

Teachers' Notes

Suggested project: Producing apple juice

Subject matter:

After the pupils have gained a general view of the many interesting aspects of the apple, attention can be turned to juice production. The overview could be also taken from the project "Planting an apple tree" (see below). Juice production as a subject covers both home and industrial-scale production.

This could serve as a start-off for the practical "home-made" juice section, and at the same time help to bring out the different production methods needed for these two techniques.

If plenty of time is available because the project is integrated into regular active learning rather than simply part of a short project week, the apple themes "Planting our own apple tree" and "From apple to juice" could also be run together (see the overview at the end of the Teachers' Notes).

Teaching objectives:

The young people are introduced to the apple as a valuable part of our daily diet. The course of the lesson depends largely on the pupils themselves, which means that they have an opportunity to gain practice in a number of different activities (see "Suggested classroom procedure"). If the theoretical part is expanded a little, the unit can also serve to bring out why the food production processes in a specialised modern society are different from those in traditional agricultural or artisan production.

Suggested classroom procedure

As a start, everybody should bring their own apple. Free narration and brainstorming on the subject of apples and apple juice.

Phase: Overview / Various aspects of the apple	
Activity	Subject matter
Collecting and ordering existing knowledge about the apple in the form of a structural diagram ("Mind Mapping") ¹ .	Creativity methods
Filling in the worksheet (WS): doing the apple quiz	The many different aspects of the apple, apple juice production, health value of the apple
Phase: Producing (our own) apple juice	
Defining work stages (WS as "first aid", supported possibly by Background Text or even a web search)	Production stages
Drawing up a work schedule	Systematic work, production stages, possibly comparison with industrial production
Allotting tasks: Who supplies what?	Systematic work in sub-project groups
Distributing separate tasks, practical work	Systematic work in sub-project groups
Labours rewarded: apple juice straight or in non-alcoholic cocktails	Tasty recipes with the "everyday" product apple juice
Adding further to the structural diagram, possibly drawing up a documentation (e.g. wall newspaper) if it is intended to record this phase	Documentation method

¹ For the structural diagram, see the Background Text to the "Apple Tree" unit.

If the apple themes “Planting our own apple tree” and “From apple to juice” are run together, the lessons could proceed on the following lines:

Phase: Overview / Various aspects of the apple	
Activity	Subject matter
Collecting and ordering existing knowledge about the apple in the form of a structural diagram (“Mind Mapping”). This will probably reveal the first gaps in the pupils’ knowledge. The diagram will be kept - perhaps transferred to an acetate or large sheet of paper - and expanded later	Creativity methods
Filling in the Worksheet: doing the apple quiz, literature search	The many different aspects of the apple: botanical classification, codling moth as pest, apple juice production, health value of the apple
Studying an apple blossom, if available, and preparing an assembled illustration	Structure of the blossom, studying original specimens, handling a forceps, assembled blossom illustration, correct drawing
Drawing a blossom and the cross-section of an apple, legends based on information from the literature	Structure of the blossom and (aggregate) fruit
Phase: Production of the “raw material” apple	
Repeated brainstorming, followed by expansion of the structural diagram: the aim is now to find persons to contact* (Experts) and preliminary questions	Creativity methods, the whole range of apple producers
First compilation of information: free reporting on the experts and analysis by the class	
Drawing up suitable question lists for in-depth information, drafting headings for interviews, perhaps arranging a day for photos	Systematic work
Questions / interview / taking photographs / email questions to Foodstudents Experts, etc.	Verbal expression, communication pathways
Obtaining tree and materials**	Systematic work
Planting tree**	
Drawing up records: presentation, ordering and sorting of information, e.g. as wall newspaper	Who supply us with apples and how are apples produced? (Cultivation: where and how, etc.); e.g. map showing principal cultivation areas, photos/drawings of pests, plant protection, grafting of fruit-trees, apple cultivars and their harvesting times, etc..
Phase: Producing (our own) apple juice	
Defining work stages and drawing up a work schedule	Production stages, comparison with industrial production
Allotting tasks: Who supplies what?	
Distributing separate tasks, practical work	
Labours rewarded: apple juice straight or in non-alcoholic cocktails	Tasty recipes with the “everyday” product apple juice
Supplementing or preparing overall documentation	

* Apple producers: leisure-time gardeners, fruit-growers, relatives or acquaintances; additional experts would be the Foodstudents Experts, farmers’ associations, etc. Information on breeding and grafting techniques with fruit-trees could be obtained from tree nurseries. The Foodstudents Experts might also be a possible source of information.

** Arrange permission and financing of tree and materials beforehand: Friends? Donations from parents? Class fund?

Foodstudents in the classroom: The Quiz and the Experts

Foodstudents offers apples, potatoes and bread as quiz themes. The suggested theme “Making apple juice” integrates the Apple Quiz (jointly with the Lexicon), where all aspects of the apple are highlighted. The pupils learn more about the subject matter in the form of questions and answers, thus combining enjoyable activity, the reinforcement of new knowledge, and an interest in the many varied aspects of a particular foodstuff.

Foodstudents also offers an opportunity to get in touch with experts - mostly scientists - by email. All of them are genuine specialists in their own particular areas. Email contacts are a good means for young people to get used to addressing questions to experts and help them lose their shyness towards persons they may think to be “above their heads” or “unreachable”. It also gives them practice in social and political participation as future responsible citizens. All of the experts will do their best to reply

within one week at the latest. Should one of the experts be absent for a longer period, a substitute will be organised.

The Quiz:

The worksheet "Planting our own apple-tree" is filled in with the Apple Quiz. The Apple Quiz and the Lexicon together will provide the answers to all the blanks in the worksheet.

This worksheet (WS) is a shortened version of the WS from the suggested teaching unit "Planting an apple tree". For this reason the WS from "Planting an apple tree" should be used if both projects are run either simultaneously or one after another.

Questions to the Experts:

Other questions will certainly arise, depending on the central subject matter of the unit. Here are a few suggestions and examples as to which might be the right expert to approach:

Questions about production quality immediately arise, especially when comparing industrial apple juice production with home-made: what is the vitamin content and storage-life of the juices? What exactly are the effects of pasteurisation (person to contact, e.g. Dr. Andrea Dittrich)?

Who is responsible for quality control in industrial production (person to contact, Dr. Oliver Mellenthin)?

Are there any genetically modified apple trees in Europe or can any genetically modified apples be bought in the supermarket, e.g. with resistance to the codling moth (person to contact, Prof. Hans-Jörg Buhk)?

What are the differences between fruit juice, fruit nectar and fruit juice drinks (person to contact, e.g. Gerd Spelsberg)?