications extend far beyond just digital money, including supply chain management, voting systems, and more.

Scan here to learn more about blockchain and how it works

What is Sustainability?

In the environmental context, sustainability refers to the practice of using natural resources and managing the environment in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs. It is a holistic approach to environmental management and resource use that seeks to balance ecological, social, and economic considerations. The core principles behind the sustainable mindset include:

- **Conservation of Resources**: Sustainability involves using natural resources efficiently and conserving them for the long term. This includes practices such as reducing waste, recycling, and using renewable resources whenever possible.

- **Environmental Protection**: Sustainability aims to protect and preserve ecosystems and biodiversity. It involves minimising pollution, preventing habitat destruction, and safeguarding the health of the planet's ecosystems.

- **Social Responsibility**: Environmental sustainability takes into account the well-being and quality of life of communities and individuals. It promotes social equity and considers the social impacts of environmental decisions.

Source 1 - Image source: Microsoft Creative Commons

- **Economic Viability**: Sustainable practices should be economically viable in the long run. This means that businesses and industries should be able to operate profitably while also minimising their negative environmental impacts.

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- **Long-Term Perspective**: Sustainability focuses on long-term solutions and planning, rather than short-term gains. It considers the consequences of actions over extended periods and strives for enduring benefits.

- **Interconnectedness**: Sustainability recognises that everything in the environment is interconnected. Changes in one part of an ecosystem can have ripple effects throughout the system, and thus, decisions must take these interactions into account.

- **Adaptation and Resilience**: Sustainability involves building systems and practices that are adaptable and resilient in the face of environmental challenges and changes, including climate change.

In essence, environmental sustainability is about finding a balance between meeting human needs and protecting the planet's ecosystems for current and future generations. It encompasses a wide range of practices and approaches aimed at minimising harm to the environment, conserving resources, and promoting a harmonious relationship between humans and nature.

Sustainability & Blockchain

Blockchain can be used to promote and increase sustainability in many ways. By providing transparency, traceability, and trust in transactions, blockchain technology can help drive sustainable practices across various industries and sectors.

One of the primary ways that blockchain can be used to increase sustainability is by creating transparent supply chains for products. This means consumers can trace the origin of products, ensuring that they are ethically, and sustainability produced. For example, in the food industry, consumers can trace the journey of their food from the farm to their plate, ensuring fair labour practices and environmentally friendly production methods.

Source 2 - Leeloo Thefirst, Pexels (2021), found here: https://www.pexels.com/photo/smartphone-pen-calendar-and-eyeglasses-on-flat-surface-7887800/

Blockchain can also facilitate the trading of renewable energy. Producers of renewable energy (like solar or wind farms) can sell excess energy directly to consumers through a blockchain-based system. This reduces the reliance on fossil fuels and promotes the use of clean, sustainable energy sources.

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Blockchain can be used to create a transparent and verifiable system for tracking carbon credits. This allows companies and individuals to offset their carbon emissions by investing in sustainable projects. It ensures that the investments lead to real reductions in greenhouse gas emissions. It can also be used to track the disposal and recycling of waste materials. This can help ensure that waste is properly managed, recycled, and disposed of in an environmentally responsible manner.

Smart contracts are self-executing contracts with the terms of the agreement written into code. They can be used for environmental agreements, like paying for ecosystem services. For example, a farmer could be paid automatically when they implement sustainable farming practices that benefit the environment. Additionally, blockchain can be used to track and verify transactions related to wildlife conservation efforts. This ensures that funds allocated for conservation are used for their intended purpose, preventing corruption and mismanagement.

Blockchain can provide transparency in charitable donations. Donors can track where their contributions go and ensure they are used for sustainable and ethical projects. It can be used to track and manage water usage in a transparent and accountable manner. This is particularly important in regions facing water scarcity.

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Methodology for Non-Formal Education

Non-formal education, together with youth work, is a proven way of helping young people from disadvantaged neighbourhoods to overcome the disadvantages they experience and to become active contributors to the development of their communities and society. Non-formal education refers to any organised learning process that takes place outside of the formal education system. It is structured and purposeful but does not necessarily follow the conventional curriculum or lead to a formal qualification or certification. These programs are designed to meet the specific learning needs and goals of participants, often focusing on practical skills, personal development, and lifelong learning.

Non-formal education is often more flexible in terms of timing, location, and pace compared to formal education. It can be tailored to accommodate learners' schedules and specific learning objectives. It can occur in various settings such as community centres, workshops, online platforms, vocational training centres, libraries, and other community spaces. It caters to a wide range of learners, including adults, youth, and children. Non-formal education can address specific groups like marginalised communities, working adults, or individuals seeking to acquire specific skills.

Source 3 - Image source: Microsoft Creative Commons

Non-formal education often emphasises practical skills, vocational training, and personal development. These educational programs are geared towards enabling individuals to apply what they learn in their everyday lives or careers. Unlike formal education, non-formal education does not typically lead to recognised degrees or diplomas. Instead, participants may receive certificates of completion or other informal recognition of their achievements.

Examples of non-formal education programs include adult literacy classes, vocational training workshops, community-based skills development initiatives, language courses, and various workshops or seminars conducted by community organisations, NGOs, or government agencies.

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Non-formal education plays a crucial role in providing learning opportunities for individuals who may not have access to or benefit from formal education systems. It can empower people with practical skills, knowledge, and confidence to improve their personal and professional lives.

Non-formal Methodology for BLAST! Curriculum

Non-formal methodology can be implemented using a variety of techniques and approaches. These techniques are often flexible, learner-centred, and tailored to individual needs. These approaches include:

These techniques can be used individually or in combination with one another, depending on the different learning objectives and the preferences and needs of the participants. Non-formal learning techniques are valuable tools for promoting active, engaging, and effective learning experiences outside of formal educational structures.

In the BLAST curriculum, you will find a multitude of different learning techniques that help to support the non-formal education of participants. This includes:

- Groupwork activities
- Group discussions
- Reflective exercises based on videos
- Research projects
- Roleplaying activities
- Brainstorming
- Experiential learning exercises

In a non-formal educational setting, a combination of learning techniques can be strategically used to strengthen the blockchain and sustainability competencies of young adults. Groupwork activities serve as a foundational approach, encouraging collaboration and teamwork among participants. Through collaborative projects centred around blockchain and sustainability, individuals are encouraged to work together, developing problem-solving skills and a deeper understanding of the subjects at hand.

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Group discussions play a pivotal role in facilitating conversations around blockchain and sustainability topics. This platform encourages active participation, critical thinking, and the exchange of diverse perspectives among the participants. It creates an environment where ideas are shared, debated, and refined, ultimately enriching participants' understanding of the subject matter.

Another valuable technique involves reflective exercises based on videos. By utilising visual content as a launchpad for reflection, participants are prompted to contemplate the potential impacts of blockchain on sustainability. This exercise not only enhances their comprehension but also encourages them to think critically about the broader implications of these technologies.

Research projects offer participants an opportunity to delve deeper into the intersection of blockchain and sustainability. These tasks promote independent inquiry, requiring individuals to analyse and synthesise information. This method empowers participants to develop a comprehensive understanding of the subject matter.

Roleplaying activities provide a dynamic and immersive learning experience. Participants are placed in simulated scenarios related to blockchain and sustainability, allowing them to adopt various roles. This approach cultivates empathy, hones problem-solving skills, and offers a practical understanding of how these concepts can be applied in real-world situations.

Brainstorming sessions serve as a platform for creativity and innovation. Participants are encouraged to generate novel ideas and solutions pertaining to blockchain and sustainability. This fosters a culture of innovative thinking and problem-solving skills, empowering participants to think outside the box.

Lastly, experiential learning exercises offer a hands-on approach, allowing participants to directly engage with blockchain technology and sustainability concepts. By immersing themselves in practical activities, participants gain a tangible understanding of how these concepts function in real-world scenarios. This method enhances their ability to apply theoretical knowledge to practical situations, ensuring a well-rounded comprehension of the subject matter.

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Dialogic Assessment Method

To assess the understanding and transfer of knowledge of the participants, it is important to follow a dialogical assessment method. A dialogic assessment method is an approach to evaluating learning and understanding that emphasises active, collaborative, and reflective dialogue between teachers and students (Egan-Simon, 2018). It follows the dialogic teaching technique which emphasises communication to challenge and expand the learners' thinking and aid their cognitive and social development. Unlike traditional assessment methods, which often focus on one-way communication (e.g., exams, quizzes, essays), dialogic assessment encourages a dynamic exchange of ideas, feedback, and reflections.

Source 4 - Dialogical teaching style benefits, adapted from: https://my.chartered.college/impact_article/its-good-to-talk-moving-towards-dialogic-teaching/

Dialogic assessment can be particularly effective in fostering critical thinking, communication skills, and deeper understanding of the subject matter. It also promotes a more learner-centred and inclusive educational environment. This approach aligns well with modern educational philosophies that emphasise active learning, student empowerment, and the development of skills beyond rote memorisation. Keep in mind that the specific implementation of dialogic assessment can vary based on the educational context, subject matter, and the preferences of the teacher or institution.

Collaboration among students plays a pivotal role in dialogic assessment. Substantial evidence supports the idea that engaging in dialogic learning enhances students' academic performance. Research consistently demonstrates the advantages of this approach over traditional individual study methods (University of Nottingham, n.d.). Introducing dialogic assessment into the learning environment can be done through a variety of methods, but primarily through discussion. Educators can learn about how to initiate and sustain discussion through:

- Encouraging students to participate in speaking
- Attentively observing student conversations

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- Establishing guidelines for student discussions
- Directing students' conversations towards the assigned task

Dialogic assessment involves various methods that promote active engagement, reflection, and two-way communication between teachers and students. Here are some common methods:

Peer Assessment and Feedback	Students assess and provide feedback on each other's work or presentations. This encourages a collaborative learning environment and helps students develop their critical evaluation skills.
Self-Assessment and Reflection	Students evaluate their own work or performance against predefined criteria. They reflect on their strengths and areas for improvement, promoting metacognition and self-awareness.
Group Discussions and Debates	Students engage in conversations with their peers, where they can share their perspectives, defend their ideas, and learn from one another.
One-on-One Conferences	Teachers meet individually with students to discuss their progress, understanding, and goals. This provides personalised feedback and allows for a deeper understanding of individual learning needs.
Concept Mapping and Mind Mapping	Students create visual representations of their understanding of a concept or topic. This method helps to reveal the depth of their understanding and connections between ideas.
Collaborative Project	Students work together on a project, requiring them to communicate, negotiate, and collectively produce a final product. The assessment can focus on both the process and the final outcome.
Think-Pair-Share	Students think about a question or prompt individually, then discuss their thoughts with a partner before sharing them with the larger group. This encourages active engagement and peer learning.
Roleplay and Simulations	Students take on specific roles or scenarios to apply their knowledge and skills. This can be particularly effective for subjects that involve real-world applications.
Feedback Circles	In small groups, students take turns giving and receiving feedback on a particular project or assignment. This promotes a culture of constructive criticism and peer support.

These methods can be adapted and combined to suit the specific learning objectives and context of a given course or educational setting. The goal is to foster meaningful interactions, promote deeper understanding, and support ongoing learning.

When introducing dialogic assessment methods to the BLAST! curriculum, educators can use a variety of different methods at the end of each day or session to assess the overall understanding and comprehension of learners. There are a variety of different activities involved throughout the BLAST! curriculum learning units; however, educators and trainers are encouraged to create their own overall assessment tool through the use of dialogical assessment methods as set out above. Among the suggested assessment methods include group discussions and self-reflection. These assessment methods in particular encourage participants to reflect on their own ways of thinking and allow for participants to understand the different opinions of other participants.

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How to Use the Resources

It is important to have a solid understanding of both blockchain and sustainability before implementing the materials. Use the resources in the learning plan to get an overview of each topic and build upon your understanding of the core material by engaging with the resources found on the BLAST! learning programme which can be found by scanning the QR code below!

The six learning units contained within the curriculum address six core themes surrounding sustainability. These themes are designed to showcase the powerful role that blockchain technology can play in promoting and supporting sustainable action. The six themes covered are:

1. Climate change
2. Natural disasters
3. Biodiversity loss
4. Ocean-health deterioration
5. Air pollution
6. Water scarcity

Scan here to access the BLAST! learning programme videos

To use these learning units to achieve the maximum impact, you can follow these tips:

1. **Familiarise yourself with the learning plans and the content:** Take some time to conduct your own research into the topics of blockchain, sustainability, and social action before engaging with the lesson plans. Build your own understanding of the different sections and the activities they offers, such as the videos, group discussions, and articles, before engaging with the learners.

2. **Conduct some background research to supplement your teaching:** Look at the videos and some of the additional resources linked on the platform and within the learning plan to help support your delivery of the learning material.

3. **Find relevant local case studies:** Find some local case studies to help give real-world examples to support the understanding and relevance of the content to learners.

4. **Adapt the resources to suit your learners:** The content contained within the curriculum might be better suited in a different format for the needs of your group of learners. Take the time to adapt any materials necessary to suit the needs of your learning group as well as your teaching methods.

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5. **Interactive Activities:** Engage students with hands-on activities like simulations, role-playing, or blockchain games. This could involve creating a mock blockchain or participating in a sustainable supply chain activity.

6. **Encourage Critical Thinking:** Prompt discussions about the potential challenges and ethical considerations related to blockchain and sustainability. Encourage students to think critically about the implications.

7. **Assessment and Feedback:** Use a variety of assessment methods such as quizzes, presentations, reports, and discussions to evaluate students' understanding. Provide constructive feedback to help them improve.

Using the Resources – Example

In this example of how to implement the resources, we will look at Learning Unit 3 – Biodiversity Loss. This lesson plan focuses on the impact of biodiversity loss and how blockchain can be used to support more sustainable action when it comes to preserving biodiversity and natural ecosystems.

One way that trainers can adapt the learning materials to suit their learners is by making informative or guiding presentations. These presentations can be laid out to help facilitate and guide the session while also containing key points of information. Check Annex 1 below to see an example of how you can complete this.

The lesson plan covers 20 hours of content spread over 5 days. For day one, trainers open the sessions by giving a theoretical overview of biodiversity loss using a series of three videos that can be found on YouTube.

Trainers can supplement this activity by welcoming participants to the sessions and asking them what they understand of biodiversity loss. This allows participants to think about their pre-existing understanding of the topics, and allows educators to gauge the level of knowledge about the topic amongst learners before starting a deeper dive.

For the second and third videos in the lesson, there are group activities attached to the video. The trainer follows the instructions in the lesson plan to implement the activity, ensuring that the groups of participants understand their instructions.

Trainers can supplement this activity by following up the completion of the activity with a short group discussion about the human impact on biodiversity in their own local communities. This allows for the transfer of knowledge of participants from largescale, global events to their own personal understanding of the topic.

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For day two, participants are given a summary of the material learned on day one, and participants are invited to participate in an hour-long group activity whereby they are tasked with creating either a video/presentation or a roleplay demonstrating a variety of themes related to biodiversity loss. This activity is aimed at increasing participants understanding of the importance of biodiversity preservation.

Trainers can expand upon this activity by inviting participants to explain their understanding of ways that blockchain can help support biodiversity preservation. This includes asking participants to contribute their own understanding of the impact of blockchain on the environment, and the ways that this can be counteracted.

For day three, participants are tasked with putting themselves in the shoes of specific jobs that are affected by biodiversity loss. Participants watch a video on the impact of biodiversity loss before engaging in a research project investigating the impact of biodiversity on people, and invited to create a moving pictures story, or a song/poem that demonstrates the impact of this loss to the planet and communities as a whole.

Trainers can encourage further self-reflection on this day by encouraging participants to related biodiversity loss to the jobs of their loved ones. Trainers can invite participants to consider the wider impact of biodiversity loss on the way they live their lives, as well as the world around them.

For day four, participants are presented with fictional scenarios relating to biodiversity. With these scenarios, participants are invited to write speeches that can be used in a debate between two sides: those who will be agreeable to the idea of biodiversity but put their own needs ahead of biodiversity, as well as those who actively fight for the protection of biodiversity and doing their best to prevent its loss.

Expanding on this activity, trainers can show participants examples of debates on modern and relevant topics on YouTube. This will help to demonstrate the necessary skills for participants to use during their debates, and also showcase the importance of being able to argue both sides of a point. This builds upon the participant's communication skills.

For day five, participants are invited to participate in their debate. After each person has spoken, participants are invited to argue or support the presentations, based on their own assigned scenario's point of view. Once the debate is completed, the trainer invites participants to watch a video about how blockchain could help to save the Amazon rainforest.

Trainers can build upon this activity by inviting participants to share their own opinion of the debate topic. The participants can share whether they agree or disagree with their assigned role, and whether arguing for a different point of view helped to expand or change their own.

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Annex 1 – Presentation Example

What is Biodiversity Loss?

How are humans driving Biodiversity Loss?

Group Work!

- Split into groups of 2 -4
- Select one of the human activities listed in the video
- Brainstorm and generate one solution addressed to young people/peers to change their behaviour
- Take 45 minutes…
- Then share your ideas with the group!

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Sustainable Development Goal 15 – Life on Land

SDG 15 in Europe
SDG 15 on Global level

Over to you! Sustainable Development Goal 15 – Life on Land

Working in groups of 24, research what is being done on either a National (in your country), European or Global level to achieve Goal 15!

Through this research try to answer:

- Is Goal 15 on track?
- What initiatives are being piloted?
- Are they effective?

Take 45 minutes, and then present your findings to the group!

Biodiversity in Farming

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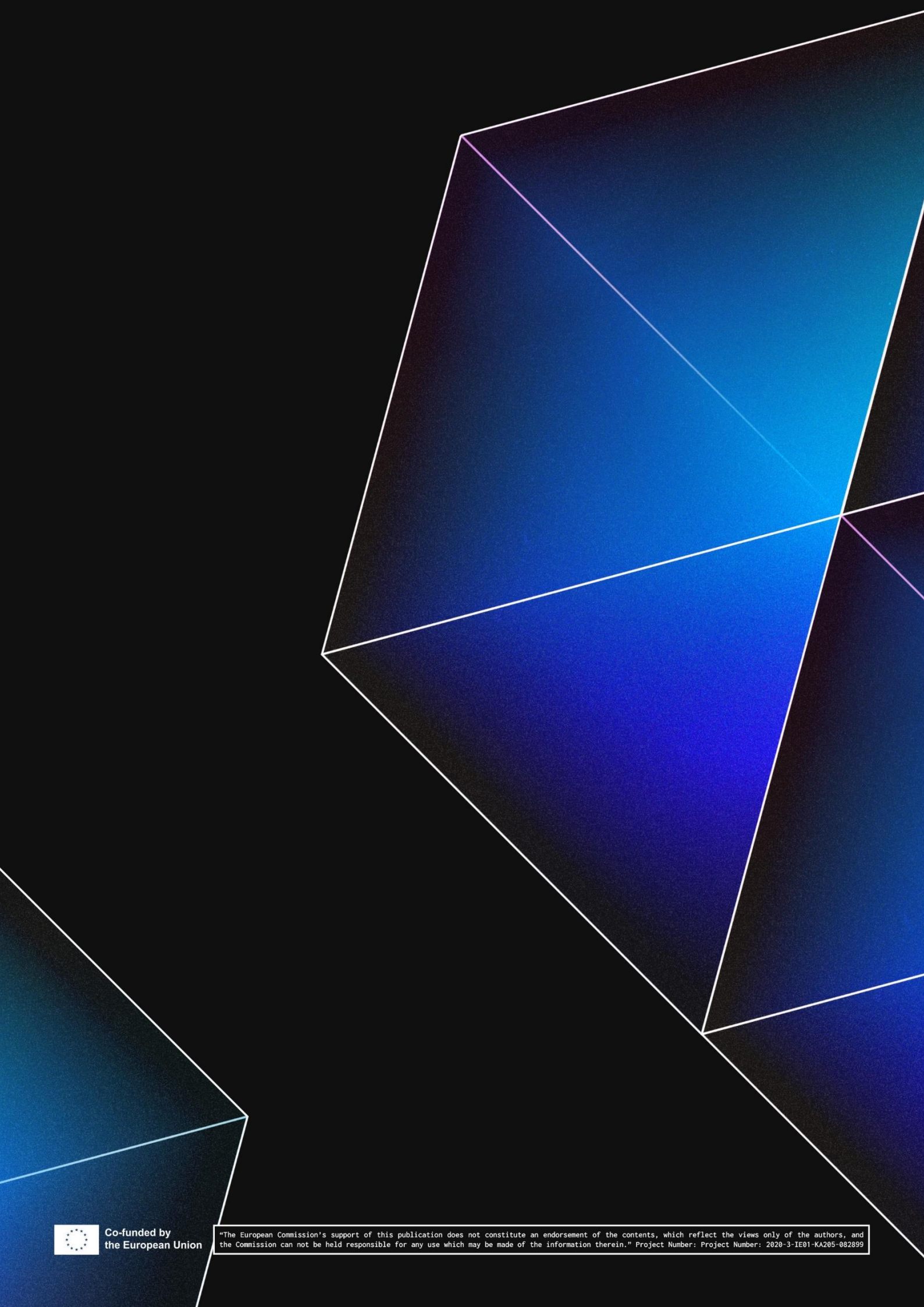

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