# SLOG 4.0

Digital and green skills for boosting innovation and sustainability of the logistics sector

## PROJECT AIMS

The project links two frameworks: sustainability/green skills and 4.0 technologies/digital skills within the field of logistics and aims to adapt green and digital skills of students to the requirements of the industry 4.0.

***"TO INCREASE THE ADOPTION OF SUSTAINABLE AND DIGITAL PRACTICES IN THE LOGISTICS SECTOR, SECTOR RESPONSIBLE FOR CREATING SUBSTANTIAL COSTS FOR SOCIETY."***

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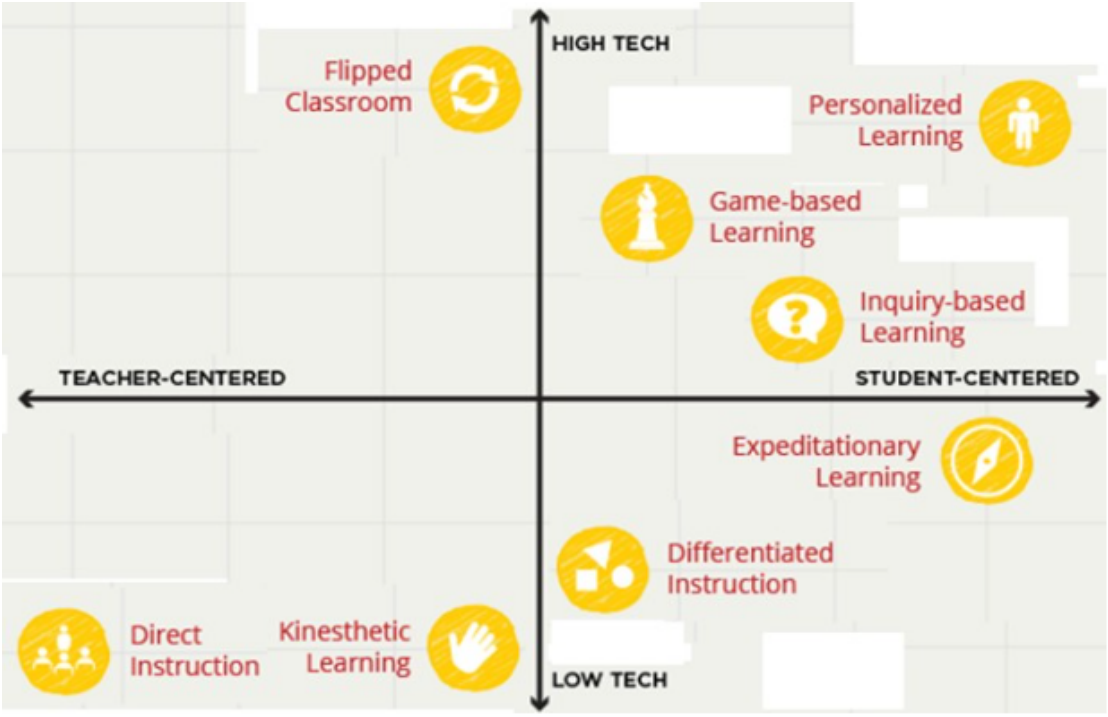
# PRESENTATION ON...

## Slog4.0 current developments

A comprehensive training needs analysis is now completed!

Data on **training needs analysis** was collected on topics needed to prepare logistics students and employees to lead the transformation of classic logistics into Sustainable Logistics 4.0. The initial phase involved conducting a **literature review**, providing valuable insights into the **essential learning outcomes, skills, and contents** required for future endeavors in the logistics sector. Furthermore, the literature review allowed the project team to explore contemporary and **effective pedagogical approaches** for designing lectures and tutorials tailored to both students and adults returning to academia. The figure below showcases some of these pedagogical methods. Notably, the literature review highlighted the prominence of student-centered pedagogical approaches, significantly impacting knowledge acquisition and motivating students to embrace new information.



# PRESENTATION ON...

## Slog4.0 current developments

A comprehensive training needs analysis is now completed!

Remarkably, a total of **1612 individuals** viewed the survey introduction page. According to the survey results, both students and employees, on average, rated their abilities to implement digitalization processes and sustainability practices in real-life scenarios with a score of 3 (indicating they are probably able to implement them in practice). The mean average for all respondents and the listed activities in the questionnaire suggest some **lack of confidence** in own capabilities in this matter. A more detailed analysis revealed significant differences between respondents with varying levels of experience within each group. Specifically, there were statistically significant differences between the following groups:

- Students with no prior experience in digitalization/sustainability and those who have experience in these areas, for all the specified activities in the questionnaire.
- Employees with no prior experience in digitalization/sustainability and those who have experience in these areas, for all the activities listed in the questionnaire.

*These findings highlight the importance of experience and knowledge in driving confidence and competence in implementing digitalization and sustainability initiatives.*

**These findings are an important contribution to achieving the final goal of this stage which is to define the Design Principles and the Curriculum for the Sustainable Logistics 4.0 training course.**

# DID YOU KNOW...

## The power of IoT in driving sustainability for supply chains

**Logistics companies** play a vital role in the global economy, facilitating the movement of goods and materials worldwide. Nevertheless, the increasing focus on sustainability has put pressure on these companies to minimize their carbon footprint and improve operational efficiency. One effective approach to achieve this is by **optimizing their supply chains and harnessing IoT technology**.

Supply chain optimization entails streamlining the flow of goods from production to consumption, minimizing waste, and cutting costs. This can be accomplished through the utilization of technology, data analytics, and strategic planning. IoT technology plays a pivotal role in this process.

IoT sensors and devices can collect data on various aspects of the supply chain, ranging from production to delivery. By analyzing this data, inefficiencies and bottlenecks in the supply chain can be identified. For instance, IoT sensors can track inventory levels, monitor environmental conditions, and optimize delivery routes. This **empowers** logistics companies to make data-driven decisions, optimizing their supply chain and reducing their environmental impact.

# DID YOU KNOW...

## The power of IoT in driving sustainability for supply chains

Leveraging IoT technology to rationalize supply chains can yield several ***benefits for logistics companies:***

- **Reduced costs**: IoT sensors facilitate inventory management optimization, waste reduction, and decreased energy consumption, resulting in enhanced efficiency and reduced costs.
- **Improved customer satisfaction**: IoT technology enables logistics firms to improve delivery times, minimize stockouts, and ensure products are delivered in optimal condition. This fosters increased customer loyalty and repeat business.
- **Increased sustainability**: By optimizing delivery routes, reducing mileage, and minimizing waste, IoT technology helps logistics companies reduce their carbon footprint, contributing to a more sustainable future.

To leverage IoT technology for supply chain rationalization, logistics companies can utilize various ***tools and strategies,*** such as:

- **IoT sensors**: Tracking inventory levels, environmental conditions, and delivery routes enables data-driven supply chain decisions and reduced environmental impact.
- **Blockchain technology**: Implementing blockchain technology enhances transparency and reduces the risk of fraud in the supply chain. It ensures products are ethically sourced and suppliers comply with environmental and social responsibility standards.
- **Artificial intelligence** (AI): AI analysis of data from IoT sensors and other sources identifies inefficiencies and optimizes the supply chain. Predictive AI algorithms can forecast demand and enhance production schedules.

Harnessing IoT technology to rationalize supply chains offers logistics companies several **advantages**, including cost reduction, improved customer satisfaction, and increased sustainability. Through the integration of IoT sensors, blockchain technology, and AI, logistics companies can optimize their supply chains and operate more efficiently and sustainably.

# UNDERSTANDING DELPHI METHODOLOGY:

## A Collaborative Approach to Decision-Making

**The Delphi methodology** is a powerful and widely used technique that fosters group consensus on complex issues, making it an invaluable tool in decision-making processes across various fields. Developed during the 1950s by the **RAND Corporation**, the Delphi method is designed to extract knowledge and insights from a panel of experts, enabling them to converge towards a common viewpoint without the constraints of face-to-face interactions. This **collaborative approach** has found applications in diverse areas, from business and technology to healthcare and policy development.

One of the primary purposes of the Delphi methodology is to provide a **structured approach** for dealing with uncertainty and complexity. When faced with ambiguous or rapidly changing situations, the Delphi method allows experts to offer anonymous input and engage in **iterative rounds of feedback** and discussion.

The application of the Delphi methodology spans various industries. In business, it is often employed for strategic planning, market research, and forecasting. For instance, when determining future market trends, business leaders can solicit insights from a diverse **group of experts** through the Delphi process. In healthcare, Delphi surveys are utilized to define medical guidelines, assess treatment efficacy, and identify emerging health challenges. Additionally, government bodies frequently leverage the Delphi method to gather expert opinions in crafting policies or regulations, ensuring a comprehensive and informed decision-making process.

The Delphi methodology follows a structured framework that typically involves multiple rounds of data collection and feedback. In the first round, participants are asked open-ended questions and provide their responses anonymously. In the subsequent rounds, participants receive a summary of the group's collective responses and are invited to refine their opinions. This iterative process continues until a **consensus** is reached or when further rounds no longer yield significant changes in responses. The Delphi method's flexibility allows it to be tailored to the specific needs of a project or problem, making it a versatile tool in various domains.

## WHAT IS SLOG4.0?

Slog4.0 is a European project that aims to promote the uptake of eco-friendly and technologically advanced approaches within the logistics industry, a sector known for generating significant expenses for society, including greenhouse gas emissions and pollutants. For this purpose, it aims to contribute to the formation of a fresh cohort of proficient professionals for the logistics sector, equipped with a sustainability-focused mindset and a comprehensive skill set aligned with the principles of Industry 4.0.

## PROJECT INFORMATION

Name: Sustainable Logistics4.0: Digital and green skills for boosting innovation and sustainability of the logistics sector
Number: KA220-HED-B12C4B93
Duration: 36 months
Funding: Erasmus+ Programme of the European Union, call "Cooperation partnerships in higher education"

## PROJECT PARTNERS

The consortium includes 4 universities that believe in the need of proposing an innovative training offer in the field of logistic 4.0 by developing a new interdisciplinary curriculum, and 3 companies providing specialized and advanced services, selected upon the expected commitment proven by consolidated previous relations and their acknowledged proficiency.
The partners of the project are:

- Poznan University of Technology (Poland) - coordinator
- University of Aveiro (Portugal)
- University of Gaziantep (Turkey)
- University of Maribor (Slovenia)
- Valuedo srl (Italy)
- ECQA (Austria)
- Zerynth srl (Italy)

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