

The state of the art of school farming in Switzerland – the case of SchuB

Hans Wydler

Zurich University of Applied Sciences. Institute of Natural Resource Sciences,
Grueental, Postfach, CH-8820 Wädenswil (Switzerland); E-Mail: hans.wydler@zhaw.ch

Keywords: School farming, environmental education, evaluation

Abstract:

School Farming (SF) is a current, many-sided eco-educational programme in Switzerland. SF has received high ratings from teachers, but the perspective of pupils sometimes differs. Using data from a written online survey, this study analyses which groups of pupils were particularly interested in the items covered. The results showed animals to be the most popular item, providing a good entry-point to the topics, especially for younger pupils. On average, pupils interested in the topics covered by SF were in the minority. However, various subgroups resonated particularly with SF: in addition to younger pupils, these were ones who had already visited a farm several times; moreover, girls were more interested than boys and pupils with Swiss-German mother tongue more than those with German or a foreign language. Boys were more interested in watching slaughter and meat processing than girls; on the other hand, girls were attracted by the opportunity to be present at harvest time.

It can be concluded that pupils' interests are not yet exactly enough known. It makes sense to start early with SF visits, and multiple visits are likely to arouse and develop deeper interests in pupils. Gender-specific aspects should be given greater attention when considering options to be offered. Although SF's activities are designed to be attractive to boys, those surveyed showed less interest and evaluated two of the four topics in the survey less favourably than girls. In Switzerland, activities for younger pupils at the primary and lower secondary school levels are most in demand. To cater for higher secondary school classes, these initial activities need to be expanded to include a far broader and possibly more controversial range of SF topics than is currently available.

1. Introduction

In Switzerland there are - as in all European countries - a wide variety of environmental educational programmes. Environmental and nature education is anchored in the compulsory education curriculum (1st to 9th grades) under the heading of "People and the Environment". Various programmes support teachers in the fields of nature and environmental education. The national foundation 'Umweltbildung Schweiz' (Environmental Education Switzerland) provides resources to teachers dealing with this educational field, including topics related to agriculture. Nature education learning objectives are also accomplished via excursions. Some schools have a school garden in which biodiversity and microbiological systems can be experienced at first hand. In cities school gardens, which pupils manage for a semester as part of an optional subject, are common: each pupil grows their own vegetables and salad on their own patch. Agricultural

colleges offer courses and guided tours for school classes, for example with an agricultural learning trail and show farms providing farming activities such as cheese-making.

In Switzerland, the education system is under cantonal control and is therefore relatively heterogeneous. Agriculture, nutrition, and cycles of materials are included in practically all curricula. Despite the current trend towards curriculum coordination, each canton has considerable freedom in designing its own curricula, and there are significant differences in the organization of environmental education. Teachers are ultimately responsible for the content and delivery of their lessons. They enjoy considerable liberty in this respect and make the most of it to a large extent.

SF has an important role in Switzerland. Nevertheless, whether environmental education lessons include a visit to a farm, how frequently or intensively such visits take place and what objectives are pursued is the responsibility of the individual teacher. Actual lesson design is thus strongly influenced by each teacher's interests and individual preferences. SF provides a choice of activities that has become more professionally organised in recent years. What was once spontaneously implemented has now for some time been professionally advertised and further developed.

The Swiss SF programme is called "School on the Farm" (SchuB). The most important player behind this range of programmes is the Swiss Farmers' Association (SBV). SchuB is part of the promotional campaign of the SBV: "Fortunately, there are Swiss farmers." At the national level, SchuB is the responsibility of a national forum which ensures that programmes are developed and anchored in the cantons. There is only a relatively small financial budget available at this level, but the decentralized support system in the cantons leads to a relatively large distribution of SF throughout Switzerland.

Visits are normally funded by the cantonal ministries of education; in some cantons, however, ministries of agriculture also support SchuB activities. Furthermore, the programmes are partially supported by the cantonal farmers' associations. The funding of SchuB is not sustainably organised, and more funding would allow further expansion of the programmes. At present the services on offer have stabilised at around 28,000 pupil visits per year, which usually take place in the course of the 1st to 6th classes, and less frequently in pre-school or in higher grades (7th to 9th) (Nationales Forum "Schule auf dem Bauernhof", 2011).

2. School on the farm SchuB

Each year, approximately 28,000 pupils visit SchuB farms. The most common form is a one-day SchuB visit (11,400 pupils), followed by half-day visits (9,200 pupils) and one-to two-hour visits (4,500 pupils). The most intensive form of visit, lasting several days, is the least common (3,100 pupils per year). This last form requires that the farms have an appropriate infrastructure, and can provide organisational arrangements (ibid.).

Approximately 300 farms cooperate with SchuB. SchuB operations are working, productive farms. The income from SchuB visits usually makes up only a very minimal percentage of the income of farms. The SchuB farms provide access to their operating structures in accordance with a varied profile of services. During the farm visits the pupils can try out a range of individual activities. Visits by a particular class can take place one or even several times a year. About 10% of the events are multi-day programmes. SchuB's main activity consists in allocating SchuB farms to class teachers: SchuB keeps up-to-date lists of farms, and the specific services they offer can be found on SchuB's website.

SchuB operates in two areas: on the one hand it aims to secure a more solid foothold in schools (improve public awareness of its services among the cantonal and municipal education authorities, in schools and among teachers), while on the other hand SchuB must also have a solid foundation in the agricultural sector (with cantonal farmers' secretariats and farmers' associations, agricultural training and further education institutions, and especially among participating family farms). The structures are organised on a cantonal basis and financing is also organised at this level.

What does SchuB offer to schools and pupils? The following is taken from SchuB's educational material (SchuB and LBL, 2001):

- "Hands-on treatment of topic areas (plant, animal / human / environment and landscape-design and -change issues) as are required in all curricula at various levels
- Experience-based lessons with a high degree of activity-orientation
- Extra-curricular learning sites with varied and motivating learning forms
- Varied approaches to learning content
- An ideal model for interdisciplinary teaching
- Opening up contacts between schools, urban and rural populations
- Experience of political disputes, practicing tolerance, dialogue and social competence
- Meeting with the mind-set, problems and opportunities of an economic sector which concerns everyone (food, landscape, etc.)
- Addressing the overlapping issues of ecology and economy: sustainable ways of dealing with the basics of life, with reference to the reality of small businesses
- A visual model for connections between various areas of interest
- Encounter with rural culture"(ibid, p 4).

At the level of objectives SchuB fulfils many key demands and concerns of current teaching design: exploratory and investigative learning, self-initiated action, problem-based, interdisciplinary learning. A variety of skills can be practised within the various programmes. In addition to the professional content of farming, social skills are written particularly large.

3. Evaluation of SchuB from the perspective of teachers

The University of Zurich has evaluated the SchuB range of programmes in three cantons (Ranft, Lindemann-Matthies & Nagel, 2002). The study focuses on teachers and participating farmers and was commissioned by the Swiss Farmers' Association (SBV). Qualitative and quantitative surveys were conducted for evaluation purposes. Part of the evaluation is based on the structure and strategy of SchuB, but some aspects of content are also addressed.

About 90% of teachers give SchuB's programmes very good marks ("good" and "very good" on a five-point Likert scale).

Teachers gave the following reasons for taking part in SchuB (ibid, p.31):

- "Multi-sensory experience of selected topics on a farm
- Direct access to farms, experience of farming families
- Bringing children closer to nature
- Opportunity of practical work for pupils
- Experiencing learning content at first hand
- Getting to know local farm animal and useful plant species
- Finding out what a farmer does
- Becoming familiar with local products and food production

- Experiencing seasons and natural cycles.”

The following content success factors – aspects already well established and widely implemented – were mentioned in the synthesis by the evaluators (ibid, p 50):

- “The parties involved in SchuB follow the same goals.
- The subject of agriculture is embedded in the curriculum.
- SchuB visits enable group work on farms.
- Teaching of theory can take place in school and be experienced in a practical setting on the farm.
- The farms offer a wide range of topics.
- Teachers can participate on the farm.
- The participating farmers have teaching skills and authority.
- Clear rules for the safety of pupils are adhered to on the farms.”

The following aspects were seen as important but capable of further improvement (challenges still to be optimised, ibid. p. 50):

- SchuB is suitable for all grades (including kindergarten).
- Annual projects would offer increased potential.
- Preparations and post processing could be optimised further.
- The range of topics could be exploited by the teachers in many more ways.

A similarly positive picture is painted by the participating farmers. Not only are they motivated to engage in work with children, but also they see their work of providing an insight into farms as being entirely in the spirit of the SBV and their lobbying interests. They want to bring the profession closer to schoolchildren, and show them local products and production methods.

5. Interest of children and young people in visiting a farm

No Swiss study has so far recorded the perspectives of children and adolescents on SchuB. Their interest and their satisfaction with the programmes are therefore not known. The descriptions of farm visits in the evaluation report cited suggest that participants are enthusiastic. But is this true from the perspective of the pupils? This knowledge gap is partially closed by the work of Bossart (2012) on the interests of children. The work is not related to SchuB, but to visits to farms in general. The study is interesting to the extent that the interests of the pupils were surveyed regarding various central aspects of a visit to a farm:

Are children interested in **rural life**? (Rural life - 3 items: a farmer's family, children, getting to know daily life on the farm.)

Can **animals** arouse children's interest? (The farm as a place for animals to live - 3 items: interest in animals, dealing with animals, taking responsibility for animals.)

Are children interested in the **origin and the production of food**? (Origin and production of food - 6 items: everyday foods, dairy, meat processing, work in the fields, harvesting, processing of vegetables.)

Would the children like to explore **landscapes and nature**? (Contact with and experience of nature - 2 items: exploring landscapes, experiencing seasons.)

On the basis of developmental and gender-specific conditions and other considerations, the following **hypotheses** can be formulated:

A visit to a farm provokes gender-typical reactions.

A visit to a farm means being able to be active, being able to move about outdoors, and doing and helping with various jobs. On the basis of gender stereotypes, it is expected that this will appeal more to boys than girls and may in some ways provide a counterbalance to general school education (which in Switzerland is often discussed as being insufficiently oriented to boys). It is expected that technical aspects will be more attractive to boys. On the basis of stereotypes, it is supposed that aspects of animal husbandry and food production and utilisation will appeal more to girls.

Younger pupils are more strongly addressed than older ones.

The farm with its clearly visible, useful and sensuous world appeals particularly to younger pupils. They are especially open to experiencing and learning from nature. This is reinforced by the encounters with animals, the strong impressions, such as the intense odours in the farm, aspects like the warmth of the dung heap, and the mating or territorial behaviour of animals, all of which can provide intense experiences. In addition, the opportunity not only to handle products, but also to taste them, provide sensory forms of experience to which young children are particularly responsive: for example, drinking fresh milk which is still warm from the cow, enjoying sun-warmed tomatoes or carrots out of the cool, damp ground, furrowed by earth worms.

Children with immigrant backgrounds do not differ from Swiss children.

On average about a quarter of children in classes in Switzerland come from an immigrant background. It is assumed that this is a heterogeneous group. The zero-hypothesis is formulated that children from immigrant backgrounds do not differ from Swiss children.

6. Research design for written survey of pupils

In the online survey by Bossart (2012), N = 228 pupils in the 4th to 9th class from the city of St. Gallen were interviewed. The city of St. Gallen is the capital of the canton of the same name, located in the German-speaking eastern part of Switzerland. It is located in the centre of a larger urban agglomeration and at 700 meters above sea level is relatively high. The regional landscape has a pre-alpine character and agriculture is a traditional part of this cultural landscape. The quantitative survey was conducted with a standardized questionnaire. The survey is not representative (no random numbers, no random selection of the class) and contained a total of 29 questions. 11 school classes of different grade levels were surveyed and no non-responses were noted. The data from this survey were used for the secondary statistical analyses shown here. All the presented results were calculated by the author of this study.

7. Results

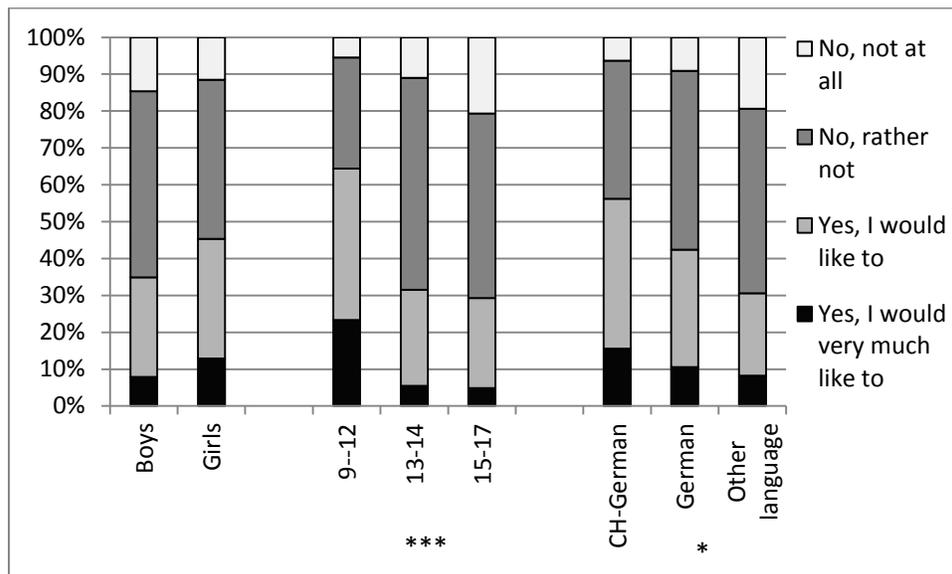
Pupils who had never visited a farm were a small minority: twelve pupils (5%) reported never having been on a farm. A majority of the pupils had visited a farm several times: 43% between one and nine times, 27% between 10 and 19 times and 25% more than 20 times. The school was the main organiser of farm visits: 58% of pupils indicated that their experience of a farm came through their school. 36% had visited a farm with relatives, 26% with friends, 26% with parents and a further 21% with other people not listed in the questionnaire. The preferred method was visiting a farm with friends: 74% of pupils preferred this method of visiting, 29% with parents, 21% with relatives and 15% with other people; a visit alone was the least attractive visit type with only 8% choosing this variant. Survey respondents were not asked about their preference for farm visits with the school.

7.1 Enthusiasm for going on a farm visit, helping with farm work or staying on a farm

The answers to the question of whether the pupils would like to visit, help on a farm or spend a longer holiday there shows a similar picture for all three questions: for girls, young pupils and for pupils with a Swiss-German dialect as their mother tongue the enthusiasm for CF was significantly more pronounced (for example, see Figure 1 "Desire for a visit.").

The pupils were most interested in the farm as a "place for animals to live" (mean: 2.8), followed by "experience nature" and "the rural environment" (mean: 2.6). The pupils were least interested in the "production of food" (mean: 2.4) (see Table 2). In these general assessments, there were significant differences between different groups, however (see sections 7.2. and 7.3).

Figure 1: Desire for a farm visit



Probability of error: *** $p \leq 0.001$; * $p \leq 0.05$

7.2 Preferred items from a gender perspective

Rural life and the farm as a place for farm animals to live were more interesting to girls than boys (see Table 1). For "food production" and "experience of nature" no gender differences were shown.

Table 1: Areas of interest by gender (comparison of means, t-test)

		Mean	(sd)	T	df	p-value
Rural life	Boys	2.4	(0.59)	-3.11	226	0.002
	Girls	2.7	(0.67)			
Place for animals to live	Boys	2.6	(0.68)	-3.36	226	0.001
	Girls	2.9	(0.78)			
Production of food	Boys	2.4	(0.50)	1.51	226	n.s.
	Girls	2.3	(0.58)			
Nature and experience of nature	Boys	2.5	(0.73)	-1.08	226	n.s.
	Girls	2.6	(0.76)			

The lack of statistical significance regarding food production is surprising, as this had been seen as being of higher potential interest to females. The reason for this is the different responses of the genders in respect to different items. Most striking is the item "Do you want to watch how an animal is slaughtered and the meat processed?". The boys were significantly more likely to reply affirmatively to this item than the girls (51% vs. 17% with a moderately or significantly positive response). A tendency towards greater male interest was also shown in the item "get to know the origin of food" (66% vs. 58%, n.s.) and in the item "milking and milk processing" (53% vs. 47% n.s.). The pattern changes significantly for harvesting (44% vs. 60%), to some extent for "vegetable processing" (43% vs. 50%, n.s.) and for "field work" (37% vs. 44% n.s.), where the girls showed a higher interest.

In line with traditional patterns the survey shows that the boys were more interested in milk and meat production and the girls in the cultivation and processing of vegetables and field crops. Possibly boys would show more interest in further topic areas (e.g. renewable energies (solar and wind power), production of biomass, etc.). Many of these aspects were not covered. In the summarised responses (enthusiasm for going on a visit, helping with farm work, staying on a farm), potentially higher interest levels in boys were not found.

7.3 Interest in different subjects according to age, mother tongue and farm experience

The most obvious differences in terms of the four topics were in relation to age: younger pupils were more interested in the topics than older ones (except for food production, see Table 2). There were also significant differences in terms of prior experience: the more the pupils had already been on farm visits, the more interested they were in the topics. Pupils with Swiss German mother tongue were more interested in the four topics than those with German or another mother tongue (with the exception of food production).

Table 2: Areas of interest by farm visits made, age and mother tongue (Anova)

		Rural life		Place for farm animals to live		Production of food		Experience of nature	
		Mean	(sd)	Mean	(sd)	Mean	(sd)	Mean	(sd)
Age in years	3-12	2.8	(2.6-2.9)	3.1	(3.0-3.3)	2.5	(2.4-2.6)	2.8	(2.7-3.0)
	13-14	2.5	(2.4-2.7)	2.8	(2.6-2.9)	2.4	(2.2-2.5)	2.5	(2.4-2.7)
	15-17	2.4	(2.2-2.5)	2.4	(2.3-2.6)	2.3	(2.2-2.4)	2.4	(2.3-2.6)
	F=	7.2**		18.4***		2.5 n.s.		5.8*	
Mother tongue	Swiss-G.	2.8	(2.7-3.0)	3.1	(2.9-3.3)	2.4	(2.3-2.5)	2.8	(2.6-2.9)
	German	2.5	(2.4-2.7)	2.8	(2.6-2.9)	2.4	(2.2-2.5)	2.6	(2.5-2.8)
	Other languages	2.4	(2.2-2.5)	2.6	(2.4-2.7)	2.4	(2.3-2.5)	2.5	(2.3-2.6)
	F=	9.6***		10.5***		0.05 n.s.		3.6*	
Farm visits so far	never	2.5	(2.1-3.0)	2.7	(2.1-3.3)	2.3	(1.9-2.6)	2.3	(1.7-2.8)
	< 10 times	2.3	(2.2-2.5)	2.5	(2.4-2.7)	2.2	(2.1-2.4)	2.4	(2.2-2.5)
	10 to 20	2.7	(2.5-2.8)	3.0	(2.8-3.2)	2.4	(2.2-2.5)	2.7	(2.6-2.9)
	>20 times	2.8	(2.7-3.0)	3.0	(2.8-3.2)	2.6	(2.5-2.8)	2.9	(2.7-3.1)
	F=	7.8***		6.6***		6.3***		7.5***	

Probability of error: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$

A multivariate stepwise regression for the four topics shows (see Table 3) that "rural life" and especially the farm as a "place for animals to live" were more reliably predictable in terms of the variables measured (R^2 explained variance: 17% and 24%) than production of food and experience of nature (8% and 13%). Age and experience of farms were the two most important determinants.

7.4 Summary of the results

SchuB's work is based conventional models of agriculture and typical family farms. Originally thought of as a PR tool for agriculture, SchuB has shown its merit in the field of environmental education (this is shown by the evaluation of the teachers).

However, not all pupils responded enthusiastically to the opportunity of a farm visit. Specifically, enthusiasm was shown by younger pupils (9- to 10-year-olds), about two-thirds of whom were thrilled by the idea of visiting a farm to help, or of staying there longer. This also applied to the majority of pupils with Swiss-German mother tongue. Access to farms as a "place for animals to live" is especially important as this aspect received a particularly positive response from pupils. The teachers' evaluation shows that in the context of SchuB traditional themes tend to be addressed (livestock, crops and vegetables, healthy diet: Ranft et al, 2002, p.40.). The evaluation concludes that the possible spectrum of topics has not been exhausted. From the perspective of the pupils it should be mentioned here that not all of the topics on offer are appealing. Girls generally show more enthusiasm than boys. In addition, some unexpected preferences were shown; for example, that the boys wanted to find out more about meat and milk production and processing.

Table 3: Explanatory power of the four independent variables for the four topics
(Multivariate stepwise regression)

	Rural life	Place for farm animals to live	Production of food	Experience of nature
Gender (1 male; 2 female)	.18	.20	excluded	excluded
Age	-.21	-.35	-.13	-.32
Language (Swiss-G.; German; other language)	-.14	-.13	excluded	excluded
Experience of farms	.23	.18	.26	.28
Adjusted R ²	.17	.24	.08	.13

7.5 Limitations of the study

The number of pupils surveyed was relatively small and the pupils came from only one city in German-speaking Switzerland. However, this is not the most important limitation of the study, since it can be assumed that results in other German-speaking cities would be quite similar. The main limitation of this study arises from the closed method of questioning, and the relatively small number of questions. The selection and designation of the issues was probably influenced by a traditional view of agriculture (but could correspond well with SchuB's focus). Nevertheless, the predictions cannot be directly related to SchuB's programmes, because in the context of specific visits all topics can in principle be included (even if demand for peripheral issues or newer topics does not seem as likely, and possibly not so many farms are available to provide a focus on these issues). Nevertheless, a majority of the experiences reported by the pupils probably took place as part of SchuB.

8. Discussion and conclusions

SchuB is a high-quality, well-established, economical service in the context of environmental education. It can be assumed that SchuB successfully achieves the objective of creating understanding of agriculture and its concerns. However, this context limits the practical design of programmes because productive agriculture is in the foreground. In addition, the range of activities and experiences would probably be more diverse if there was a call for greater variety. A traditional

image of agriculture seems to have been taken as the main basis for the programmes. Of course, this is in the interest of the farms that receive exposure, and of SchuB. From a teacher's point of view, however, more open and broader access should probably be demanded.

Pupils respond to the opportunities represented by farm visits with more subdued euphoria. Especially younger pupils are very open for the topic, and their responses show that they are particularly interested in having access to animals. It therefore makes sense to start early with farm visits and to provide more intensive exposure over a longer period. In this way the proportion of interested pupils could probably be better maintained. SchuB and farm visits are exciting topics in this connection, to which pupils can be given more detailed exposure as they become older (from stroking animals to the contradictions of current agricultural policy). For older pupils the programmes are not sufficiently attractive, which opens up new challenges for SchuB. In addition, alternative or complementary environmental education programmes should be considered for all age groups.

References

- Bossart, S. (2012). *Wo wächst die Karotte? Woher kommt das Ei? Wo wohnt die Kuh? Lernfeld Landwirtschaft für Kinder und Jugendliche aus dem urbanen Raum*. Luzern, Hochschule Luzern Soziale Arbeit, Studienrichtung Soziokultur
- Nationales Forum "Schule auf dem Bauernhof" (2011). Jahresbericht 2010. Download of the website www.SchuB.ch, 30 April 2012.
- Ranft, M., Lindemann-Matthes, P. & Nagel, U. (2002). *Evaluation des Programms "Schule auf dem Bauernhof (SchuB)" in den Kantonen Zürich, Aargau und St. Gallen*. Institut für Umweltwissenschaften, Universität Zürich.
- SchuB and LBL (2001, *Schule auf dem Bauernhof und Landwirtschaftliche Beratungszentrale Lindau*, eds., second edition). *Unterrichtsordner "Schule auf dem Bauernhof für die Unter- und Mittelstufe, 2. überarbeitete Fassung*, Lindau.