












„Hands-on Sustainability“

Intervention - C2: Field trip to and analysis of agricultural production facilities	Preparation time	Requirements	Duration in teaching units
<p>This module is designed to collect more specific information on agricultural and business practices of farms/companies that produce ingredients for the „favorite food“ in order to acquire operational key figures with special focus on sustainability and evaluate and compare them amongst businesses.</p>	about 2 h	★★★★★	20 TU+homework
	Competency oriented learning objectives		
	AB1.5.1.C I can assess the effects of ecological and economic actions on the circular economy using a concrete case study.		
	Aim of the teaching sequence in this module		
	Students should realize and analyze based on real-world cases if there are and of which kind there are differences between small, regional farms/companies and large, industry-style farms/companies. Focus is placed on a selected part of similar production chains. Main aspect: Sustainability.		
	Learning outcome		
Illustration of the similarities and differences of production chains leading to a final product (like milk) using the example of dairy farming in the frame of portfolios based on field trips and containing several business analyses.			
Required materials/media			
Form for data acquisition, already available information on locations to be visited.			

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Phase	Duration in min	Social setting	Material/ media	Methodical-didactical notes / implementation
Confrontation	100	PL, GW	Form for data acquisition, information on RISE-model and businesses	Introduction to the module and the scientific background (selected value production chain, RISE-indicators/model). Discussion of content-related objectives, learning outcomes and preparation of material for analyses of several businesses right on site in groups.    
Reconstruction / Intervention / Interaction	2x 350	PL/GW	Prepared form for data acquisition; means of transportation	Field trip to farms and food producing businesses:    <u>On day 1:</u> one industrial-scale farm and processing company (here: dairy) each <u>On day 2:</u> three small-scale farms with processing/vending on site Focus for every group on selected operational key figures according to form for data acquisition.
Deconstruction	100	PL, GW	Filled in form for data acquisition, pictures, further information	Presentation of materials and information gathered in class, summary of important information in an overview, short discussion of overview gained, thereby elaboration of key information and its evaluation, discussion of steps to be taken for homework  Optimization of portfolios of every business (as homework) 
Reflection	100	PL	Presentation documents, portfolio	Presentation of results per business on individual „information sites“, discussion of experiences, results and learnings  Summary of all information in an overarching portfolio 

IW: individual work, GW: group work, PL: plenum

Planning of a systemic learning and teaching arrangement on regional sustainable food systems

Module/topic

C2 – Field trip to and analysis of agricultural production facilities



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Learning activity plan

1 Learning Module

1.1 Overview

Module/topic	Field trips to and analysis of agricultural production facilities <i>Case study: Milk production and processing ("The production path of milk")</i>
Curriculum/Competence Model	Curriculum of the federal state of Salzburg Three-year agricultural technical college - specialization agriculture, 2016 I can... ... interpret numbers, data and facts on agriculture and make deductions. ... consider regional, ecological and climatological conditions for the generation of agricultural products. ... evaluate product-specific data of the production of animal-based and plant-based foodstuffs. ... select foodstuffs for a wholefood diet based on available resources.
Aim of the teaching unit	The learners should use practical examples to analyze a defined section of the production chain. They should realize whether and which differences exist on between small regional companies that manufacture their own products and large industrial companies that buy their raw materials. The focus of the observations and evaluations in put on criteria for a sustainable production. Here, such businesses are selected for the field trip that are present in the region and produce agricultural products/foodstuffs.
Learning outcomes/partial competence in the subject-matter area	I can... ... find the RISE-model in the internet and extract valuable information for me ... adapt the template for data acquisition in its details to fit the businesses selected for the field trips ... ask questions to gather relevant information and put this in writing

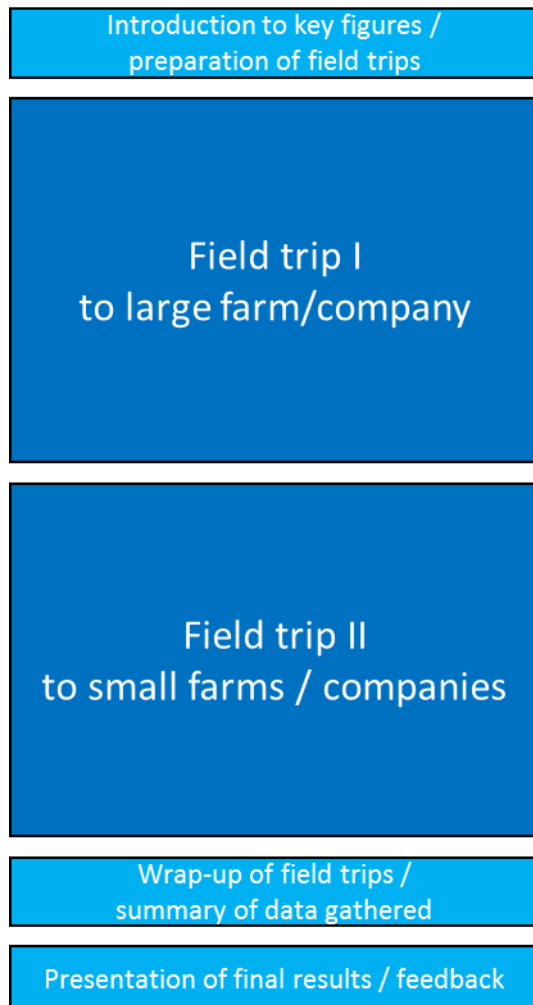
	... evaluate, compare and interpret the data gathered
Learning outcomes/semi-competence in the methodological, social and personal field	<p>I can...</p> <p>... adapt my appearance to the respective social and cultural context</p> <p>... recognize and reflect on my own living environment in relation to food quality</p> <p>... reflect my own eating behavior</p> <p>... explain the economic importance of agriculture.</p>
Schedule in teaching units (TU)	<p>2 TU – theory: Introduction and preparation of the field trips at school</p> <p>7 TU – field trip I: Field trip of 7 hours including breaks (depending on the duration of travel time and the detailed program on site)</p> <p>7 TU – field trip I: Field trip of 7 hours including breaks (depending on the duration of travel time and the detailed program on site)</p> <p>2 TU – theory: Follow-up on the field trips at school</p> <p>2 TU - theory: Presentation of the final results</p> <p>Parallel homework: Compilation of a portfolio per business visited</p>

Note:


The selected foodstuff "milk" (for illustration used here) can of course be replaced by another one (if the chosen favorite food as basis for the research in this module is a different one). It may then be necessary to visit different types of businesses and adjust the time required.





Depending on the age and experience of the student, the degree of independence can be varied during the field trips. The LTA suggests an alternative for this later-on.



Graphic overview of the structure of the learning and teaching arrangement:








1.2 Learning activity planning






Phase in Module (GP)	When? Approx. time	What for? Learning objectives, partial competences	What? Detailed teaching steps in the learning and teaching process (learning-teaching-process) incl. technical questions/explanations/contents	How? Methodological approach; Learning product	Who with whom? Social Form Role of the teacher	With what? Media and work equipment
	Teaching theory (2 TU)		Introduction to evaluation of sustainability & discussion of the ensuing teaching units (including preparation of field trips)			
Confrontation and reconstruction	30	<p>...get information on the further progress of the course and generate an understanding of the steps to be taken</p> <p>...find the RISE model in the internet and generate an understanding to what degree it influences the learner personally</p>	<p>Based on the basics of module C0 the class discusses the order of events in the field trips as well as content-related objectives and prepares necessary documents. All in all, a comparison is planned between small and large businesses along the same section of the production chain for agricultural products. In the preparation phase the teacher gets in touch with these businesses and discusses framework conditions and areas of interest of the students.</p> <p><u>Recommended field trip destinations:</u> 1 large farm and 1 dairy company, then 3 small farms (which could also be suggested by the learners).</p> <p>Presentation of the planned progress of the module and the expected learning products (form with acquired data, key figure diagram, description of each business with the help of a poster for illustration or by virtual means) that will be part of a field trip portfolio.</p> <p>Introduction of the topic by presentation of the value chain and the selected businesses therein.</p>	Information by teacher with questions by learners	Class: Lecture combined with moderation 	Already existing written / internet-based information (e.g. brochures),

30		<p>Presentation of the RISE-indicators and the RISE-model itself in its entirety and of the template for the form for data acquisition during the field trips (see chapter Fehler! Verweisquelle konnte nicht gefunden werden.).</p>	<p>Information by teacher with questions by learners</p>	<p>Class: Lecture combined with moderation</p> <p></p>	<p>Informationen regarding RISE-model, in addition project-internal form (also digitally)</p>
20	<p><i>... prepare for topic together with my group/class.</i></p> <p><i>... think of questions to best acquire data sought in the form</i></p>	<p>Formation of groups for specific "operational key figures" according to the form (see chapter Fehler! Verweisquelle konnte nicht gefunden werden.). Every group is in charge of the answers and calculations for one or more distinct key figures before, during and after the field trips. In addition, every group also tries to provide key figures or at least their estimates for all other categories.</p> <p>The form for data acquisition can be adapted to the specific needs of the businesses visited. Hence, every group quickly discusses ideas for improvement.</p>	<p>Group selection including selection of key figures in <i>class</i>; adaptation of existing template of form to the specific needs of class in <i>group work</i></p>	<p>Class</p> <p></p> <p>then group work of learners accompanied by teacher</p> <p></p>	<p>see above</p>
20	<p><i>... present and comment the most important points elaborated.</i></p>	<p>Summary and short discussion as well as harmonization of documents for the field trips.</p>	<p>Discussions and planning in <i>class</i></p>	<p>Class</p> <p></p>	<p>see above</p>

	Field trip day I (~7 TU)		On the scent of milk production (I): The whole class takes itself on the field trip to visit foodstuff producers on industrial scale: one large-scale farm and dairy company each			
Reconstruction, Intervention, Interaction	<p>... appear punctually</p> <p>... formulate questions to gather relevant information and put it into writing</p> <p>... fill in the prepared form for data acquisition</p>	<p>Large farm:</p> <ol style="list-style-type: none"> 1. Gathering at school (15 min) 2. Departure by bus to the large farm (x min) 3. Welcome and short introduction of the farm by representative (15 min) 4. The representative guides the class through the farm and comments at every location of importance what there is to see, answers the questions posed by the participants and relates information on the way of doing business, on production, quality control, storage, delivery as well as management. (120 min) 5. Summary and final round of questions at the starting point of the guided tour. (20 min) 6. Return to the school / continuation to the next business. (x min) 	<p>Field trip: Information in whole group, if need be formation of subgroups during guided tour</p>	<p>Field trip</p> 	<p>Camera/ smartphone; note pad, form</p>	
	<p>... appear punctually</p> <p>... formulate questions to gather relevant information and put it into writing</p> <p>... fill in the prepared form for data acquisition</p>	<p>Large dairy company:</p> <ol style="list-style-type: none"> 1. Continuation to the dairy company (x min) 2. Welcome and introduction (possibly video on company, then first comments on production facilities and economic as well as sustainability-related data). (30 min) 3. Guided tour of the business starting at the delivery, the production, quality control, storage, distribution facility as well as management and administration; in small groups allowing for answering detailed questions and getting information right away. (120 min) 4. Final discussion and farewell (30 min) 	<p>see above</p>	<p>see above</p> 	<p>see above</p>	

			<p>5. Return to school (x min)</p> <p>Clear role distribution of the focal points of the groups for a directed gathering of information, data, footage for a centralized evaluation in the follow-up phase.</p>			
	Field trip day II (~7 TU)		<p>On the scent of milk production (II): The whole class takes itself on the field trip to visit foodstuff producers on small scale: three small-scale farms (owned and operated by families) including their own food processing and vending – they might differ regarding conventional versus organic farming, in size and geographical location, product spectrum offered, type of vending</p>			
Reconstruction, Intervention, Interaction	~7 TU	<p>... appear punctually</p> <p>... formulate questions to gather relevant information and put it into writing</p> <p>... fill in the prepared form for data acquisition</p>	<p>Small farms:</p> <ol style="list-style-type: none"> Gathering at school (15 min) Departure by bus to the small farm (x min) Welcome and short introduction of the farm by representative (10 min) The representative guides the class through the farm and comments at every location of importance what there is to see, answers the questions posed by the participants and relates information on the way of doing business. (60 min) Summary and final round of questions at the starting point of the guided tour. (15 min) Return to the school / continuation to the next business. (x min) <p>Alternative possibility of execution see chapter Fehler! Verweisquelle konnte nicht gefunden werden.</p>	see above	see above 	see above

	Teaching theory (2 TU)		Follow-up discussion of both field trip days			
Deconstruction	30	<i>...presentation of data acquired</i>	Presentation of acquired materials and information per group in front of class	Group representative presents in front of class	Teacher as moderator organizes presentations 	existing documentation of field trips
	30	<i>... evaluation of data acquired</i> <i>... summary of data acquired</i>	Summarizing of key information (operation key figures) for all businesses visited in a table for an overview as basis for the spidernet diagram	Teacher compiles representative key figures on board / on data projector for deliberation of whole class	Teacher manages the summarizing process 	see above
	20	<i>... taking part in a business-style discussion</i> <i>... interpretation of data acquired</i>	Discussion of the "whole pictures" gained in comparison to the original expectations, with reference to individual key figures / business areas if necessary	Discussion in class	Class 	see above, generated table with overview
	20	<i>... summarizing key information</i>	Extraction of key information for a comparison of single businesses as preparation for the field trip portfolios to be written (especially business portrait as poster / wanted poster). Negotiation and definition of framework conditions for documentation. Here every group has to contribute information regarding its focus per business. Therefore, a collaborative act to design and write the business portraits is advisable (e.g. in separate room or on virtual platform).	Discussion in class: Negotiated framework conditions	Class 	see above, generated table with overview

		... summarizing data	Additional work: All groups compile at home their individual aspects for a common field trip portfolio (consisting of finalized forms for data acquisition, diagrams with key figures, posters on business).	Homework: Field trip portfolio	Work in groups or individually 	Material available / generated up to now
	Teaching theory (2 TU)		Finalization of results			
Reflection	30	... compilation of results ... presentation of results	Preparation of single "information sites" (mini-exhibition) and presentation of the compiled, self-explanatory information there (which is recommendable for larger-scale posters per business, otherwise an adapted presentation of the information in the virtual space). Individual tour of learners to all sites to get an up-to-date and complete overview. In case the exhibition is visited by external persons, it is considered advantageous to have one "representative" per information site provide requested explanations.	1 site per business – there presentation of key information by representative of each group and/or teacher in front of class	Teacher as moderator accompanies presentations and discussion 	Portfolios compiled at home
	60	... leading / participating in a discussion	Extensive discussion in class at the different sites regarding the overview gained and the learnings deduces therefrom based on guiding questions that emerged during the progress of the module or as can be found in chap. Fehler! Verweisquelle konnte nicht gefunden werden.. If learners currently worked or planned to work in an agricultural business, it would be particularly interesting, to listen to their opinion regarding the necessary changes in the businesses visited and discuss them.	Discussion in class	Class 	
	10		Preview of next lessons of next module planned or connection to module C0.	Information by teacher in class	Class 	material of ensuing modules
			Additional work (maybe by teacher): Teacher collects all materials compiled and finalizes the field trip portfolio elaborated by learners.			

1.3 Literature and other sources used

- Curriculum of the agricultural schools of Salzburg 2016 (State of Salzburg)
- **RISE:** <https://www.bfh.ch/en/research/reference-projects/rise/> (03.01.2021)

2 Annex to the learning and teaching arrangement

Form for acquisition of key figures and data of production

Example of a form that could be taken to the companies and be processed by the pupils. For all businesses visited during the field trips the same form can be used. (Template of this form for adaptation and printing available as file.)

Operational key figures	Scale: the more points, the better (no value = data not available, minimum = 1, maximum = 5) Free space: for personal notes
Management:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- objectives - realization - risk	
Products:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- type - amount - quality	
Marketing:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- regional - national - international	
Environmental protection:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- fertilization - crop protection - air pollution	
Water use:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- water supply - water use - waste water	
Energy:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- energy supply - energy demand	
Utilized agricultural area (in ha):	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- arable land - grassland - other	
Animal husbandry:	1 2 3 4 5 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
- husbandry system - animal population - race	

Basic considerations about teaching

3 Didactic analysis

3.1 Entry requirements /preconcepts/pre-experience

25 students of an agricultural college

Prior knowledge from previous modules relevant for this module: A, B, C0

Ability to organize themselves independently and acquire data within the given framework

3.2 Didactic-methodological considerations

3.2.1 Importance of the teaching content for the learners

- Insight into the production chains of selected dishes/food products and their similarity or difference depending on the "path" of production (small vs. large companies, family vs. industrial companies, individual production steps vs. everything from a single source).
- Understanding of relationships and also uncertainties in the production chains from the point of view of the critical consumer.
- Collection and comparative evaluation of key information and data from the respective businesses for an assessment of the "impact" of the production method on the environment.
- Awareness for difficulties relating to uncertain or missing data, if a comparative interpretation of operational key figures of different businesses was defined as objective.

3.2.2 Didactic reduction / didactic focus

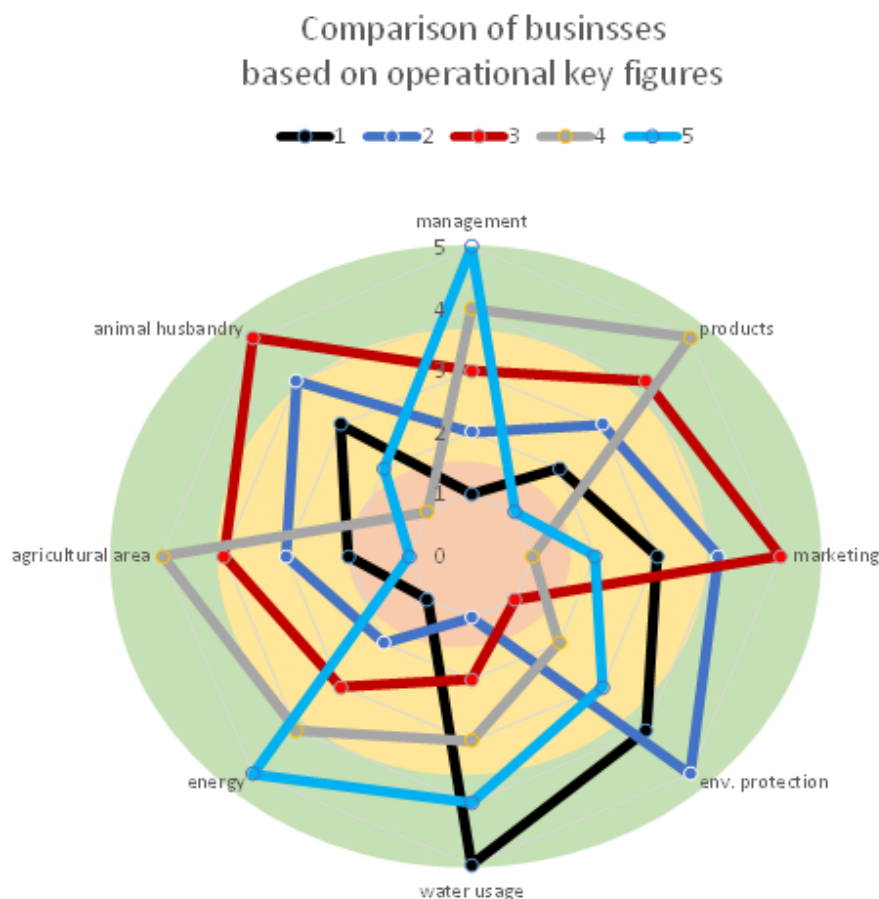
- The "intensity" of the field trip can be varied depending on the school's framework conditions. It is strongly recommended to visit at least two significantly different businesses yet with the same business objective for a simple and effective comparison. Hence, this module is suitable for all types of schools for learners aged 14 to 19.
- Selection of suitable branches and branch representatives who represent "typical" dishes/food products of interest to learners (here: milk production and processing)
- If necessary in the context of further lessons, attempt to generalize findings to other areas of foodstuffs and discuss the limitations (e.g. regional importance, data situation, comparability, accessibility).
- The relation to the more complex RISE-model and other equivalent models can be intensified to show learners which complexity can be found behind in part seemingly simple statements.

3.2.3 Aspects of individualisation and differentiation

- During both field trip days I and II a specialization on certain tasks for observation and data collection (key figures) by differentiating into distinct groups of learners is possible or necessary.
- Depending on individual interest and capabilities every learner can not only find answers to the specific group tasks, but also dwell on other points of interest in the form designed for data acquisition. These can be discussed and evaluated first within the group and later on with the whole class.
- Field trip day II can be designed, organized and executed partly or in total by the learners themselves (especially the selection of the business to visit). Here the teacher solely provides relevant framework conditions and supports single steps with information, ideas and feedback. The suggestions for the visits elaborated by the learners are collected prior to the field trip and integrated into a “master plan” for an overview. This plan is made available to all independent groups (visiting different locations). This clarifies, which group with which participants visits which destinations with which questions.

3.2.4 Success control, securing results, performance assessment

- Portfolio poster or “wanted poster” with photo documentation of the single businesses based on the data collected as well as the ensuing spidernet-diagram that is displayed in the following exemplarily.



- Optional by teachers after submission of the final portfolios of the groups (poster/wanted poster, filled form with acquired data, spidernet-diagram): Compilation of a meaningful overall document collecting and/or summarizing the individual contributions. This documentation can be used as a central basis for other modules of this course.

3.2.5 How is the personal learning progress reflected and documented?

Short-term reflection:

- Overview at the end of each of the two field trip days I and II as well as after every theory lesson.
- Discussion of knowledge, experiences and critical discussion with third parties (family, friends) about what has been learned.

Medium-term reflection:

- Self-observation of purchasing behavior with questioning of the production conditions along the production chain.

Questions for the learning diary:

- While acquiring data, what was easy or difficult for you?
- Was the representative of each business able to competently answer all the questions asked?
- Was the representative open to all kinds of questions or did he/she decide not to answer some of them?
- What do you “take home” from the visits of the businesses?
- What was unknown to you prior to the visit of the businesses?