

TALLHEDA - Shaping the Future of Digital Agriculture Education: A Questionnaire for Students

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Purpose of the Questionnaire

This questionnaire aims to gather insights into the current state and future needs of **Digital Agriculture (DA) education among students**. Our goal is to pinpoint areas for reform, enhancement, or support to ensure that DA education keeps pace with the latest advancements and industry demands. Your feedback will help identify challenges, opportunities for improvement, and potential areas for collaboration. The findings will inform strategic planning and initiatives to promote excellence in DA education, benefiting students, educators, and the broader agricultural sector. Your participation is essential in shaping the future of DA education and ensuring its relevance and effectiveness in tackling global agricultural challenges.

Confidentiality & Data Usage

- I wish to participate in the TALLHEDA Questionnaire: "**Shaping the Future of Digital Agriculture Education: A Questionnaire for Students**".
- I am aware of my rights; I have been given the contact details of the responsible persons and I consent to the processing of my personal data for the purpose and under the conditions explained in the attached file below.

Legal information

Estimated Completion Time

Thank you for taking the time to contribute to this important initiative. Completing this questionnaire is expected to take approximately 10 minutes. Your detailed responses are invaluable to us in understanding and shaping the future of Digital Agriculture education and research. We appreciate your willingness to share your insights and expertise.

II. Definitions

The following definitions have been taken from [learning resources](#) of [AgriSkills – Entrepreneurial Skills for Digitalization of Rural Agriculture project](#) (Erasmus+).

Digital Agriculture (DA) refers to the use of digital technologies, including precision farming and smart farming technologies to improve efficiency, sustainability, and productivity in agriculture. Farmers can increase their production, save costs, support sustainability and data-driven decision making. It includes advanced technologies, such as IoT (Internet of Things), drones, Artificial Intelligence (AI), cloud, big data and blockchain.

Digital farming, smart farming, and precision farming are related but distinct concepts in agriculture.

Precision Farming: Precision Farming involves the systematic observation, measurement, and enhancement of crop yields and livestock management. By harnessing technologies like GPS, drones, remote sensing, and soil sampling, farmers can fine-tune their farming practices for optimal productivity. These methods encompass variable rate planting, precise nutrient application, yield and soil mapping. The primary aim of precision agriculture is optimization.

Example: Instead of using the traditional way for applying an equal amount of fertilisers over a field, a farmer can use GPS-guided equipment to apply fertilizer and pesticides to specific areas of a field only where they are needed, reducing waste, saving costs and conserving resources.

Smart Farming: Smart Farming involves farmers collecting, tracking, monitoring, and analyzing extensive data to inform decisions about planting, harvesting, and crop management. This approach benefits farms of all sizes and integrates precision farming with various advanced technologies like IoT, drones, AI, cloud computing, and machine learning. Smart farming aims to boost agriculture's sustainability and profitability, while also enhancing food quality and mitigating environmental impacts.

Example: A farmer can use smart farming techniques to get real-time data for monitor soil moisture levels, crop health and water usage. If the sensors detect that a certain area of the field is becoming too dry, the farmer could use a drone to irrigate only that area. If sensors

detect illness in plants, the farmer can take care for single plant or for the entire field. The entire process is software-managed and sensor-monitored. In this way, a farmer can increase yields and the quality while saving labour and resources.

Internet of things (IoT): IoT refers to infrastructure, that is, devices located in the field equipped with sensors as well as networking and processing capabilities, data networks, servers and software, which allow for data exchange, processing/analysing over communication networks and/or Internet.

Example: With the recent implementations, IoT has already brought benefits, like an efficient use of water, optimisation of inputs, reduced waste, etc.

Drone: Drone is an unmanned aerial vehicle (UAV). Similar to sensor technology, drones represent hardware tools that can be used to gain a competitive advantage over competitors.

Example: Drones can increase accuracy, reduce the cost of on-the-ground crop surveys, increase efficiency and crop yields, and reduce CO2 Emissions.

Big Data: Big Data refers to the massive set of data that no conventional data management tool can handle.

Example: Big data is now being increasingly applied to agriculture as it enables real-time analysis of the data generated by IoT.

Artificial Intelligence (AI): AI consists of systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect.

Example: While various agricultural data-analysis systems are created, AI allows them to go a step forward in improving predicting capabilities and data-based decision-making.

Blockchain: Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat. A key difference between a typical database and a blockchain is how the data is structured. A blockchain collects information together in groups, known as blocks, that hold sets of information.

Example: Blockchain technologies can track and store all kinds of plant information, including the seed quality and how crops grow, and even create a record of a plant's journey once it leaves the farm. This data can increase the transparency of supply chains and reduce issues related to illegal and unethical production.

III. Educational Gap and Needs in Digital Agriculture (DA)

Are DA topics **already included** into your curriculum?

- Yes
- No

Which DA topics are **already included** in your curriculum?

Topics	Not at all	Somewhat	Neutral	Quite a bit	Very much
Artificial Intelligence (AI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blockchain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital Twins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drones/Robots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Data/ Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet of Things (IoT)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please, specify:

How interested are you **in acquiring knowledge** in the following DA technologies and applications?

Topics	Not at all	Somewhat	Neutral	Quite a bit	Very much
Artificial Intelligence (AI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blockchain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital Twins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drones/Robots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Data/ Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet of Things (IoT)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which DA topics would you like to see **added** to your curriculum for further learning?

Topics	Not at all	Somewhat	Neutral	Quite a bit	Very much
Artificial Intelligence (AI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blockchain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digital Twins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drones/Robots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big Data/ Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet of Things (IoT)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During your studies, do you have **opportunities to engage** in real case studies or internships with industry partners in relation to DA? Please, rate from 1 to 5.

Do you believe that at your University the following DA **resources** are adequate?

Topics	Not at all	Somewhat	Neutral	Quite a bit	Very much
Educational material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technological tools and infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Funding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laboratory equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration and training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please, specify:

Do you believe that DA has a **potential impact** on improving your career potential?

Please, rate from 1 to 5.

IV. General Information of the Respondents

What is your gender?

- Male
- Female

How old are you?

What is your academic level?

- Undergraduate
- Postgraduate

What is the duration of your degree program?

Please, specify the number of years.

Which semester are you currently enrolled in?

Which University do you attend?

Which department are you in?

Which country are you from?

- Belgium
- Greece
- Serbia
- Other

Please, specify: