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Chapter 1:

Introduction

1.1 Why an AI Competency Framework for Vocational Agricultural Education?

Agriculture is entering a period of rapid digital transformation. Artificial Intelligence, data science, sensors, digital platforms, satellite imagery, automation and decision-support systems are increasingly influencing how agricultural production is planned, monitored and improved. These technologies are becoming relevant across many areas of agriculture, including crop production, livestock management, food production, environmental sustainability, resource efficiency and farm decision-making.

For vocational agricultural education, this transformation creates an important responsibility. Agricultural vocational schools are expected to prepare students for a sector that is becoming more data-driven, technology-supported and environmentally demanding. Traditional agricultural knowledge remains essential, but it is no longer sufficient on its own. Future agricultural technicians will need to understand not only plants, animals, soil, food systems and farm operations, but also how digital and AI-supported tools can be used to support decisions in these areas.

An AI competency framework is needed because schools and teachers require a clear structure for introducing these new topics into vocational education. Without such a framework, AI and data science may be introduced in a fragmented, overly technical or disconnected way. A framework helps define what students should know, what they should be able to do, and how they should behave when using AI and data in agricultural contexts.

The goal is not to train agricultural students as computer scientists or software developers. Instead, the goal is to support the development of modern agricultural technicians who can combine agricultural knowledge with digital, data and AI competencies. In this way, students can become better prepared for the changing needs of agricultural enterprises and for the wider digital transformation of the sector.

1.2 Purpose and Target Audience

The AITrain Competency Framework defines the key knowledge, skills and attitudes that agricultural vocational students aged 14–18 should gradually develop in relation to Artificial Intelligence and data science in agriculture.

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The framework is intended to support the integration of AI and data-related competencies into existing agricultural subjects, such as plant production, livestock management, food production, environmental sustainability and farm management. It provides a practical guide for schools that want to modernise agricultural education while keeping learning connected to real agricultural tasks and problems.

The main users of the framework are agricultural vocational teachers, who can use it to integrate AI and data competencies into lessons, laboratory work, practical exercises and project-based activities. School administrators can use it to support curriculum planning, digital transformation and the development of more modern learning environments. Curriculum developers can use it as a basis for elective course content, learning materials and assessment activities.

The final beneficiaries are agricultural vocational students aged 14–18. Through the framework, students are expected to develop a basic but practical understanding of AI and data science, learn how these technologies can be applied in agricultural contexts, and build the confidence to use digital tools responsibly and critically.

To make the framework practical for vocational education, the competencies are organised around three dimensions: knowledge, skills and attitudes. Knowledge refers to what students should know and understand. Skills refer to what students should be able to do in practical agricultural and digital contexts. Attitudes refer to how students should think, behave and make responsible decisions when using AI and data.

The framework also uses Bloom's taxonomy to support progression in learning. Students move from recognising and understanding basic concepts, to applying tools and interpreting data, and finally to evaluating AI-supported decisions and proposing simple solutions for agricultural problems.

1.3 Technological Advances in AI in Agriculture and Implications for Student Competencies

AI and data-based technologies are increasingly used to support agricultural decision-making. Examples include crop monitoring systems, smart irrigation tools, livestock monitoring systems, food quality inspection, weather-based decision support, yield prediction, disease detection, digital farm management platforms and environmental monitoring tools.

These developments change the competencies expected from agricultural students. Students do not need to understand the full technical architecture behind every AI system, but they do need enough competence to use these technologies responsibly and effectively in agricultural contexts.

Students should first understand basic AI and data concepts. They should be able to explain, in simple terms, what data, algorithms, machine learning and AI-supported recommendations mean.

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They should also be able to recognise examples of AI in agriculture and understand how these tools can support crop production, livestock management, food production, environmental sustainability and farm operations.

Students also need practical data-related competencies. Since AI systems depend on data, students should understand where agricultural data comes from, how it can be collected, and why its quality matters. They should be able to work with simple data from fields, animals, sensors, weather records, production records or observations, and understand that inaccurate or incomplete data can lead to poor recommendations.

Another important competency is the ability to interpret digital and AI-supported outputs. Students should be able to read simple dashboards, alerts, predictions or recommendations and connect them to agricultural decisions. For example, they may need to interpret a crop stress alert, a livestock health indicator, a weather-based irrigation recommendation or a food quality warning.

At the same time, students must learn to evaluate the reliability and limitations of AI. AI systems can support decision-making, but they do not replace human judgement, field observation or agricultural expertise. Students should understand that AI outputs may be wrong if the data is incomplete, outdated, biased or poorly interpreted. They should be encouraged to compare AI-supported outputs with teacher guidance, practical observation and professional agricultural knowledge.

Finally, the growing use of AI in agriculture creates a need for responsible and ethical technology use. Students should consider issues such as data privacy, fairness, environmental impact, transparency and the role of human responsibility in decision-making. They should not be trained to follow digital recommendations blindly, but to use them as one source of support within a broader agricultural decision-making process.

For this reason, the AITrain Competency Framework combines technical understanding with practical agricultural application and responsible judgement. It aims to help students become confident users of digital and AI-supported tools, while remaining critical, reflective and aware of the wider consequences of technology use in agriculture.

7. Allow adaptation across partner schools

To provide a common European structure that can be adjusted to different curricula, agricultural sectors, school resources and learner needs.

2.3 Inclusion and accessibility in agricultural VET

The integration of artificial intelligence and data science into agricultural vocational education must be inclusive, accessible and relevant to the diverse realities of VET learners. Agricultural schools often serve students from rural areas, commuting students, learners from different socio-economic backgrounds. Therefore, AI and data education should not be designed only for learners with strong technical backgrounds but should be accessible to all students.

Inclusion means giving every learner a fair opportunity to understand and apply AI and data-related competences in agricultural contexts. Teaching should begin with familiar examples, such as crop monitoring, weather data, irrigation decisions, livestock management, food production or waste reduction. This helps students connect digital technologies with practical agricultural problems and understand their relevance to future work.

Accessibility requires clear language, visual explanations, step-by-step guidance, practical demonstrations and flexible digital resources. Learning materials should be usable on different devices and should support self-paced learning through tools such as the e-learning platform, self-learning guide and online case pool.

2.4 Sustainability and environmental responsibility

Sustainability is a key priority in modern agriculture and agricultural vocational education. Future agricultural technicians need to understand how artificial intelligence and data science can support more efficient, resilient and environmentally responsible farming.

The AITrain Competency Framework therefore links digital competence with environmental responsibility. Students should learn not only how AI tools work, but also how to evaluate whether their use supports sustainable agricultural practices.

2.5 Practical, work-based and agriculture-specific learning

AI and data science in agricultural VET should be taught through practical and work-related examples. Students need to understand these technologies as tools for solving real agricultural problems, not only as theoretical digital concepts.

Learning activities should connect to familiar areas such as crop monitoring, livestock management, irrigation, soil conditions, weather data, food production and waste reduction. Using simple datasets,

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Chapter 3:

Structure of the AITrain competency framework

3.1 Overall framework logic

The AITrain Competency Framework is designed as a practical planning tool for agricultural VET teachers. It helps teachers integrate artificial intelligence and data science into agricultural subjects in a structured and progressive way.

The framework is organised around competency domains that connect digital knowledge with agricultural practice, ethical awareness, sustainability and problem-solving. This allows AI and data competences to be included within existing agricultural lessons, rather than taught as separate technical topics.

The framework follows three progression levels: basic awareness, practical application and advanced evaluation. These levels help teachers plan learning activities that move from understanding key concepts, to using data and digital tools, and finally to evaluating AI-supported agricultural solutions.

Overall, the framework is based on integration, progression and practical relevance. It supports teachers in designing lessons that prepare students for the digital transformation of agriculture.

3.2 Competency domains of the AITrain framework

The AITrain Competency Framework is organised into five competency domains. These domains help teachers plan lessons that combine AI and data science with agricultural knowledge, practical activities and responsible technology use.

1. AI and data literacy

This domain covers the basic concepts, vocabulary and understanding needed to introduce AI and data science in agricultural VET. It includes awareness of data, algorithms, machine learning, AI tools and their possible role in agriculture.

2. Agricultural data collection and management

This domain focuses on how agricultural data are collected, organised, stored and prepared for use. It includes data from sensors, weather systems, farm records, images, field observations, livestock monitoring and production processes.

3. AI applications in agriculture

This domain addresses practical examples of AI use in agriculture, such as crop monitoring, irrigation support, livestock management, disease detection, yield prediction, food production and farm decision-making.

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4. Ethical, safe and sustainable use of AI

This domain focuses on responsible AI use. It includes data privacy, safety, bias, reliability, human judgement, environmental responsibility and the need to evaluate AI recommendations critically.

5. Practical problem-solving

This domain focuses on applying AI and data competences to real or simulated agricultural problems. It encourages students to analyse situations, use data, compare possible solutions and reflect on the practical value of digital tools in agricultural work.

3.3 Use of cognitive, affective and psychomotor domains

The AITrain Competency Framework uses the cognitive, affective and psychomotor domains to support balanced lesson planning in agricultural VET.

- The cognitive domain refers to knowledge and thinking skills. It includes understanding AI and data concepts, interpreting agricultural data, analysing digital outputs and evaluating AI-supported recommendations.
- The affective domain refers to attitudes, values and responsible behaviour. It includes curiosity, openness to innovation, ethical awareness, environmental responsibility and critical thinking about the use of AI in agriculture.
- The psychomotor domain refers to practical and hands-on skills. It includes collecting data, using digital tools, working with sensors or farm records, applying simple AI-related methods and carrying out practical agricultural tasks supported by data. In the framework matrix, psychomotor development is mainly represented through the practical skills included in each competency

By combining these three domains, the framework helps teachers design lessons that develop not only what students know, but also how they think, act and behave when using AI and data in agricultural contexts.

3.4 Use of Bloom's taxonomy

Bloom's taxonomy is used to organise the cognitive complexity of the competencies. It helps teachers design learning outcomes, activities and assessments that gradually move from basic understanding to practical application and critical evaluation.

The AITrain progression levels are aligned as follows:

- **Basic (level 1-2):** remembering and understanding;
- **Intermediate (level 3-4):** applying and analysing;
- **Advanced (level 5):** evaluating.

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3.6 Competency Framework Matrix

3.6.1 AI and Data Literacy

Level	Competency statement	Knowledge	Skill	Attitude	Example learning outcome	Example agricultural context
Basic	Students identify where data is used in simple agricultural decisions.	Know that agricultural decisions may use weather, soil, crop, livestock and production data.	Select at least three relevant data types for a given agricultural task.	Show curiosity about using evidence in agricultural work.	Students select soil moisture, rainfall and crop-condition data needed to decide whether irrigation may be required.	Planning irrigation for a vegetable crop.
Intermediate	Students interpret agricultural data from a digital monitoring system.	Understand basic tables, graphs, indicators, alerts and recommended ranges.	Read a dashboard and identify values that are above, below or within the expected range.	Use digital information carefully and check unclear results.	Students interpret temperature, humidity and soil-moisture readings and identify whether growing conditions require attention.	Monitoring greenhouse conditions.
Advanced	Students verify an AI-supported recommendation using agricultural evidence.	Understand that AI outputs depend on data quality, local conditions and the system's limitations.	Compare an AI recommendation with sensor data, weather information and direct observation.	Avoid accepting AI outputs without verification.	Students accept, reject or modify an irrigation recommendation and justify their decision using at least two sources of evidence.	Reviewing an AI irrigation recommendation.



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3.6.2 Agricultural Data Collection and Management

Level	Competency statement	Knowledge	Skill	Attitude	Example learning outcome	Example agricultural context
Basic	Students select suitable measurements for investigating an agricultural problem.	Know common agricultural data sources, including sensors, images, manual observations and farm records.	Prepare a list of the measurements, observations and records required for a task.	Recognise that relevant data are necessary for reliable decisions.	Students identify plant height, soil moisture, temperature and visible crop condition as data needed to investigate uneven crop growth.	Investigating crop-development differences.
Intermediate	Students collect and record agricultural data in a structured digital format.	Understand the importance of dates, units, labels, regular measurement and consistent recording.	Enter sensor readings or observations into a spreadsheet using correct headings, dates and units.	Work accurately and responsibly when handling data.	Students create a weekly crop-monitoring table and correctly record soil moisture, plant height, temperature and observations.	Monitoring greenhouse crop growth.
Advanced	Students detect and correct problems in an agricultural dataset before using it.	Understand missing values, unusual values, inconsistent units and unreliable measurements.	Inspect a dataset, mark data-quality problems and correct or document them.	Value accuracy and transparency rather than hiding errors.	Students identify missing soil-moisture readings, incorrect units and unusual values before using the dataset for irrigation planning.	Preparing sensor data for irrigation analysis.



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3.6.3 AI applications in Agriculture

Level	Competency statement	Knowledge	Skill	Attitude	Example learning outcome	Example agricultural context
Basic	Students connect specific AI tools with agricultural tasks.	Know that AI can support monitoring, classification, prediction and decision-making.	Match an AI application with the agricultural problem it is designed to address.	Show interest in practical and appropriate uses of AI.	Students correctly match image-based disease detection with crop protection, smart irrigation with water management and movement monitoring with livestock health.	Exploring common agricultural AI applications.
Intermediate	Students use an AI-supported tool to monitor soil moisture and support irrigation.	Understand how sensors collect soil-moisture data and how monitoring tools compare readings with expected ranges.	Use soil-moisture sensors and an AI-supported dashboard to determine whether irrigation is needed.	Follow instructions and check the tool's recommendation before acting.	Students maintain suitable soil-moisture conditions and use real-time sensor data to prevent unnecessary or insufficient irrigation.	Managing irrigation in a greenhouse or school plot.
Advanced	Students evaluate the reliability of an AI-supported plant-disease identification tool.	Understand that image quality, crop variety, disease stage and training data can affect results.	Test the tool using several crop images and compare its classifications with verified reference material.	Use technology critically and report incorrect results honestly.	Students determine how many sample images were classified correctly and identify cases in which expert confirmation is required.	Evaluating a mobile crop-disease application.



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3.6.4 Ethical, safe and sustainable AI use

Level	Competency statement	Knowledge	Skill	Attitude	Example learning outcome	Example agricultural context
Basic	Students identify situations in which AI-generated agricultural advice requires human confirmation.	Know that AI tools can produce incorrect or unsuitable recommendations.	Mark which parts of an AI recommendation should be checked through observation or expert guidance.	Show caution instead of following automated advice immediately.	Students explain why an irrigation recommendation must be checked against soil conditions, weather forecasts and crop appearance.	Reviewing automated irrigation advice.
Intermediate	Students prepare agricultural data for safe use in a classroom AI activity.	Understand basic privacy requirements concerning names, locations, images and farm records.	Remove personal or sensitive information before uploading or analysing agricultural data.	Respect farmers, classmates, organisations and data-protection rules.	Students anonymise livestock records by removing farmer names, exact farm locations and unnecessary identifying information.	Analysing livestock-health records.
Advanced	Students evaluate whether an AI-supported agricultural system is responsible and sustainable.	Understand that AI adoption may affect cost, labour, energy use, water use, animal welfare and accessibility.	Compare the benefits, risks and trade-offs of an AI-supported solution using a structured checklist.	Balance productivity with safety, fairness and environmental responsibility.	Students recommend whether a smart-irrigation system should be adopted after evaluating water savings, cost, reliability, energy use and farmer access.	Evaluating a smart-irrigation investment.



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3.6.5 Practical Problem Solving

Level	Competency statement	Knowledge	Skill	Attitude	Example learning outcome	Example agricultural context
Basic	Students define an agricultural problem that can be investigated through data.	Know that a clear problem and relevant observations are needed before collecting data.	Write a simple investigation question and identify the necessary data.	Show curiosity about finding evidence-based solutions.	Students formulate the question “Why are plants in one part of the greenhouse growing more slowly?” and identify the data needed to investigate it.	Investigating uneven plant growth.
Intermediate	Students use agricultural data to propose a practical improvement.	Understand the sequence of observing, collecting data, analysing, deciding and reviewing.	Compare recorded values, identify a pattern and recommend an action.	Show persistence and cooperate when analysing practical problems.	Students use temperature and humidity records to recommend changes to greenhouse ventilation.	Improving greenhouse climate control.
Advanced	Students evaluate an existing AI- or data-supported response to an agricultural problem.	Understand that suitability depends on data quality, accuracy, cost, reliability, limitations and the agricultural context.	Compare expected and actual results, identify strengths and weaknesses, and justify whether the approach should continue, be adjusted or be rejected.	Show critical judgement, responsibility and openness to improving decisions based on evidence.	Students evaluate whether a soil-moisture monitoring and irrigation approach worked effectively by comparing water use, sensor readings and crop condition.	Evaluating an existing smart-irrigation activity.



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Chapter 4:

Using the AITrain Framework in Lesson Planning

4.1 Purpose of the framework for teachers

For teachers, the framework provides a structured way to plan lessons, practical activities and assessments. It helps teachers answer four basic questions:

What AI and data competency should students develop?

At what level should students work: Basic, Intermediate or Advanced?

How can this competency be connected to an agricultural subject?

How can student learning be observed and assessed?

In this way, the framework acts as a bridge between general AI and data literacy and the practical realities of agricultural education.

4.2 How to read the AITrain framework matrix

The matrix is organised according to the five competency domains presented in Section 3.2. Each domain is divided into three progression levels: Basic, Intermediate and Advanced. These levels help teachers introduce AI and data gradually, according to students' age, prior knowledge, digital readiness and practical experience.

Elements of the Competency Matrix

Key components used to structure each competency in the matrix.

 1 Competency domain Shows the broad area of learning, such as AI and data literacy or practical problem-solving.	 2 Competency statement Describes what students should be able to do in a practical and observable way.
 3 Level Indicates whether the competency is at Basic, Intermediate or Advanced level	 4 Knowledge Describes what students need to know or understand.
 5 Skills Describes what students should be able to do.	 6 Attitudes Describes the behaviours, values and dispositions students should develop, such as curiosity, responsibility, caution, accuracy and critical thinking.
 7 Example learning outcome Provides a possible learning outcome that teachers can adapt for their own lessons.	 8 Example agricultural context This shows where the competency can be applied in agricultural VET, such as plant production, livestock management, food processing, sustainability or farm management.

Teachers do not need to use the whole matrix at once. They can select one or two competencies that fit the lesson topic and adapt them to their students, available equipment and subject area.

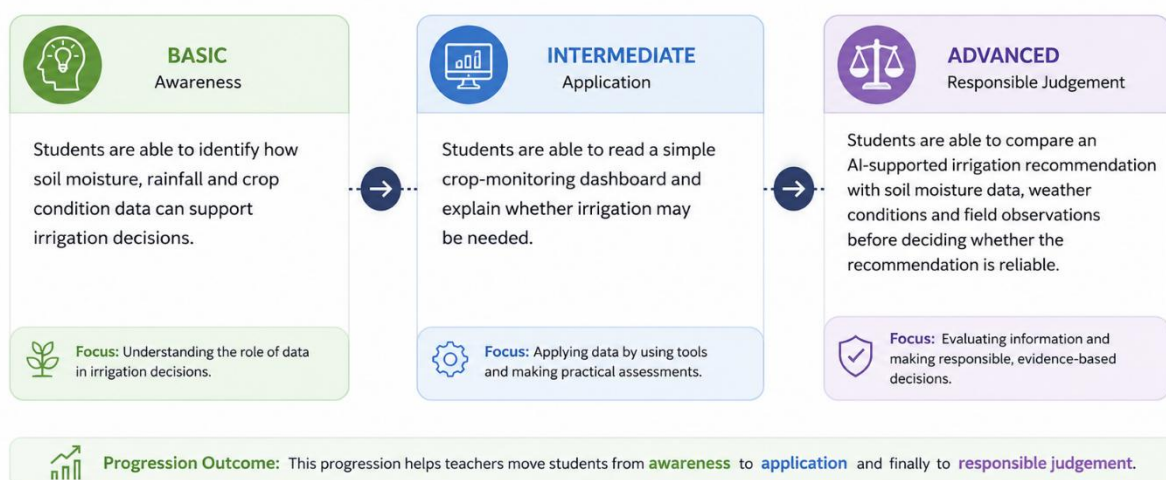
4.3 From competency to learning outcome

A competency statement describes a broad ability that students should develop. A learning outcome translates this ability into a specific result that can be taught and assessed in a lesson or activity.

Teachers can move from competency to learning outcome by following a simple process:

1. identify the agricultural topic of the lesson.
2. select the relevant competency domain from the framework.
3. choose the appropriate progression level.
4. write a learning outcome that describes what students will be able to do by the end of the lesson.
5. connect the learning outcome to a practical activity or agricultural example.

Competency Progression Example Irrigation Decisions



Inclusive implementation is also important. Activities should be designed so that all students can participate, including students with different learning needs, different levels of digital confidence and different practical experience. Group work, visual examples, step-by-step instructions and real agricultural cases can help make AI and data learning more accessible.



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Chapter 5:

Integration into agricultural VET subjects

The AITrain competencies are intended to be integrated into existing agricultural subjects. Teachers can begin with a familiar agricultural topic, identify relevant data or tools, and select a suitable learning activity according to the students' progression level.

Agricultural subject area	Relevant topics	Possible data sources and digital tools	Example learning activities
Plant production	Crop growth, soil conditions, irrigation, fertilization, pest and disease monitoring, yield prediction and harvesting	Weather records, soil-moisture measurements, crop images, field observations, sensors, satellite imagery and farm records	Interpret weather and soil data; compare irrigation needs; monitor crop growth; assess pest-risk alerts; evaluate an AI-supported recommendation against field observations
Livestock management	Animal health, feeding, growth, reproduction, milk or meat production, housing conditions and disease prevention	Weight records, feed intake, movement data, temperature, milk yield, veterinary records, images and livestock-monitoring systems	Interpret animal health records; compare production data; investigate changes in animal behaviour; assess monitoring alerts; evaluate AI-supported recommendations
Food production and processing	Food quality, hygiene, safety, storage, traceability, processing conditions, packaging and waste reduction	Temperature records, production logs, laboratory results, quality-control data, storage records, images and supply-chain information	Analyse quality-control data; compare storage conditions; identify production irregularities; assess food-safety alerts; discuss AI-supported defect detection
Sustainability and environmental management	Water and energy use, soil protection, biodiversity, climate risks, waste reduction, emissions and resource efficiency	Weather data, water-use records, soil measurements, energy consumption, environmental sensors, emissions records and monitoring platforms	Compare resource use; interpret climate-related data; assess environmental impacts; monitor water or energy consumption; evaluate AI-supported sustainability recommendations
Farm management and economics	Production planning, costs, revenues, labour, machinery use, market trends, risk management and business decision-making	Farm records, input costs, yields, sales, labour hours, machinery data, energy use, market prices and digital management platforms	Compare production costs; analyse yield and revenue data; examine market trends; assess business risks; evaluate AI-supported farm-planning recommendations

Teachers may select and adapt these examples according to their national curriculum, available equipment, agricultural specialisation and students' progression level. Digital tools are not required for every activity, as printed datasets, observations and case studies may also be used.



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Chapter 6:

Assessment of competencies

6.1 Principles for assessing AI and data competencies

Assessment of AI and data competencies in agricultural VET should be practical, progressive and connected to real agricultural contexts. It should measure not only whether students understand key concepts, but also whether they can apply them responsibly in agricultural tasks.

Assessment should reflect the three progression levels of the framework. At the basic level, teachers may assess students' understanding of key vocabulary and simple examples. At the intermediate level, assessment should focus on applying concepts, interpreting data and using digital tools in guided tasks. At the advanced level, assessment should examine students' ability to evaluate AI-supported recommendations and justify decisions.

Assessment should also consider cognitive, affective and psychomotor development. This means evaluating knowledge and thinking skills, responsible attitudes and practical abilities. For example, students may be assessed on how accurately they interpret data, how carefully they consider ethical or environmental issues, and how effectively they complete a practical task.

Finally, assessment should be transparent and fair. Students should know what is expected of them, and teachers should use clear criteria that match the learning activity, student level and agricultural subject. The aim is not to assess advanced programming ability, but to evaluate meaningful AI and data competence in agricultural learning and work-related situations.

6.2 Performance levels

Performance levels help teachers assess students development in a clear and consistent way. They should not be confused with progression levels which describe the complexity of the competency being taught, while performance levels describe how successfully a student demonstrates that competency. A student may show emerging performance on an advanced level competency.

A simple assessment approach can use three performance levels:

Emerging performance

The student shows basic understanding but needs significant guidance. They can recognise some AI and data concepts but may have difficulty explaining them clearly or applying them to agricultural situations.

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Developing performance

The student shows a satisfactory level of understanding and can apply AI and data concepts in guided agricultural tasks. They can interpret simple information, use basic tools or data, and explain results with some support.

Proficient performance

The student shows strong understanding and can apply, analyse or evaluate AI and data-related tasks with confidence. They can justify decisions, consider reliability, ethics and sustainability, and connect digital tools with real agricultural practice.

Performance criteria should consider knowledge, practical application, responsibility and communication. Teachers may assess whether students understand key concepts, use data correctly, complete practical tasks, evaluate AI-supported recommendations, collaborate effectively and explain their reasoning.

The aim of assessment is not to measure advanced technical expertise, but to assess whether students can use AI and data competences meaningfully, responsibly and appropriately in agricultural VET contexts.

6.3 Suggested assessment methods

Teachers can assess AI and data competencies through a combination of written, practical and project-based methods. The selected method should match the progression level, the agricultural subject and the type of competence being developed.

At the basic level, suitable methods include short quizzes, matching exercises, oral questions, simple explanations, concept maps and identification of AI or data examples in agriculture. These methods help teachers check whether students understand the key vocabulary and basic ideas.

At the intermediate level, assessment can include guided practical tasks, interpretation of simple datasets, group activities, worksheets, tool demonstrations and short case studies. Students may be asked to analyse weather data, compare production records, interpret livestock information or explain the output of a digital tool.

At the advanced level, assessment can include problem-based projects, scenario analysis and practical decision-making tasks. Students may compare AI-supported recommendations, assess risks, consider sustainability and justify which solution is most appropriate for a specific agricultural situation.

Assessment should also include observation of practical work, collaboration and responsible behaviour. This allows teachers to evaluate not only the final answer, but also how students collect data, use tools, discuss results and make decisions.

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6.4 Sample assessment rubric

The following sample rubrics can help teachers assess AI and data competencies in agricultural VET. They may be adapted according to the subject, activity, student level and available resources.

Assessment criterion	Emerging performance	Developing performance	Proficient performance
Understanding of AI and data concepts	Recognises some basic terms but needs support to explain them.	Explains key AI and data concepts with some connection to agriculture.	Clearly explains AI and data concepts and connects them to agricultural practice.
Use of agricultural data	Identifies simple data sources but has difficulty interpreting them.	Interprets simple agricultural data with guidance.	Interprets data accurately and explains its relevance to agricultural decisions.
Practical application	Completes basic tasks with significant teacher support.	Uses data or digital tools in guided agricultural activities.	Applies data or digital tools confidently to support practical problem-solving.
Evaluation of AI-supported recommendations	Accepts outputs without much questioning.	Identifies some strengths or limitations of AI-supported outputs.	Critically evaluates recommendations, considering reliability, context and limitations.
Ethical, safe and sustainable use	Shows limited awareness of responsibility, safety or sustainability issues.	Recognises basic ethical, safety or environmental concerns.	Considers ethics, safety, sustainability and human judgement in decision-making.
Communication and collaboration	Participates with support and gives limited explanations.	Works with others and explains results in a basic way.	Communicates clearly, collaborates effectively and justifies decisions with evidence.

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This rubric should not be used as a fixed assessment system. Teachers can select the criteria that match the activity and adjust the descriptions according to the expected progression level.

Chapter 7:

Validation and Revision

The framework will be reviewed by project partners and agricultural VET educators. Feedback will be collected on its clarity, relevance, usability and suitability for different school contexts. The framework will then be revised before final publication and may be updated following pilot implementation.

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