



## Farm-based education

– can farms and farm animals contribute to learning in accordance with the school curriculum and syllabi?

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*Gården som pedagogisk resurs – kan gårdar och lantbruksdjur bidra till lärande enligt skolans läroplan och kursplaner?*

Malin Larsson

Degree project/Independent project (30 ECTS)  
Swedish University of Agricultural Sciences, SLU  
Department of People and Society  
Outdoor environments for health and well-being  
Alnarp 2022





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Malin Larsson

**Supervisor:** Lena Lidfors, Swedish University of Agricultural Sciences, Department of Animal Environment and Health  
**Examiner:** Patrik Grahn, Swedish University of Agricultural Sciences, Department of People and Society  
**Co-examiner:** Fredrik Fernqvist, Swedish University of Agricultural Sciences, Department of People and Society

**Credits:** 30 ECTS  
**Level:** Advanced  
**Course title:** Självständigt arbete i miljöpsykologi/Independent project in environmental psychology  
**Course code:** EX1000  
**Programme/education:** Outdoor environments for health and well-being  
**Course coordinating dept:** Department of People and Society  
**Place of publication:** Alnarp  
**Year of publication:** 2022  
**Cover picture:** Malin Larsson

**Keywords:** farm-based education, educational farms, experiential learning, embodiment, embodied learning, outdoor education, animal-assisted education

## Swedish University of Agricultural Sciences

Faculty of Landscape Planning, Horticulture and Agricultural Sciences (LTV faculty)  
Department of People and Society

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## Abstract

There seems to be something missing in the modern school. An increasing number of students face difficulties in the traditional classroom setting, some cannot attend school at all, and a worrying number of students fail to leave school with approved grades, with potentially detrimental effects on their future lives. Schools in Sweden are obliged to adjust so that students can achieve the knowledge requirements in school, but it can be difficult to make such adjustments in existing school premises. To help students to succeed in school, we may need to try other methods.

Outdoor, experiential learning such as farm-based education can be a possible complement to classroom teaching. By giving all students the opportunity to have parts of their studies on educational farms with animals, they get the chance to learn more about nature, animals and our food production, while the farm environment and pedagogy enable experiential learning of school subjects following the school curriculum and syllabi.

The aim of this master thesis was to acquire knowledge about farm-based education in Swedish schools from preschool class to grade 9, through a survey sent to teachers with supposedly little knowledge about farm-based education and through deep interviews with practitioners within farm-based education. The study consists of a survey and interviews. A literature review gives a theoretical background to attention and learning, nature and animal assisted interventions and experiential learning, including farm-based education.

The survey was a part of a project with researchers in Norway, Sweden, Finland and Denmark. The Swedish version of the questionnaire was sent out to a randomized selection of 300 municipal lower secondary schools (grade 7-9) in Sweden. The interview method was semi-structured. The prepared questions were open-ended, with both thematic and dynamic dimensions. Two schoolteachers and one farm guide were interviewed. A deductive analysis was made of the interviews, with the research questions as themes.

A majority of the survey respondents thought that farm-based education could fit into the syllabi for science subjects, home and consumer studies and social study subjects. Only two of the 47 respondents thought that farm-based education did not fit into the syllabus of any subject. Most respondents found it important with documented effects of farm-based education. Some respondents thought that farm-based education would take too much time from ordinary lectures. Most respondents thought that the farmer together with schoolteachers, or with teachers employed at the farm, should teach the students during farm visits, rather than the farmer alone.

The results of both the survey and the interviews indicate that farm-based education might be suitable for all students, for whole classes as well as for smaller groups of students in need of special support. Farm-based education can fit into the syllabi of many school subjects, including languages, mathematics, biology, chemistry, physics, home and consumer studies, crafts and sports and health. Many survey respondents and two interviewees found transportation to farms to be a potential problem for farm-based education.

All interviewees thought that economy is a potential problem for farm-based education. They had found that teachers who are familiar with farm-based education are usually positive to it, while teachers who have no such experience might be more reluctant. To attract teachers, farm visits should be well organised and easy to fit into the schedule. Preparations, structure and safety routines are crucial. The interviewees found it important that farm-based education is connected to the school curriculum and syllabi, and they thought that it can be advantageous to work interdisciplinary.

According to the interviewees, farm animals are central in most farm activities. Children can learn a lot from socialising with animals, studying their behaviour and compare with human

behaviour. The farm environment and the animals increase attention and create opportunities for learning. Educational farms provide unique learning opportunities that are not given anywhere else.

Regarding further education for teachers within farm-based education, both survey respondents and interviewees preferred a mixture of online teaching and physical meetings. The interviewees claimed that a course about farm-based education should include handling of different kinds of animals and the relationship between animals and children.

Some conclusions from the study are that farm-based education might enhance students' learning in several school subjects. The interviewed teachers and farm staff with experience of farm-based education saw possibilities to use it more in the education, especially for younger students and for students with special needs. It can be recommended to increase availability of farm-based education and let all students take part of it at least to some degree. For students with special needs, farm-based education might improve school attendance, health and well-being.

Further research is needed to evaluate effects and suitable methods for farm-based education.

*Keywords:* farm-based education, educational farms, experiential learning, embodiment, embodied learning, outdoor education, animal-assisted education

## Sammanfattning

Det verkar saknas något i den moderna skolan. Ett ökande antal elever möter svårigheter i den traditionella klassrumsmiljön, en del kan inte gå i skolan alls, och en oroande andel elever misslyckas med att lämna skolan med godkända betyg, vilket kan ha negativa effekter på deras framtida liv. Skolor i Sverige är skyldiga att anpassa så att eleverna ska kunna nå kunskapskraven i skolan, men det kan vara svårt att göra sådana anpassningar i befintliga skollokaler. För att hjälpa eleverna att lyckas i skolan kan vi behöva pröva andra metoder.

Utomhuspedagogik och upplevelsebaserat lärande, där pedagogiska lantgårdar ingår, kan vara möjliga komplement till klassrumsundervisning. Genom att ge alla skolelever möjlighet att ha delar av sin skolgång på undervisningsgårdar med djur får eleverna chansen att lära sig mer om naturen, djuren och vår livsmedelsproduktion, samtidigt som gårdsmiljön och pedagogiken möjliggör upplevelsebaserat lärande av skolämnen efter skolans läroplan och kursplaner.

Syftet med denna masteruppsats var att skaffa kunskap om gården som pedagogisk resurs i svensk skola, från förskoleklass till årskurs 9, genom en enkät som skickades till lärare med förmodat begränsad kunskap om gården som pedagogisk resurs, och genom djupintervjuer med praktiker med erfarenhet av gården som pedagogisk resurs. Studien består av en enkät och intervjuer. En litteraturoversikt ger en teoretisk bakgrund till uppmärksamhet och lärande, natur- och djurunderstödda insatser och upplevelsebaserat lärande, inklusive gården som pedagogisk resurs.

Enkätundersökningen ingick i ett projekt med forskare i Norge, Sverige, Finland och Danmark. Den svenska versionen av enkäten skickades ut till ett slumpmässigt urval av 300 kommunala högstadieskolor (årskurs 7-9) i Sverige. Intervjumetoden var semistrukturerad. De förberedda frågorna var öppna, med både tematiska och dynamiska dimensioner. Två lärare och en gårdsguide intervjuades. En tematisk analys gjordes av intervjuerna, med forskningsfrågorna som teman.

En majoritet av de som besvarade enkäten tyckte att gården som pedagogisk resurs kan passa in i kursplanerna för naturvetenskapliga ämnen, hem- och konsumentkunskap och samhällsorienterande ämnen. Endast två av de 47 tillfrågade tyckte att gården som pedagogisk resurs inte passade in i något ämnes kursplan. De flesta tyckte att det var viktigt med dokumenterade effekter av gården som pedagogisk resurs. Vissa respondenter tyckte att gården som pedagogisk resurs skulle ta för mycket tid från den vanliga undervisningen. De flesta tillfrågade tyckte att lantbrukaren tillsammans med skollärare, eller med lärare anställda på gården, borde undervisa eleverna vid gårdsbesök, snarare än enbart lantbrukaren.

Resultaten av både enkätundersökningen och intervjuerna tyder på att gården som pedagogisk resurs kan vara lämplig för alla elever, för hela klasser såväl som för mindre grupper av elever med behov av särskilt stöd. Gården som pedagogisk resurs kan passa in i kursplanerna för många skolämnen, inklusive språk, matematik, biologi, kemi, fysik, hem- och konsumentkunskap, slöjd och idrott och hälsa. Många enkätrespondenter och två intervjupersoner uppgav att resor till gårdar är ett potentiellt problem för användandet av gården som pedagogisk resurs.

Alla intervjupersoner ansåg att ekonomi är ett potentiellt problem för att använda gården som pedagogisk resurs. Deras erfarenhet var att lärare som är bekanta med gården som pedagogisk resurs vanligtvis är positiva, medan lärare som inte har erfarenhet kan vara mer tveksamma. För att locka lärare bör gårdsbesök vara välorganiserade och lätta att passa in i schemat. Förberedelser, struktur och säkerhetsrutiner är avgörande. Intervjupersonerna ansåg att det var viktigt att gården som pedagogisk resurs kopplas till skolans läroplan och kursplaner och att det kan vara fördelaktigt att arbeta ämnesövergripande.

Enligt intervjupersonerna är lantbruksdjur centrala i de flesta pedagogiska gårdsaktiviteter. Barn kan lära sig mycket av att umgås med djur, studera deras beteende och jämföra med mänskligt beteende. Gårdsmiljön och djuren ökar uppmärksamheten och skapar möjligheter till lärande. Gården som pedagogisk resurs ger unika lärandemöjligheter som inte ges någon annanstans.

På frågor om vidareutbildning för lärare om gården som pedagogisk resurs föredrog både enkätrespondenter och intervjupersoner en blandning av online-undervisning och fysiska träffar. Intervjupersonerna menade att en utbildning om gården som pedagogisk resurs bör innehålla hantering av olika sorters djur och relationen mellan djur och barn.

Några slutsatser från studien är att gården som pedagogisk resurs kan förbättra elevernas lärande i flera skolämnen. Intervjuade lärare och gårdspersonal med erfarenhet av att använda lantgårdar i undervisningen såg möjligheter att använda dem mer i utbildningen, särskilt för yngre elever och för elever i behov av särskilt stöd. Det kan rekommenderas att öka tillgängligheten till gården som pedagogisk resurs och låta alla elever ta del av den åtminstone till viss del. För elever med behov av särskilt stöd har vistelse på lantgårdar potential att förbättra skolgång, hälsa och välbefinnande.

Ytterligare forskning behövs för att utvärdera effekter och lämpliga metoder för gården som pedagogisk resurs.



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## Abbreviations

AAI	Animal Assisted Interventions
AAE	Animal Assisted Education
ADHD	Attention Deficit Hyperactivity Disorder
ASD	Autism Spectrum Disorder
EAI	Equine Assisted Interventions
NAI	Nature Assisted Interventions
NBI	Nature Based Interventions
NPC	Neuro-Psychiatric Conditions

# 1. Introduction

## 1.1. Background

There seems to be something missing in the modern school. An increasing number of students face difficulties in the traditional classroom setting, some cannot attend school at all, and a worrying number of students fail to leave school with approved grades, with potentially detrimental effects on their future lives (SOU 2016:94, 2016). In recent decades, the proportion of teenagers, mainly girls, with psychosomatic disorders has increased sharply, and many students state that they often feel stressed, have stomach pain or headaches (Folkhälsomyndigheten, 2018).

The proportion of students with neurodevelopmental diagnoses has also increased over time (Gillberg, 2015; Stockholm County Council, 2017). The risk of school failure is elevated for students with neurodevelopmental conditions (NDC)(Anderson, 2020; Taneja Johansson, 2021) such as attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), dyslexia, dyscalculia, language disorders and DCD (Developmental Coordination Disorder) (Attention, 2018; Specialpedagogiska Skolmyndigheten [SPSM], 2022). NDC are behavioural diagnoses with a biological background in the brain, and several diagnoses often occur together (Albajara Sáenz et al., 2020; SPSM, 2022). Students with NDC have a higher incidence than other students of depression, anxiety and other psychiatric disorders (Lever & Geurts, 2016; Kessler et al., 2006; Widell & Klint Langland, 2021), often as a result of a stressful school environment and lack of individual adaptations in school (Widell & Klint Langland, 2021).

Schools in Sweden are obliged under the School Act to make adjustments so that students can achieve the knowledge requirements in school (School Act (2010: 800)), but in practice it can be difficult to make such adjustments in existing school premises. To help the most vulnerable students to succeed in school, we may need to try other methods. Outdoor pedagogy and farm-based education are possible complements to classroom teaching (Flynn et al., 2020).

Outdoor and experiential learning have many components needed for students who do not thrive in a classroom setting. However, some students may need more

to overcome previous school failures. A meaningful context, such as a farm with animals to care for, might provide additional benefits to the outdoor environment.

Many children today grow up without a direct connection to agriculture, which can lead to a reduced understanding and prejudices about farming and animal husbandry (Smeds et al., 2015). If children already in school get in touch with farming and animals, some of the negative effects of urbanization might be counteracted and misconceptions about farming can be reduced (Smeds et al., 2015).

By giving all school students the opportunity to have part of their teaching on educational farms with animals, the students get the chance to learn more about nature, animals and our food production, while the pedagogy and the environment on the farm enable experiential learning of school subjects. Some students, e.g. with NDC, could stay one or more days a week in small groups on educational farms, adapted to each child's needs and wishes, in a similar way as is already practised by *Inn på tunet* (approx. Into the farm) in Norway (Inn på tunet, n.d.).

In a society in rapid change, with climate threats and great uncertainty about the future, educational farming can both create a sense of security and stability through the farm's natural annual cycle, and increase the opportunities for recruiting young people to the green sector, which can facilitate a transition to an ecologically sustainable society.

This master thesis explores the possible role of farms and domestic animals in education in the Swedish mandatory school, from preschool class (P, 6 years of age) to grade 9, both for full-class neurotypical (normally functioning) students and for smaller groups of students with special needs.

## 1.2. Aims and research questions

The aim of this master thesis was to acquire knowledge about farm-based education in Swedish schools from preschool class to grade 9. The master thesis used two methods: a survey sent to teachers with supposedly little knowledge about farm-based education and deep interviews with practitioners with experience of farm-based education.

The objective of the survey was to investigate attitudes to and knowledge about farm-based education among teachers in grade 7-9.

The objective of the interviews was to acquire knowledge from practitioners about farm-based education in grade P-9.

The following research questions were investigated in both the survey and the interviews:

- How do teachers perceive farm-based education compared to other outdoor experiential learning and classroom teaching?
- For which subjects and students can farm-based education be suitable?



- How do nature, animals and the farm context affect learning and well-being for different categories of students in farm-based education?
- How can farm-based education be organised?
- What kinds of curriculum-based and other activities can be performed at educational farms? (Only interviews)
- How should courses about farm-based education for teachers and teacher students be designed?
- What strengths, weaknesses, opportunities and threats exist for the implementation of farm-based education?

### 1.3. Evolution, physical activity and brain function

Our human brain evolved in an environment with high levels of physical activity (Raichlen & Polk, 2013). Kempermann et al. (2010) concluded that the evolutionary link between physical activity and cognitively demanding tasks is so strong that the brain perceives physical activity as a signal to start working. Evolutionary selection may explain the strong link between physical activity and cognitive ability, and that many people find it easier to concentrate if they are allowed to move. However, the classroom differs drastically from the environment on the savannah, the environment to which our bodies and brains are biologically adapted (Raichlen & Polk, 2013).

Several parts of the brain are positively affected by physical activity. Blood flow in the brain increases, which can briefly improve attention and concentration (Hansen & Sundberg, 2014). The capillary network in the cerebral cortex is strengthened, which improves blood flow and oxygenation even in the long term (Huang et al., 2013). Hormones such as serotonin, dopamine, norepinephrine and endorphins are released during physical exertion, which makes us alert and feeling well (Hansen & Sundberg, 2014). Physical exertion activates several genes and their linked hormones that control blood vessel and nerve cell growth (Cotman & Berchtold, 2002; Raichlen & Polk, 2013). Physical activity thus has many positive effects on brain and cognition, and on the whole body.

### 1.4. Evolution and biophilia

The interest in and feeling for nature, plants and animals seem to be deeply rooted in humans, according to the biophilia hypothesis, presented by Fromm (1964; 1973, referred in Barbiero & Berto, 2021), and further developed by Wilson (1984). The biophilia hypothesis claims that humans have a positively biased sense for living organisms that is partly genetically based and that has benefited our survival through the evolution (Rogers, 2019). Proponents of the hypothesis mean that we

feel safe surrounded by plants and animals. If the natural environment is peaceful and the animals seem calm, this secure impression seems to transmit to humans. The relationship with pets also has a strong impact on us, not least on children (Bekoff, 2007).

## 1.5. Attention and ADHD

Attention is important for our survival. Many activities require attention to keep healthy and to avoid accidents. Attention is also necessary to reach academic goals. However, what is attention, and how does it work?

### 1.5.1. Attention as a brain function

Understanding sensation and perception facilitates understanding of attention. According to Mather (2011), sensation is the primary experience of incoming stimuli to a sensory organ, while perception is an experience constructed by the brain, combining different sensations to create meaning. In a *bottom-up process*, sensory information from the environment, e.g. light, is transferred to the brain and processed into an experience (e.g. object recognition), while in a *top-down process*, stimuli are modified by prior experiences and knowledge, with higher-level cortical areas modifying lower-level interpretation according to the best prediction (Mather, 2011). However, there is no absolute boundary between bottom-up and top-down processes (Mather, 2011). Attention control occurs primarily (but not exclusively) in two interconnected, interacting cortical networks in the cortex of the brain, and in subcortical networks, which communicate with each other (Gazzaniga et al., 2013; Vossel et al., 2014).

According to Kaplan and Berman (2011), executive functioning (such as attention) and self-regulatory functions share a common resource in the brain, with limited capacity. Kaplan and Berman (2011) claim that if the common resource is depleted, e.g. if the brain is busy with either self-control or attention, the other function performs worse than normally. If a person has to concentrate on a difficult task that demands directed attention, this means that s/he has limited capacity to control behaviour, e.g. to be polite. The brain needs a lot of glucose to work, and low blood glucose levels correlate with inferior performance on self-regulation and executive functioning tasks (Kaplan and Berman, 2011). Kaplan and Berman assume that the limited capacity of the brain is an evolutionary advantage, to save energy that is seldom needed.

All humans have limited capacity to self-regulate and control emotions. For humans with NDC, such as ADHD and ASD, the ability to self-regulate, as well as to direct attention to less interesting tasks, is often on a low baseline level (which is part of the diagnoses). Children with ADHD tend to have troubles with response

inhibition and working memory, while children with ASD mainly have troubles with cognitive flexibility, organisation and planning (Semrud-Clikeman et al., 2010). ASD and ADHD share some genetic traits, and they often co-occur (Panagiotidi et al., 2019). If a person with ADHD or ASD is overwhelmed, e.g. by too high demands or sensory overload (e.g. strong light or noise), the ability to regulate emotions tends to decrease below the baseline level, which can result in a “meltdown”, with screaming, crying and sometimes out-acting behaviour, or even with shutdown, withdrawal and passivity (Bedrossian, 2015; Bennie, 2016; Miller, n.d.).

### 1.5.2. Attention Restoration Theory (ART) and ADHD

Kaplan & Kaplan (1989) and Kaplan (1995) developed the Attention Restoration Theory (ART), where two different kinds of attention are described. Directed (voluntary) attention is needed to focus on a task that requires effort, such as making plans, and this effort may cause “directed attention fatigue” if over-used (Kaplan, 1995). Involuntary attention (also called fascination), is caught e.g. by animals and nature, and is thought to contribute to restoration after directed attention fatigue (Kaplan, 1995). Involuntary attention is synonymous to stimulus-driven attention (Vossel et al., 2014).

Kaplan (1995) described the components of restorative environments as 1) **being away** from the everyday environment; 2) **fascination** with the elements included the environment, in natural environments usually soft fascination; 3) **extent**, or a sense of space; 4) **compatibility** with our preferences, which is often achieved in natural environments.

Several studies show that natural environments can have restorative effects on our brains and improve our cognitive functions, such as impulse control and attention (Wells, 2000; Faber-Taylor and Kuo, 2009, 2011; Chawla et al., 2014). According to Amicone et al. (2018) and Mårtensson et al. (2009), green, natural schoolyards can offer better attention recovery for the students than a built schoolyard.

According to Kaplan and Berman (2011), during human evolution people used stimulus-driven, relatively effortless attention more extensively than directed attention, while we generally need to use the limited capacity of directed attention more in the modern society.

“Involuntary attention, once a highly adaptive mechanism, is now often used against one’s own best interests. Thus, directed attention becomes essential in pursuing one’s purposes, especially as involuntary attention is increasingly irrelevant or even counter to these goals. In this very changed world, directed attention is called upon far more often than it once was and perhaps at times more often than it is capable of responding to.” (Kaplan and Berman, 2011)

Kaplan and Berman (2011) showed that children with ADHD perform worse than neurotypical (NT) children when trying to solve tasks demanding directed attention, but they performed similar to NT children on tasks demanding stimulus-driven attention. ADHD might not necessarily mean a general attention deficit, but rather a limited capacity for directed attention.

ADHD occurs in about 5-10 % of the human population and is highly heritable (Williams & Taylor, 2006). ADHD traits probably filled a function during human evolution, such as a tendency for risk taking and finding more food or better settlements (Williams & Taylor, 2006). If the evolution to some extent favoured ADHD traits, why are ADHD traits in the modern society often considered a neuropsychiatric diagnosis, and not an advantage?

Let us return to Kaplan and Berman (2011), who describe involuntary (stimulus-driven) attention as relatively effortless, and also restorative for a resource-depleted brain that has been forced into directed attention for too long time. Directed attention fatigue was probably not a big issue at the savannah, but many modern humans are forced to spend a large part of their childhood sitting inside a classroom, needing to focus on tasks (listening, reading, counting) which demand directed attention for prolonged periods of time. The directed attention resource seems to be easily depleted in children in general, and especially in children with ADHD traits.

Humans evolved in a natural environment where stimulus-driven attention tended to be more important than directed attention, and where children learned mainly by watching adults, by playing and by using their whole body and all senses in multimodal, experiential learning. Our bodies and brains have not changed just because we changed our ways of living. Humans still have the same brain, the same needs and the same ways of functioning. However, there is a large variation in how well individuals can fit in the modern society. Some individuals fit in without problems, while others do not. In our modern society, students who have difficulties with social interactions, with processing of external stimuli, or with sitting on a chair and focusing, tend to become investigated for their difficulties and sooner or later receive a diagnosis, such as ADHD or autism. This does not mean that there is something wrong with those individuals, just that their needs and talents do not fit into the template of the modern school and society as they are designed today.

## 1.6. Embodiment, embodied cognition and situated learning

Our bodies are not just instruments to perform actions ordered by our brains. The brain is an integrated part of the body, which cannot be treated as a separate entity. The terms “embodiment” and “embodied cognition” refer to cognition as strongly connected to and influenced by both sensory and locomotor experiences (Kontra et

al., 2012). “Situated learning” refers to learning being strongly influenced by actions as well as by context, physical and social environment (McLellan, 1996).

Infants learn very much by using their bodies to explore the world. Sensorimotor learning is basically learning by doing. A child’s sensorimotor development is very much parallel to, and also shapes, its cognitive and social development (Kontra et al., 2012). This strong coupling between bodily experience and learning is important during the whole lifespan (Kontra et al., 2012). Thus, our understanding of the world is greatly affected by our own embodied experience.

Macedonia (2019) reviews the historic development of the view on mind and body. In the 17:th century, Descartes introduced the dichotomy between body and mind, where he thought that the body followed the laws of nature, while the mind was supposedly separate from the body and from the laws of nature (Macedonia, 2019). Macedonia describes rationalism as sprung from this artificial dichotomy and still having a strong influence on education and on the common view on body and mind.

Smith and Sheya (2010) concluded that “learning is fundamentally a consequence of “doing” and of coupling heterogeneous sensory–motor systems in the service of a task” (p. 728). In the 1980s, neuroscience researchers still thought of thinking as separate from sensing and acting, while later research “indicates that knowledge is embedded in, distributed across, and thus inseparable from noncognitive processes of perceiving and acting” (Smith & Sheya, 2010, p. 725). “Learning and development, after all, are the accrued product of the real-time internal events that are themselves the consequence of perceiving and acting in a physical world” (Smith & Sheya, 2010, p. 726).

The educational system in Sweden is inert and not updated according to the latest research about neuroscience and pedagogy. In the Swedish curriculum and syllabi, and in the way they are practised in schools, learning is still to a large extent viewed in a similar way as it was in research decades ago - as an internal process in the brain, disconnected from the own body and the surrounding physical world (Rambusch & Ziemke, 2005). As Rambusch and Ziemke (2005) put it: “Contextual aspects have been believed to play an insignificant role in learning, and teaching practices have therefore focused largely on transmitting content into the mind of people.” (p. 1803). Both researchers and teachers may have questioned traditional dichotomy theories for decades, but they still prevail in teaching in most schools. The educational system in Sweden has been criticised by some researchers for its inability to incorporate modern neuroscience into the curriculum and syllabi (Skolporten, 2014). Outdoor and experiential learning, such as farm-based education, still play minor roles in Swedish schools. A new curriculum with more emphasis on embodiment and situated learning might increase the possibilities for farm-based education.

## 1.7. Impact of nature and animals on human well-being and development

The impact of nature, plants and animals on human health has been subject to a lot of interest from researchers and practitioners during the latest decades. This section gives a brief overview, with the main focus on children.

### 1.7.1. Definitions

There are several different terms used to describe various research and working fields in the junction between human well-being and development on one hand and nature and animals on the other hand.

Environmental psychology is a broad research field within psychology, where the interrelationship between environment and human behaviour is studied (De Young, 1999).

Research on the impact of nature, and of natural elements such as plants and animals, on human health, well-being and development partly belongs to the research field environmental psychology. However, it can also belong to other research fields, such as medicine (nature-assisted therapy) and pedagogy (nature-assisted education). Furthermore, it can be cross-disciplinary, depending on the researchers involved and on the nature of the research.

Nature based interventions (NBI) are interventions that make use of landscapes and outdoor places as such to promote human health, with the place itself as the base for the intervention (Palsdottir et al., 2018).

Nature assisted interventions (NAI) is an umbrella term for interventions where nature and natural elements (including plants and animals, also in indoor settings) are used to support activities to promote human health, well-being and development, with focus on activities rather than place (Palsdottir et al., 2019).

Animal assisted interventions (AAI) is a collective term for several different activities where animals help to improve human physical and mental health or development, e.g. in physiotherapy, psychotherapy, learning and leisure activities (Derr, 2007; IAHAIO, 2018). AAI can be further specified according to animal species, e.g. equine assisted interventions (EAI), and/or according to the specific intervention, e.g. animal assisted education (AAE) or equine assisted therapy (EAT).

Animal assisted education (AAE) is a goal oriented, planned and structured intervention, directed or performed by teachers and other professionals, with focus on academic goals, pro-social skills and cognitive functioning (IAHAIO White Paper, 2018). Animal assisted education (AAE) might include different kinds of education where animals are used, such as school dogs and reading dogs (IAHAIO White Paper, 2018), equine assisted education (Isaacson, 2016; Larsson, 2021) and farm-based education with animals involved (Green Chimneys, n.d.).

Nature assisted education (NAE) might be used to define outdoor teaching in general, including school gardening and farm-based education, in analogy with the IAHAIO definition of AAE (see above), although this term is not commonly used yet.

### **1.7.2. Nature and plants for human well-being and development**

For some adults, being out in nature may primarily mean to enjoy beautiful scenery. For children, with their driving force to play and move, there is a strong connection between natural, green environments and physical activity. Safe, easily accessible green areas support children's outdoor play and activity (Chawla, 2015). Amoly et al. (2014) as well as Markevych et al. (2014) found associations between less hyperactivity, better attention and the presence of green areas near children's homes.

Many children spend a lot of time at preschool or school. The play environment in the schoolyard is important for children's possibilities for active play. Söderström et al. (2013) found that pre-schoolers who had access to a yard with trees, shrubbery and hills had better health and better sleep at night than peers with a more barren preschool yard.

For children with ADHD, studies have shown positive effects of physical activity and play in green environments compared to build environments (Faber Taylor & Kuo, 2009; 2011). Nature exposure can provide emotional, social and sensory-motor benefits for children with ASD (Li et al., 2019).

Using forests and green outdoor environments as a part of school education can be beneficial for students. Roe and Aspinall (2011) found that a forest school day had positive effects on students' self-perceived energy, happiness and stress level, and that the effect was largest for students with behavioural problems.

### **1.7.3. Domestic animals for human well-being and development**

Domestic animals provide us humans with food, clothing, traction and carrying capacity, but also security and company. In recent decades, domestic animals have also become our co-workers in AAI (Derr, 2007). Animals can also be our friends, which might be valuable to people who find human friendship difficult (Derr, 2007). We need to take care of the animals and provide them with food and company, which gives meaningful training for children and adolescents, e.g. with NDC, who might struggle with social interactions with humans, and for whom contact with animals might act as a bridge for building working relationships with humans (Schuck et al, 2018). Taking care of animals also means that the child needs to behave in a safe and predictable way, to avoid accidents and avoid scaring the animals, which provides self-regulation training that can also be useful in interactions with humans (Schuck et al, 2018).

It is well documented that domestic animals can have positive effects on children's physical and mental health. Attachment to animals can help to heal traumatized children (Yorke, 2008). Byström (2020) found in her dissertation that contact with horses and other animals increased autistic children's understanding of others' thoughts and feelings. Through their behaviour, animals provide direct, non-verbal and authentic feedback on human behaviour, which can help both children and adults to behave appropriately (Rajfura & Karaszewski, 2018; Schuck et al., 2018). Rajfura and Karaszewski (2018) observed that exercises with horses gave participants insights into their own body language, behaviour and communication, and how it affects other people. However, it is not so common yet that e.g. horses are used in teaching in Swedish schools (Forsgren & Hollsten, 2021).

## 1.8. Experiential learning, outdoor education and physical activity

Experiential learning is learning by own experience, often popularly expressed as learning by doing. In experiential learning, the educator sets up the problems and boundaries for a learning situation, and guides the students through observation, reflection and abstract thinking (The Association for Experiential Education, n.d.). The learning situation leads the student to being creative and asking question, and to dealing with success, risk and failure (The Association for Experiential Education, n.d.). Outdoor and farm-based education are variants of experiential learning.

Experiential learning, including outdoor and farm-based education, involves physical activity to different degrees. Physical activity can improve school children's academic performance (Ericsson, 2003; Singh et al, 2012; Käll et al., 2014; Bunketorp Käll et al., 2015). Studies have shown that for children with ADHD and ASD, physical activity can improve functions such as cognition, attention and socio-emotional functioning (Bremer et al, 2016; Suarez-Manzano et al., 2018). However, theoretical subjects have competed out physical activity in the school curriculum over time (Wilkins et al., 2003; Pappas, 2008; Ericsson, 2020).

Outdoor teaching, including both physical activity and nature contact, can impact positively on students' study motivation, school results and social skills (Fägerstam, 2012; Faskunger et al., 2018). Outdoor education can enrich learning in many school subjects, which can be studied completely or partially outdoors, in a multimodal way where all senses are used (Jordet, 2007; Taklo, 2014). This is closely related to Pfeifers & Bongard's (2007) reasoning about embodied intelligence. Cognition develops best in its embodied context, in a stimulating environment where body and brain interact, and several senses are used. Outdoor



and experiential learning can thus be an important complement to classroom teaching.

For decades, the school has valued theoretical skills higher than practical skills (Taklo, 2014). The school rewards ability to sit still and listen, without providing alternatives, which seems to affect boys more than girls (Taklo, 2014). Students with difficulties in school can also disturb other students (Skolinspektionen, 2015). Moving and using the body promotes learning in both practical and theoretical school subjects (Ericsson, 2003). Schools that can offer a variety of pedagogical environments and methods can better suit students with different needs.

For students with NDC, insufficient support in school can often lead to high school absenteeism (SOU 2016: 94). Students with NDC often need special support in school, and they may benefit from being outdoors in green environments (Faber Taylor & Kuo, 2011; Li et al., 2019).

Through evolution, learning has normally taken place outdoors, in motion and close to animals and nature (Kempermann et al., 2010). A safe but also varied and interesting environment, including moments of surprise, can increase focus and facilitate learning, which can be of extra importance for students who do not thrive in the confined, boring and often messy classroom environment (Taklo, 2014).

## 1.9. Animal assisted education

There are many domestic animal species, which could potentially be used in animal assisted education (AAE), but fewer species that might be considered suitable for the task. Using animals in education requires skilled staff, for the safety and welfare of both the animals and the students. This section gives a brief overview of the use of animals in education.

Several aspects are important to consider before using animals in education and other interventions with children and adolescents.

Some factors to consider for human welfare:

- Safety of humans: Risk of being kicked, barred, torn, bitten or trodden by an animal (Chastain & Vellios, 2017; av.se). Risk of slipping, falling, being damaged by objects around the animal (Arbetsmiljöverket, 2017).
- Health aspects: Risk for contagious diseases, microbes, allergies against fur, hay etc. (Chastain & Vellios, 2017). Obvious risks of getting too cold or too hot when having education outdoors.
- Welfare aspects: Risk of becoming scared by animals or surprising moments.

Some factors to consider for animal welfare (Serpell et al., 2010; IAHAIO, 2018):

- Safety of animals: Risk of being physically injured by humans.

- Health of animals: Risk for contagious diseases transmitted from humans.
- Welfare of animals: Risk of becoming stressed e.g. by transportation, new environments, noise, crowds or out-acting humans.

These risks can be mitigated if the animal handler knows the animals well and only works with animals that are safe and tolerant to the expected stress factors in the interventions (Serpell et al., 2010). For the long-term welfare of the animals, it would be an advantage if the animals not only accept their job, but that they enjoy it (IAHAIO, 2018). This might be easier to achieve if the animals stay in their home environment and meet people there, with possibilities to withdraw if they wish, than if they are transported to schools and other places, when both the transportation and the new environments may cause stress.

### 1.9.1. Dogs and smaller pets in education

Dogs have the ability to read human behaviour and signals and can form strong emotional bonds with humans (Jalongo, 2015). Dogs can accompany students in a school building relatively easily, and school dogs sometimes occur in Swedish schools (Magnusson, 2021). A school dog can reduce negative behaviours and make students more interested in interacting with other students (Kotrschal & Ortbauers, 2003; Esteves & Stokes, 2008).

Many cats do not particularly enjoy car travels and meeting foreign people in new environments, although some trained cats can accept it (Gardiánová & Hejrová, 2015). Allergy against cats is relatively common among children (1177, 2021). Cats living on a farm may be used in AAE, if they are free to choose to interact with the visiting students.

Small pets might in some cases be kept in a school, if feeding and care can be arranged for during weekends and holidays (Fine & Gee, 2017).

Rabbits and guinea pigs are traditionally kept in cages. They are prey animals and can be easily scared if not trained. If handled from an early age, they can be calm and easy to handle, although they can get injured if handled carelessly (Gardiánová & Hejrová, 2015). The students need to be careful and control their behaviour around the animals. However, using rabbits and guinea pigs in education puts high demands on the teachers and instructors to keep the animals safe and calm (IAHAIO, 2021a; Gardiánová & Hejrová, 2015).

Smaller rodents such as hamsters, mice and gerbils are usually night-active and tend to sleep in daytime, and they are easily scared and might not like being handled (Gardiánová & Hejrová, 2015). Their small size imposes an injury risk for them, and they should not be handled by small children, but they can still be interesting to look at.

Caged birds such as parrots, budgies and canaries might be interesting to watch, since they are herd animals with interesting behaviour and with a variety of sounds

(IAHAIO, 2021a; Gardiánová & Hejrová, 2015). Some caged birds can become hand tamed if trained (Gardiánová & Hejrová, 2015).

Fish can be beautiful to watch and interesting to study. Students can learn a lot about biology when studying fish in an aquarium, which is a local ecosystem in itself (Gardiánová & Hejrová, 2015).

### 1.9.2. Horses in education

Equine assisted education (EAE) is a form of AAE, where horses are used as co-workers to promote students' learning, usually in a rural setting, on a farm, riding school or other equine facility. There is plenty of recent research on the effects of EAI in general, however there is not much specific research on EAE. Thus, to evaluate effects of EAE, more studies are needed.

The impact on horse welfare in EAE has not yet been studied scientifically. There are some studies of horse welfare in other forms of EAI. Reega (2017) found that general horse welfare, housing, outdoor activities, feeding etc. affects horse stress level in EAI, and that it was difficult to evaluate the stress level specifically for EAI. Mendonça et al. (2019) did not find elevated stress or other adverse reactions in horses in EAI, but they also did not find signs of increased horse welfare.



Picture 1. School assignment on horseback (Photo: Malin Larsson).

Horses may in some cases be transported to the students and the school, although it might be more feasible to transport the students to the horse facility. There the horse is in its normal environment, with needed equipment easily accessible. Also,

the students do not only have access to the horse, but also to the surroundings, such as daylight, wind, sounds and smells, which are considered an important part of the intervention (Pálsdóttir et al., 2020). If horses are brought to the school, the “being away” component (Kaplan, 1995) will not be as strong as if you bring the students to a rural equine facility.

### 1.9.3. Farm animals in education

There are many species of farm animals around the world. Horses are sometimes included in the category farm animals, sometimes not. Here are some species mentioned which are commonly used in farm-based education. Most of these animals would not be suitable to transport to schools on a regular basis. It might be more suitable to meet them at the farm, where they feel safe and can show their normal behaviours.

- Poultry can be very useful in education. Hens live together in a flock, they make many different sounds, they have varied behaviours, and they lay eggs, which can be collected and eaten by the students. Some hens can also be cuddly. They are relatively small and cheap, they need not much space, and they are relatively easy to keep, which makes them suitable animals in education. They may even be kept at some schools. Hens are normally very safe to be around, although a few roosters might be aggressive. (IAHAIO, 2021b)
- Goats are social animals with interesting behaviours. They like to jump and climb. They might become very friendly and cuddly to humans. Some goats can be moody and even butt people. Goats are often highly motivated by food. Some goats may learn to do tricks. Goats are relatively cheap and usually easier to keep than cattle. (IAHAIO, 2021b)
- Sheep are very social animals who prefer to stay in their herd. Some sheep can be cuddly, while others are shy for humans. Their wool might be used for crafts in school work. Sheep are generally safe and kind animals, with the exception of adult rams, which might butt people. (IAHAIO, 2021b)
- Pigs are social animals with various behaviours and sounds. They are often highly motivated by food and some pigs can learn to do tricks. Their behaviour and appearance might create opportunities for conversations about various subjects. Pigs might potentially bite humans, although they normally just bite other pigs. Normal precautions are usually enough, like being kind to the pigs and avoid fingers close to their mouths. (IAHAIO, 2021b)
- Cattle are large and heavy. They may kick or butt if they get annoyed, or they might step on human feet by mistake. There is extra need for safety precautions and routines around cattle, especially those with horns. Cows

are social animals with a repertoire of behaviours, although they spend many hours ruminating or eating. Cows and calves can sometimes be very cuddly, and students may enjoy feeding milk to a calf. Students might want to try to milk a dairy cow, and the milk can be used in home and consumer studies. (IAHAIO, 2021b)

- New world camelids: Alpacas and llamas are social animals and may show interesting behaviours. Some can be cuddly to humans. They can spit if they get annoyed. They can kick to the sides, so safety precautions are needed. Alpaca walks are popular activities on some farms. (IAHAIO, 2021b)
- Old world camelids: One humped camel (dromedary or Arabian camel) and two humped (Bactrian) camel. Both can be used for riding, and they can be a complement to horses. Camels are social animals with a repertoire of behaviours. Intact males can be very dangerous and should not be handled by students. Females and castrates are normally calm and predictable. They enjoy lying down to be brushed and cuddled, which makes the interaction safe. Camels can be transported to events. They tend to be calmer and less reactive than horses. A two-humped camel is comfortable to ride, even without a saddle. (IAHAIO, 2021b; Larsson & Meiner, 2017)



*Picture 2. Cattle and sheep can be suitable animals for farm-based education, if they are well-handled and calm (Photo: Malin Larsson).*

## 1.10. Farm-based education

Farm-based education is the use of farms for educational purposes, usually for preschool and school children and adolescents, with experiential, place-based education at the farm (Farm-Based Education Network, n.d.; Haubehofer et al., 2013). The farm is considered an authentic learning environment and a part of the community. Farm-based learning means using “the farm in all its dimensions as a learning environment” with “the original encounter with agriculture directly on the spot” (Haubehofer et al., 2013, p. 2).

“Goals and objective in farm education are educational and carried out together with schools. Farm education is about integrating school subjects into actual processes of society and making them meaningful for the children. // Farm education is about action and learning to act as a responsible, conscious and aware consumer, now and in the future, in accordance with sustainable development.” (Haubehofer et al., 2013, p. 3)

On educational farms with farm animals and horses, students can meet other animal species than what is possible to bring to schools, and the students can stay in a permissive environment with large areas and opportunities for play and creativity. On the farm, the animals live in a safe and familiar environment, unlike animals brought to schools. Going out to a farm and meeting different animals can mean new experiences for school children. The varied and different environment involves moments of surprise that sharpen attention and create conditions for learning (Pearce, 2008).

There are educational farms in several countries, including USA, Canada and Great Britain (Farm-Based Education Network, n.d.). Green Chimneys in Brewster, NY, USA, was founded in 1947 and has a residential school for grade K (kindergarten) to grade 12, based on experiential learning in nature and farm environment, with about 300 animals of different species integrated in learning for students with special needs (Green Chimneys, n.d.).

In Norway, Inn på tunet is an association for farms all around the country which provide farm activities for different categories of people, including students who need an alternative school form in a small context with nature and animals (Inn på tunet, n.d.).

Educational farms are found in some places in Sweden, mainly 4H farms, which arrange farm visits and hands-on courses for children about farm animals, self-sufficiency and natural cycles (Riksförbundet Sveriges 4H, n.d.a). 4H stands for Head (knowledge), Heart (compassion), Hand (skills) and Health (for a healthier lifestyle) (Riksförbundet Sveriges 4H, n.d.c). For upper secondary school, some agricultural colleges are adapted to students with special needs. For students with special needs in grade P-9, there are not many options yet for farm-based education in Sweden.

The connection between the teaching in school and the learning that takes place during farm visits is not always coordinated (Lundström & Ljung, 2014). In order to get full effect of educational farming, the teaching at the farm needs to be coordinated with the school curriculum and syllabi, and the methods need to be developed and tested with school classes and smaller groups of students, for example at farming high schools where the pedagogical competence is available and the facilities are adapted for teaching.

Animals are an important part of the farm-based education, but the environment is also important. Kaplan (1995) described four main components of restorative environments as being away, fascination, extent and compatibility. Educational farms can differ a lot from each other, but they have in common that they are not school or home environment, so they fulfil the “being away” component. A farm is full of fascinating things for students who are not used to farms. The farm always has extent and various shapes, with buildings, trees and perhaps a visible horizon. The compatibility factor depends on the farm and the students’ preferences. Restorative values might be considered when planning educational farms.



*Picture 3. A small-scale old-fashioned Swedish educational farm with restorative values and safe environment without traffic (Photo: Malin Larsson).*

## 2. Methods

This master thesis is primarily descriptive and is based on both quantitative and qualitative methods, namely a survey and interviews.

### 2.1. Survey

The survey study was a collaboration between the research institute NORCE (Norwegian Research Centre AS) in Norway, the Swedish University of Agricultural Sciences (SLU), the University of Helsinki in Finland and the University of Aarhus in Denmark. The questionnaire (Appendix 1) was developed by a group of five Nordic researchers (Bente Berget, NMBU Norway; Lena Lidfors and Anna Maria Pálsdóttir, SLU, Sweden; Karen Thodberg, Aarhus University, Denmark; Ingela Wikman, University of Helsinki, Finland). Professor Lena Lidfors was responsible for the Swedish part of the survey. The author was part of the process to develop the questions, prepared the survey for use in Swedish schools, distributed it to schools and collected and analysed the results.

Netigate (netigate.net) was used for the construction and distribution of the Swedish version of the questionnaire, as well as for the collection of data, which was then automatically transferred from Netigate to an Excel file. For data analysis, Excel (Microsoft, [www.microsoft.com](http://www.microsoft.com)) and Minitab (binary logistic regression, Minitab® 16.2.4, Minitab Inc.) were used.

The Swedish version of the questionnaire was sent out to a randomized selection of 300 municipal upper secondary schools (grade 7-9) in Sweden. A selection of 100+200 schools, out of 1162 schools in total, was made using a randomizing function in Excel, with a proportional selection of schools from each county (since a random selection for the whole country turned out not to give a representative selection for counties with few schools). A few schools were excluded from the selection due to technical issues (problems with e-mail address, etc.). The questionnaire was sent by e-mail to a first selection of 100 schools in October 2020, and to the second selection of 200 schools in November 2020, with one reminder e-mail after a couple of weeks. The second selection was made after receiving very few answers from the first selection.



Due to GDPR, we did not have contact information to individual teachers. We asked each school administration to forward the link to the questionnaire to five permanently employed teachers who they thought might want to respond to the questionnaire.

## 2.2. Interviews

Two interview protocols (Appendix 2) were prepared in advance, one protocol for teachers and one for staff at educational farms. The teacher protocol had 26 main questions, and the farm-staff protocol had 21 main questions. Some questions also had sub-questions. The questions were specifically developed for this study, with the research questions as a base, and inspired by previous, unpublished work by the author.

The interview method was semi-structured (see Kvale & Brinkmann 2014, p. 165). The prepared questions were open-ended, with both thematic and dynamic dimensions (see Kvale & Brinkmann 2014, pp. 172-173). The questions were complemented with follow-up questions during the interview. In a semi-structured interview, prepared questions are used to start the interview, but the interviewer allows the questions to develop into a live conversation with the help of new follow-up questions during the interview (Longhurst, 2003). Semi-structured interview is primarily a qualitative method, exploring values and words rather than numbers and raw data (Hedin, 1996).

The questions were sent to the interviewees in advance. Interviews were performed by telephone and recorded in the application ACR (NLL APPS). Interviews were manually transcribed from sound to text, word by word as far as possible, however excluding the most obvious bloopers, some interruptive moments and sounds that were considered irrelevant in the context.

The interviews were made with three persons, all women, in June 2021. The selection of teachers was made by searching in Facebook groups and on web-pages for persons working with farm-based education, until a suitable number of persons agreed on being interviewed. The selection of farm staff was made through recommendations via 4H.

The first interviewee (I1) is a certified teacher and works with a group of children with special needs (most with NDC such as ADHD and/or ASD) in grade 7-9 in a Swedish school. She also has her own small farm with horses and some other animals, where she accepts students from her class every week.

The second interviewee is a certified teacher for grade 0-3 and works as an outdoor teacher at a small private school, with students from preschool class to grade 9. She normally works outdoors with the students, at the school's forest basecamp, and sometimes going to a small local community farm, run by a small organisation and providing free farm visits for the locals as well as for school and preschool groups.

There are several different domestic animals at the farm, as well as a vegetable garden, a café and a small shop.

The third interviewee works as an operations manager for two 4H farms, with her main work at the largest of the farms. She has many years' working experience from 4H farms. She works with different tasks at the farm, such as guiding groups of visitors of different ages, among them preschool and school children. She is also responsible for courses and summer camps for children.

For the analysis of the transcribed interviews, a general thematic approach was used (see Braun & Clarke, 2006). The transcript was read thoroughly and colour-coded. During the process of reading and colour-coding the text, the idea appeared to connect the themes strictly to the research questions, in order to use the interviews as much as possible to answer the research questions.

A deductive (theoretical) analysis was made of the interviews, with the research questions as themes and theoretical framework.

After the text was colour-coded according to the research questions, the coded text was transferred into an Excel file, with each text string under its theme. Some text was transferred to a different theme and colour during this process.

The themes were used as headlines in the report. Each theme was analysed separately from the others.

## 2.3. Ethics

Kvale & Brinkmann (2014) identify three ethical guidelines that should be the starting point in research.

**Informed consent:** The respondents are informed about the purpose and structure of the survey and about the participants' voluntary participation.

**Confidentiality:** Published information is de-identified so that no information is included that could lead to a participating person being recognised.

**Consequences:** Participants should have the right to find out about, and the researcher should take into account, possible consequences of the study for the participants, both negative and positive.

### 2.3.1. Survey

**Informed consent:** Respondents were informed about the background and purpose with the survey.

**Confidentiality:** No personal data were traceable in the survey. The respondents were informed that all responses were processed anonymously and in accordance with GDPR. The respondents were also informed that names and other personal information should not be mentioned in the boxes for free text in the survey.

Consequences: Since no personal data were published, there are probably no positive or negative consequences for the respondents.

### 2.3.2. Interviews

Informed consent: The interviewees were well informed about the background and purpose of the interviews and about the possibility to withdraw, and they had given their informed consent, with no hidden agenda from the interviewer (see Kvale & Brinkmann 2014, pp. 105-108).

Confidentiality: Names or other personal data were not recorded anywhere in the audio recording, transcript or written report. In the transcripts, letters were used to indicate the names of the interviewees, who did not reveal any personal data about customers or participants during the interviews. Thus, the confidentiality of the interviewees was secured.

Consequences: Since no personal data were published, there are probably no direct consequences for the interviewees - neither positive, nor negative. There might be positive long-term consequences if the work contributes to more knowledge about and acceptance of farm-based education.

## 3. Results of survey

### 3.1. Background of respondents and schools

A majority of the respondents were females (67 %, 37 out of 55). Only four out of 55 respondents were younger than 36 years. Fourteen respondents (15 %) grew up on a farm. Of the respondents 62 % had a cat and 49 % had a dog during childhood, while 20 % grew up without animals (n=55). As a contrast, only 18 % had a dog and 31 % had a cat now, and 55 % had no animals. Of the respondents, 58 % reported that they were outdoors several times a week during childhood, and 47 % now. Only one respondent out of 55 had never visited a farm.

A majority of the respondents had long teaching experience; 46 % had worked as a teacher for 11-20 years, and 35 % had worked for more than 20 years (n=54). The most common teaching subjects among the respondents were social study subjects (37 %) and mathematics (31 %, n=54).

Many of the respondents (37 %, 20 out of 54) work at schools located in small towns with fewer than 20.000 inhabitants.

### 3.2. Work with farm-based education and Outdoor/Nature-Assisted Education in schools

Most respondents and their schools (79 %) had never worked with farm-based education, while 38 % had never worked with Outdoor or Nature Assisted Education (n=52). Two respondents or their schools work with farm-based education every day, one once a month and two sporadically (Figure 1). Since the questionnaire was anonymous, we do not know if the respondents work at the same or different schools.

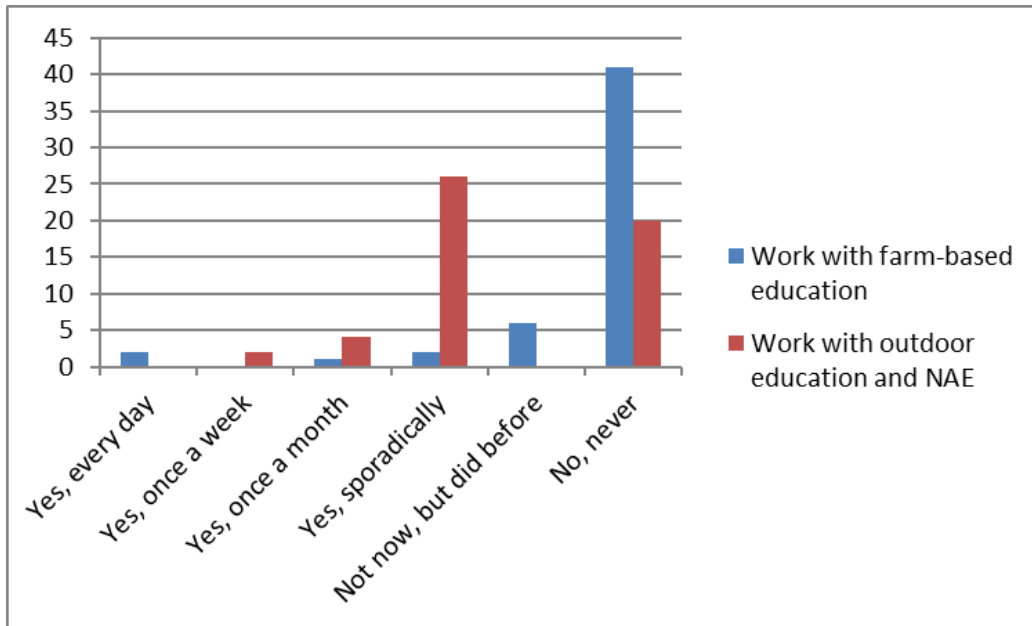


Figure 1. Number of answers on the survey question: "Do you or other teachers at the school work with farm-based education with the students?" and "Do you or other teachers at the school work with outdoor education and nature-assisted education (NAE) with the students?" (N=52)

To compare schools regarding work with farm-based education and location of schools, a combination of two questions was used (figure 2).

For teachers working in schools in rural areas, 3 out of 8 respondents or their colleagues had worked or did work with farm-based education, while for smaller cities (20 000-100 000 inhabitants), 3 out of 9 respondents or their colleagues currently worked with farm-based education. For the larger cities, only one respondent currently worked and two had worked with farm-based education, and for the small towns, two had worked with farm-based education. There was a tendency for rural area schools to use farm-based education more than small town schools, but there were no significant differences between categories (table 1).

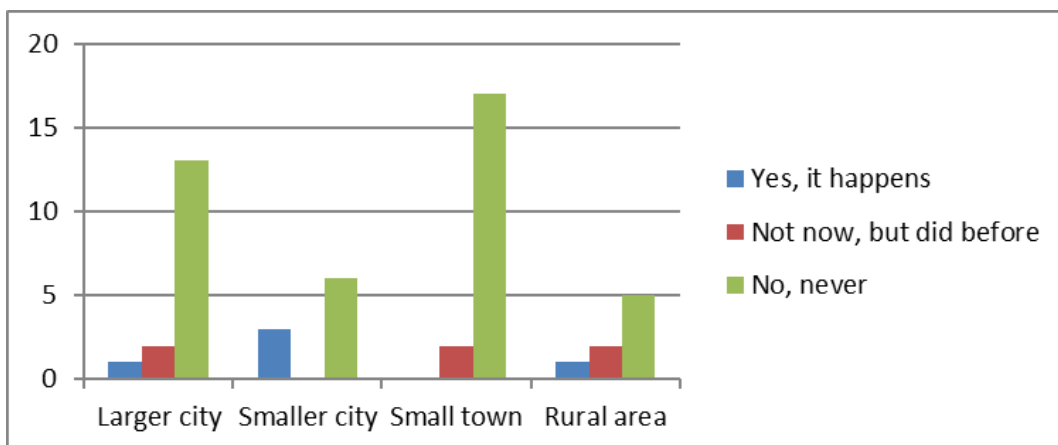


Figure 2. Number of answers from each geographical category (larger city, smaller city, small town, rural area) to the survey question "Do you or other teachers at the school work with farm-based education with the students?" (N=52).

Table 1. Frequency data were analysed with binary logistic regression, using the “logit link” function (Minitab® 16.2.4, Minitab Inc.). The model included effect of location as a fixed factor with “Small town” as reference group.

Predictor	Coef	SE Coef	Z	P
Constant	-2.14007	0.747526	-2.86	0.004
Location				
Larger city	0.673729	0.984404	0.68	0.494
Rural area	1.62924	1.04505	1.56	0.119
Smaller city	1.44692	1.02898	1.41	0.16

### 3.3. Which school subjects could be included in farm-based education?

Two blocks of questions in the survey included questions about farm-based education in different school subjects. They partly answer the research question “For which subjects and students can farm-based education be suitable?”. In these questions, biology was handled as a separate subject, while the other science subjects were grouped together.

There were two slightly different questions on the theme:

- *In which school subjects can farm-based education fit into the syllabus? (1 or more crosses)* This question was for all respondents, no matter their opinion about farm-based education (n=47).
- *Which subjects in primary school do you think could be included in farm-based education? (1 or more crosses)* This question was directed to the respondents who answered Yes to the question *Do you think there are students who can benefit from farm-based education?* (n=38).

In the first question, Biology scored highest with 41 of the respondents (n=47) considering farm-based education to fit into the syllabus for the subject (figure 3). Home and consumer studies as well as Social study subjects also scored high, with 35 and 34, respectively (n=47). Only two of the 47 respondents thought that farm-based education did not fit into the syllabus of any subjects.

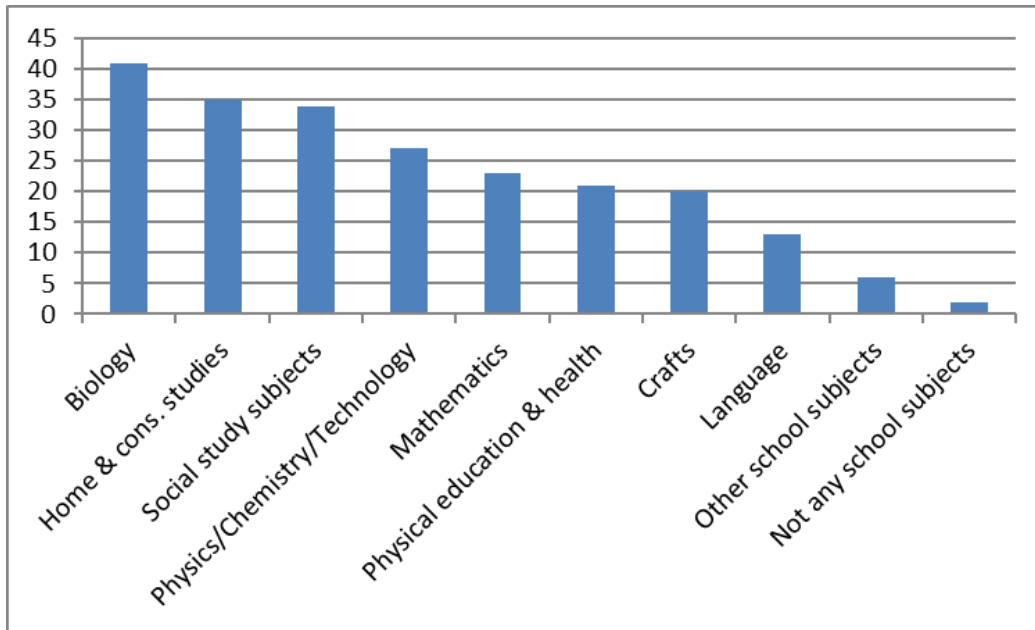


Figure 3. Number of answers on the survey question “In which school subjects can farm-based education fit into the syllabus?” Responding teachers could fill in one or more crosses (N=47).

The answers to the second question showed a similar pattern, but with some slight differences, as can be seen in figure 4. Most of the 38 respondents considered biology (34 answers) to be a suitable subject for farm-based education, while the other science subjects (19 answers) were considered less suitable. Home and consumer studies (29 answers) and social study subjects (28 answers) scored high (n=38). Physical education and health got 19 answers, mathematics 16 answers and language (Swedish, English and Modern languages) only 7 answers, n=38).

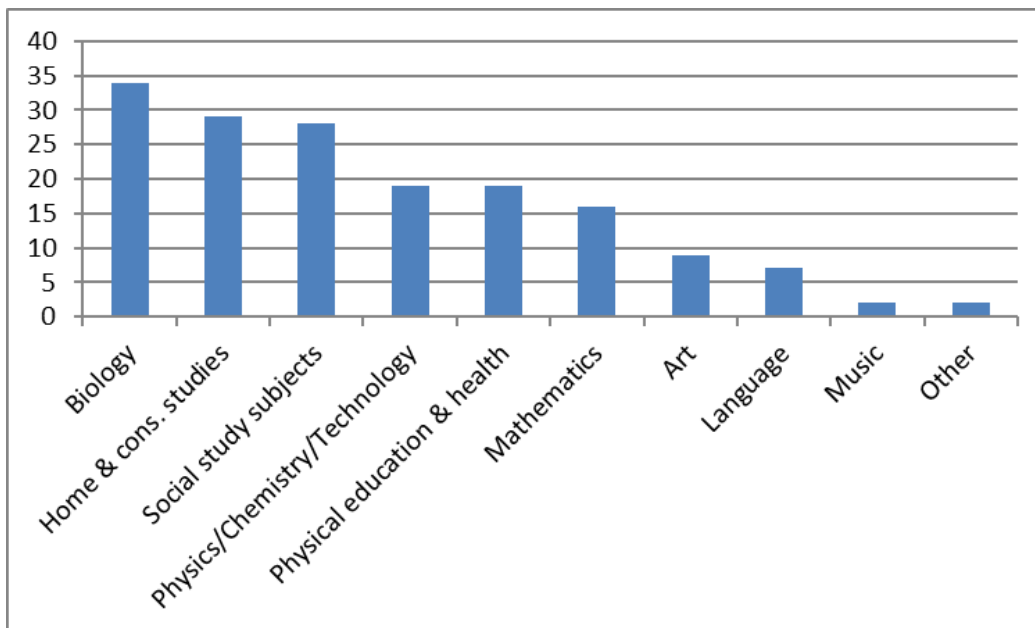


Figure 4. Number of answers on the survey question: “Which subjects in primary school do you think could be included in farm-based education?” Responding teachers could fill in one or more crosses (N=38).

### 3.4. How students can benefit from farm-based education

The next blocks in the survey focussed on aspects of farm-based education. They partly answer the research question “How do nature, animals and the farm context affect learning and well-being for different categories of students in farm-based education?”

The respondents were asked the following question: *Do you think there are students who can benefit from farm-based education?* There were 43 out of 47 who answered Yes. The other four finished the survey without further questions about farm-based education.

In the question block about effects of farm-based education, the first question was: *Which student groups do you think can benefit from farm-based education?* This was a rank order question, where the respondents were supposed to rank every alternative from 1-8, with 1 as the highest rank.

In figure 5, only the highest ranked answers (1) are shown for each alternative. The ranked results show that the respondents tended to choose the alternative *All students* to benefit from farm-based education, with 8 out of 31 respondents selecting this alternative as their number 1. *Other groups* scored 5, *Disabilities* 4 and *School-tired* 3.

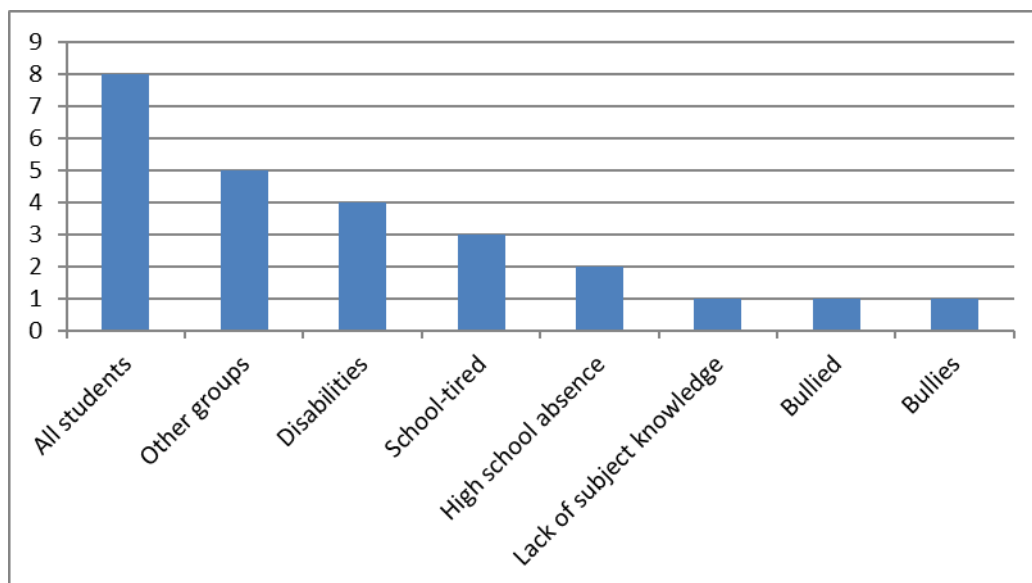


Figure 5. Number of respondents who ranked the respective group highest (1) in the survey question “Which student groups do you think can benefit from farm-based education?” The total answers were ranked 1-8 (N=31).



The next survey question in the block was: *How do you think individual students can benefit from farm-based education?* This was also a rank order question, where the respondents were supposed to rank every alternative from 1-7, with 1 as the highest rank. The following benefits for students were included in the rank: *The students learn more; They get more motivation to come to school; They get more physical activity; They get more security in connection with other people; They develop better communication skills; They are better able to cope with tasks; They gain increased self-esteem.*

In figure 6, only the highest ranked answers (1) were selected for every alternative. The ranked results show no clear preference for a specific benefit. The highest score was 5 (5 respondents out of 29 choosing this as their number 1), for the three alternatives *Learn more, Increased school motivation and Increased self-esteem*, respectively. Only two respondents ranked *More physical activity* as number 1.

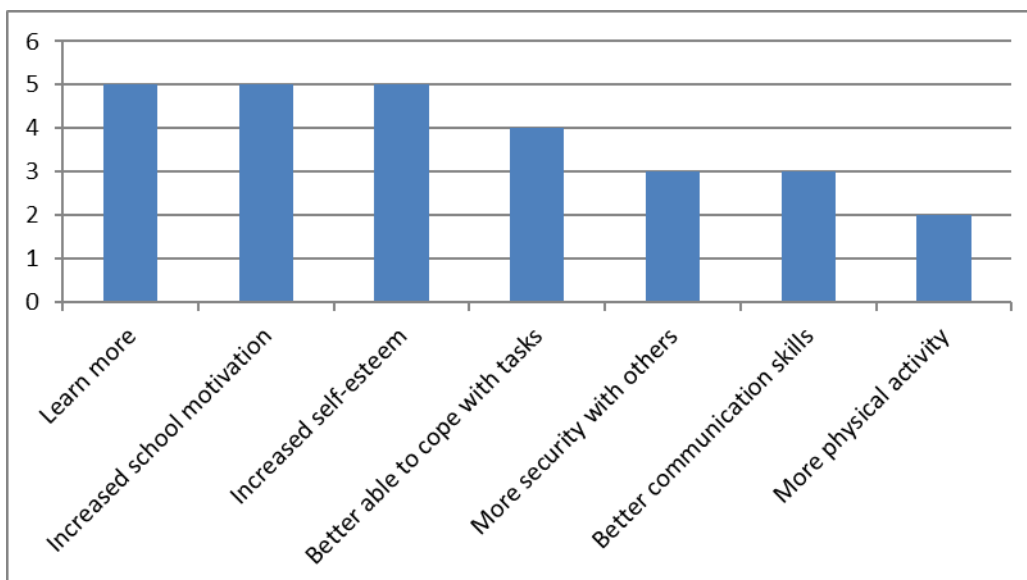


Figure 6. Number of respondents who ranked the respective group highest (1) in the survey question “How do you think individual students can benefit from farm-based education?” The total answers were ranked 1-7 (N=29).

### 3.5. Further education in farm-based education for teachers

In the survey, there were questions about further education in farm-based education, which partly answer the research question “How should courses about farm-based education for teachers and teacher students be designed?”

Of 38 responding teachers, 27 thought that further education would be needed to work with farm-based education. Just 14 of the respondents would consider getting such education if it was offered.

On the question *What would be important to you in a further education within farm-based education?*, 18 out of 22 respondents thought it was important to be able to use the education in their current work place. Half of the responding teachers wanted to work less with ordinary tasks to be able to take such a course (n=22). Only one respondent found raised salary important to take such a course.

The next question (figure 7) was *How do you wish further education to be arranged?* Here 68 % (15 out of 22 respondents) preferred a mixture of online teaching and physical meetings. Also, 59 % (13 out of 22 respondents) found it important to receive a course certificate. Half of the respondents would prefer to decrease their ordinary working time to take a course, while the other half did not find it necessary.

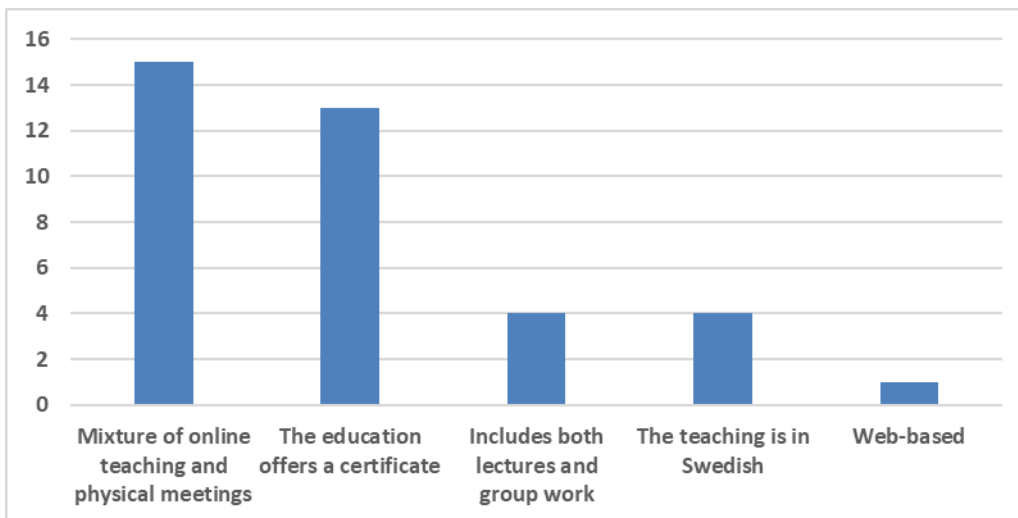


Figure 7. Number of answers on the survey question “How do you wish further education to be arranged?” (N=38).

### 3.6. Implementation of farm-based education

One survey question about implementation of farm-based education (figure 8) was *Who should teach on training farms?*, which partly answers the research question “How can farm-based education be organised?”. The respondents preferred either the farmer together with teachers from the school (17 answers), or the farmer together with teachers employed at the farm (15 answers), to teach the students at the farm. Only four thought that the farmer alone should teach the students. Two chose “Other”, and added “Have no opinion” and “Depends on competence and personality”, respectively.

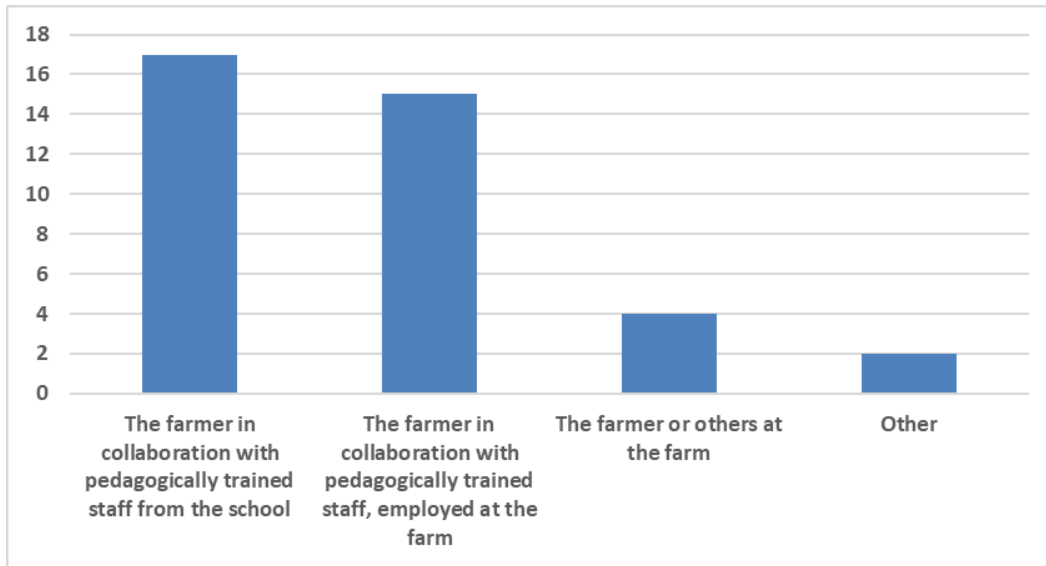


Figure 8. Number of answers on the survey question “Who should teach on educational farms?” (N=38).

We also wanted to know more about teachers’ opinions about possible weaknesses and threats with farm-based education. The question *What can speak against implementing farm-based education? (1 or more crosses)* partly answers the research question “What strengths, weaknesses, opportunities and threats exist for the implementation of farm-based education?”. See table 2 for the full answers. The most common perceived obstacle for farm-based education, selected by 30 of the 38 respondents, was problems with transportation between the school and the farm. The second most common perceived obstacle was lack of time, and allergy problems were on third place. Also, lack of support and further education was considered as obstacles.

Table 2. Number of responding teachers answering the survey question: *What can speak against implementing farm-based education? (1 or more crosses)* (N=38).

What can speak against implementing farm-based education?	Answers
Logistics problems	30
Takes too much time from other teaching	22
Allergy problems	21
Lack of support from school management, such as further education	14
Problems with fear of animals	13
Lack of research and practical experience on effects of farm-based education	10
Difficulties if the weather is bad (e.g. rain, cold, heat, wind)	9
Preferable to use the money for other improvements to primary schools	8
Cultural barriers	4
Other (optional): Lack of competence	1
Nothing speaks against farm-based education	0

On the question *How important is it to you that there is documentation on the effect of farm-based education – that is, if it actually helps the students?* On this question 50 % (19 out of 38 respondents) answered *Very important* and 42 % (16 answers) *Fairly important*. Thus 92 % of the respondents found it important with documented effects of farm-based education.



*Picture 4. Goats and pigs at a small-scale educational farm. Children are allowed to enter the enclosure under supervision. They are not allowed to enter the shelter, where the animals should be able to withdraw if they want (Photo: Malin Larsson).*

## 4. Results of interviews

The results of the three interviews are presented below, connected to each research question. Citations are from the translation of the interview transcripts for I1, I2 or I3 respectively, if nothing else is indicated.

There were several common factors which occurred in at least two of, or in all three interviews. They are briefly summarised after the headline for each research question.

### 4.1. How do teachers perceive farm-based education compared to other outdoor experiential learning and classroom teaching?

Teachers who are familiar with farm-based or outdoor education tend to be positive to farm-based education. Teachers who have no such experience might be more reluctant. To be attractive to teachers, farm visits should be well organised and easy to fit into the schedule.

#### 4.1.1. Interviewee 1 (I1)

I1 highlights the role of animals in farm-based education compared to other forms of education. The animals do an important part of the job.

... it is fantastic to be able to work with the students together with the animals. It is also a way of creating a relationship with the students in a different way than what one might achieve in the school environment. // ...it is the animals that prevail, and it is they who make the difference the most. I don't really need to say or do much, but they take care of it themselves.

I1 agrees well with her teacher colleagues concerning farm-based education: "They are completely on the track, and we have made this decision together, so they also see many benefits." (I1)

#### 4.1.2. Interviewee 2 (I2)

I2 considers farm-based education as an integrated and important part of outdoor education. Most school subjects can fit into farm-based and outdoor education. It is

natural to work interdisciplinary and adapt flexibly to the circumstances, rather than trying to fit a single subject into a given time frame. Farm-based education connects learning to the environment, to the seasons and to different senses in a real-life context.

Farm-based education gives a more complete experience than classroom learning. The particular farm in itself becomes a framework for memories, learning and relating to other experiences. The students pick up facts and connect them to what they see, hear and feel, which promotes learning more than just reading about facts. The particular farm also becomes an important place in the memory, and a starting point to compare with other places.

When comparing the classroom to outdoor education for students, usually boys, who have difficulty sitting still, I2 considers outdoor education more suitable, whether on a farm or in the forest. The freedom to move is beneficial. Students can walk around during outdoor lectures without disturbing others. Generally, boys have lower grades than girls, but in her school, the difference is small. It might be affected by the school's outdoor focus, although they have not investigated if there is such connection.

For the interviewee, hens are the most important animals, for various reasons. Hens can serve as representatives for all animals and for life in general. They can become very tame and enjoy being cuddled with. The students learn what the hens need, and what happens when they die – a full life cycle. Students who do not have animals at home can learn about animals at school.

Hens are very nice animals! They talk to you, they tell when they have laid their eggs, and it is clear if they are happy or morose, or how they are doing. It is so special for children to be able to follow this, when they have laid eggs and incubate and hatch chickens. It is fantastic.

The interviewee repeatedly stresses the central role of animals in farm-based education. A farm without animals would not be the same thing. The animals are difficult to compete with in catching the interest and curiosity of children. Plants are alive too, but less exciting than animals, which are difficult to compete with. The animals can help enhancing attention to other things at the farm. When visiting a farm for the first time, it might be wise to start with looking at the animals to satisfy the students' curiosity, so that the students then will be able to focus on other things. During breaks, the students often want to stroll around and socialize with the animals, which I2 states that they should be allowed to do.

At I2:s school, the other teachers are also positive to outdoor and farm-based learning. That is not the case at many other schools, where teachers who are inexperienced with outdoor teaching might consider it difficult, wet, cold and messy. Some teachers might think that outdoor education is a waste of time, since they don't know how to organise it to make it work. However, this can be changed

with experience, as I2 can see on her school where the attitude towards outdoor teaching is very positive.

In a larger perspective, farm-based education can also facilitate the understanding of food production and our role in the ecosystems.

#### 4.1.3. Interviewee 3 (I3)

I3 has worked at the 4H farm for many years. She has chosen to focus on study visits rather than courses. During study visits she can catch the children's attention for an hour, and they think it's very exciting. In addition, the teachers listen and learn from the farm visits, for example, the ecological circle visits.

Farm-based education can provide learning opportunities that the classroom does not provide. Many children who have difficulty sitting still find it easier to be outdoors. In farm math, students can weigh and calculate how much feed the animals should have. It is applied and hands-on.

## 4.2. For which subjects and students can farm-based education be suitable?

Farm-based education should have some connection to the school curriculum and syllabi. Otherwise, it will be difficult to motivate use of farm-based education to principals and municipalities.

Farm-based education can fit into the syllabi of many school subjects, including languages, mathematics, biology, chemistry, physics, home and consumer studies, crafts and sports and health. Parts of the syllabi in civics and history are also possible to connect to farm-based education. It might be advantageous for learning to work interdisciplinary, rather than artificially dividing the schedule for the farm visit into different subjects.

Farm-based education is suitable for all students, for whole classes as well as for smaller groups of students with special needs. If students have allergy against substances at the farm, adaptations might be needed. Pollen allergy might be a worse problem than allergy to animals.

#### 4.2.1. Interviewee 1 (I1)

According to I1, many school subjects can be woven into farm activities. Languages are easy to integrate into all subjects and activities. You can read to an animal or take a walk while talking Swedish or English. Farm-based education can be integrated with most subjects - some more, others less. There are plenty of things at a farm connected to technology, maths and biology. Home and consumer studies, sports and health, physics and chemistry are easy to integrate. Social study subjects

can be adapted to farm-based education to some degree, e.g. sustainable development, rural history, and comparing farming in different countries. Farm-based education creates possibilities to integrate subjects that are usually artificially separated from each other in school.

In fact, I think the best thing would be to work interdisciplinary. Because it also provides another context for the students than when we separate the subjects and work individually with each subject. I think it benefits everyone, in fact, to get an overview in a different way. But it also requires co-planning, and it requires a little more of us. But I still think it would benefit the students to have it more like that.

I1 considers farm-based education and being with animals suitable for all students, not only for students with need for special support. A possible exception might be students with severe allergies.

Some students might need to be solely at a farm, and not in school, “at least for a fairly long period, to find oneself again, and dare to find their way back” (I1).

I1 means that the so-called “home-sitters” (a term commonly used for students with high absenteeism) and students with NDC are often the same students, and that many of them would benefit from farm-based education. Social conflicts in school classes might be targeted with farm-based interventions for the whole class, although you would need to divide the students into smaller groups at the farm.

#### 4.2.2. Interviewee 2 (I2)

The interviewee considers farm-based education suitable for the syllabi of several school subjects, like civics, science, math and sports.

If she would need to choose which students should visit a farm, I2 would focus on whole school classes, with one visit for all students in grade three as a minimum. She also thinks that certain groups with special needs might benefit more than others from farm-based education.

#### 4.2.3. Interviewee 3 (I3)

The study visits can be adapted from three years and up, even for adults. Most of those who come are from preschool, 3-5 years old. From the schools, most visits are from preschool class to grade 2. From private schools, there are also a lot of visits in grade 4-5. There are also visits from special schools and from small groups of students with special needs. Most of the school classes come from urban schools. Many children have parents born in other countries.



### 4.3. How can farm-based education be organised?

Preparations and safety routines are crucial. Farm visits need to be planned and structured. Short travel time from schools to farms is an advantage, since time is a limited resource for the schools and travelling can be considered a waste of time because it lacks connection to the curriculum and syllabi. Intervals between visits depend on factors such as economy, schedule, and availability of farms to visit.

When a farm is visited by whole classes, the classes are usually divided into groups of 12-15 students, sometimes 18 or even 25. A group of 12 students is often an optimal group size. For smaller groups of students with special needs, the group size is individually adapted and can sometimes be one student with one adult. Accompanying school staff could be 2-4 for a whole class, which means 1-2 teachers and assistants for a group of 12-15 students. For students with special needs, the ratio can be one adult to one student.

The results of the interviews are summarised below and in table 3.

#### 4.3.1. Interviewee 1 (I1)

The farm visits are 1.5 hours/occasion. The school's welfare officer drives the students to the farm and takes active part in the farm activities. There are two students each time, once a week. Each student comes to the farm every third week. Participation is voluntary for the students.

The school uses a minivan for transportation. The farm is situated about 15 km from the school. The travel time is about one hour per occasion. The welfare officer drives the minivan and brings her dog, so the students meet her and the dog first thing in the morning. At the farm, there are sheep, a horse and a pony, rabbits, dogs and cats.

During the visits, the teacher/farmer and the welfare officer take care of one student each. Usually it does not work to let two students work together.

Preparations and safety routines are very important. At each visit, the students receive short instructions about routines and rules at the farm. After arrival to the farm, the students are asked about their current emotional state. The stable has been cleaned from potentially harmful objects. The students need to wear protective equipment, such as riding helmets and gloves, depending on the current tasks. The horses are tied up before handling, to prevent accidents. The students are instructed about appropriate behaviour around the horses.

The visits always have the same structure. The school welfare officer drives the students to the farm in the morning. They change to working clothes and shoes. Then the students fill in a self-assessment form with smileys from 1-10, to grade their feelings. The employees take care of one student each. After the first session, they switch students and do the same activity again with the other student. After the

activities, they have a check-out with the self-assessment form and go back to school for lunch.

The students know what to expect during the visits. There are different activities, but always the same structure. The group size is currently only one student per group. The focus is on socialising with the animals, rather than with peers. In the plan, there is a maximum group size of three students, which might work if they know each other well and agree with each other.

Farm-based education can be as a part of the ordinary work for school staff. It is technically possible to employ a teacher to work full-time with farm-based education.

Farm visits every or every second week would be possible with a larger group of students each time. But for I1:s students it is more beneficial with smaller groups and fewer occasions.

It is possible with farm-based education without horses, although many farms work with horses. Horses are important, but not indispensable in farm-based education. You can't ride on a rabbit or a sheep. If being carried is important, horses are needed, but not otherwise.

#### 4.3.2. Interviewee 2 (I2)

The school works a lot with outdoor pedagogy and experiential learning. Farm-based education is a part of the whole school concept of being outdoors a lot and learning by doing. One teacher (I2) is employed full-time with outdoor pedagogy, and she organises field trips and farm visits. She has prepared boxes with all necessary equipment for outdoor learning, such as first aid, pencils and knives. Preparations are crucial to succeed with outdoor teaching. If everything is prepared, it is easy for the teachers to take the class outdoors or go to the farm.

The students at the school learn to bike latest in grade 2. If a student doesn't have a bike, or if the bike is broken or forgotten, there are extra bikes at the school to borrow. The community farm is quite close to the school, not far by bike. If the school classes need to travel longer distances, for example to visit a commercial farm, the school can rent a bus. There are two classes in each grade, and they usually go out both classes, about 35 students each time.

The school has its own henhouse with a small flock of laying hens. Students and staff at the after-school care ("fritids") take care of the hens in weekdays, while some students are hired to take care of the hens during school breaks.

At the community farm, there are several domestic animal species: Pigs, goats, hens, rabbits, horses, cats, and often staff's dogs, sometimes also cows.

In grade 1-6, all classes have a half day each week for outdoor activities. They use to visit the community farm 1-3 times a year with each class, from preschool class to grade 4.

The farm visits should be booked in advance, for the farm staff to prepare for the visit. But there are not many schools visiting the farm, so usually there is no queue. Visits can be quite spontaneous.

A farm visit starts with biking from the school. After arriving to the farm, they go through the rules at the farm, where students are allowed to be and how to behave. There are normally four adults from the school during the farm visits, three teachers and one additional employee.

For other schools, the farm staff may take care of the guiding, but from this school, the teachers already know the farm and the animals, so the teachers take care of the teaching.

The 30-35 students are divided into suitable groups, either two or three groups, with up to 18 or up to 12 in each group, and the groups start with different activities. Then they have a snack, and they can stroll around by themselves and look at the animals. Then the groups switch activities. I2 considers 12 students as the most suitable group size, but it depends on the activities.

At this school, they can basically visit the educational farm whenever they like, when it suits into the schedule, up to three times a year and class. But farms open to visitors are a limited resource. If all schools in Sweden would implement farm-based education, it would need to be organised in another way, according to I2. Just one visit during the whole school time would be too little, but one visit per year from preschool class to grade six would be appropriate, preferably during different seasons, to catch seasonal changes. If there is a high demand from schools, just two visits during grade 1-6 would be valuable too.

In I2:s opinion, community farms and farm visits for schools should be financed by the municipalities, for example with farm staff employed by the municipality. The schools should not need to cover the costs from their own budgets.

### 4.3.3. Interviewee 3 (I3)

The 4H farm where I3 works is situated close to a city with a lot of schools and preschools. The farm has more than 100.000 visitors every year. With so many visitors, there is a need for strict routines, clear structure and well organised work.

The animals at the farm are horses, goats, sheep, pigs, rabbits, cats, hens and ducks. There is not space enough in the stable to keep cows. There is no farmland. They grow a few vegetables in the garden for educational purposes.

During school semesters, the farm often has three visits per day in April-June, mainly from preschools and schools, normally for one hour each. Some schools come again and again. There are different visits to book, e.g. animal guiding with patting and socializing, ecological circle visits (“kretsloppsbesök”), pony riding or horse and carriage. All programmes are very structured but can be adapted to specific needs. Usually there are two full school classes for each visit, divided into groups of 12-15 children. If the schedule is fully booked, it might be possible to

accept groups of 25 children, but then they need to be very well behaved. It also means a bit less time for each child to pat, ride or go by horse carriage. The welfare of the animals is crucial since the animals are the core of the visits.

Farmyard School is a concept where small groups of about 4-5 students can book reoccurring visits during the semester. The visits are individually adapted and are often booked by special schools. The students get to know the farm and the animals and participate in the farm work to some degree. They can choose which animals they want to interact with. Special schools can afford farm school, since there are more resources per student than in ordinary schools. Students with special needs in the ordinary school also visit the farm sometimes, usually in small groups with individually adapted programmes.

The booking system for the farm visits is digital, via a website where the schools specify a time, a programme, the number of children and if there are special needs, allergies etc. After booking, they get a confirmation e-mail. Because there are very many bookings, a digital booking system is needed. Usually, bookings by phone are not accepted.

During the farm visits, there are usually two teachers accompanying each school class. If there are students who need an extra resource person, there can be additional staff from school. The role of the school staff is to take care of the children and keep order. The 4H farm staff takes care of the guiding and education.

So first when they come to the farm, we introduce ourselves and tell what the day will contain. Then all children can wash their hands and spray their hands. // And then we tell that now we are guests at the animals' home, and then we have to be calm and nice, because otherwise the animals don't like that we visit.

In the autumn there is normally less farm guiding and more time for ecological cycle visits, which are woven into the curriculum, within Agenda 2030. The activity, with 10 children in each group, includes baking and being indoors, which suits well during the cold season.

Table 3. Short summary of results for the research question “How can farm-based education be organised?”.

	<u>Interviewee 1</u>	<u>Interviewee 2</u>	<u>Interviewee 3</u>
<b>Farm location</b>	15 km from the school	3.5 km from the school	Walking distance from municipal transport and from some schools
<b>Transportation from schools</b>	Minivan owned by the school	Bikes, sometimes car	Municipal transport
<b>Booking of visits</b>	Not needed. Farm owned by a teacher.	Yes, a few days in advance	Yes, via website, up to 3 months in advance
<b>Duration of visits</b>	1.5 hours/occasion	About 2 hours/occasion	1 hour
<b>Frequency of visits</b>	Every third week, project based	1-3 times/year	Depends on each school.
<b>Grades of visiting students</b>	Grade 7-9	Grade 1-4 mainly	Grade 0-5 mainly, but open for everyone
<b>Categories of students (whole classes, small groups)</b>	Small groups with special needs	Whole classes	Whole classes, sometimes small groups with special needs
<b>Number of students for each visit</b>	2 students	30-35 students (two classes)	Around 50 students (two classes)
<b>Number of school staff for each visit</b>	2	4 (3 teachers and one resource person)	4 teachers (plus extra staff if needed)
<b>Quotient students/teachers</b>	1	7.5-9	12.5
<b>Student group sizes during activities</b>	1 (sometimes 2)	12 or 18	12-15, sometimes 25
<b>Number of farm staff during visits</b>	1 (same as school staff, farm owner)	1 (optional)	1 for each group
<b>Farm animal species</b>	Sheep, horses, rabbits, dogs, cats	Pigs, goats, hens, rabbits, horses, cats, staff's dogs, sometimes cows	Horses, goats, sheep, pigs, rabbits, cats, hens, ducks
<b>Plants, vegetables</b>	No gardening activities yet	Some gardening, but not so popular among students	There is a garden, not much used in farm guiding
<b>Optimal frequency of visits according to interviewees</b>	Every week-every third week for students with special needs	Preferably at least one annual visit in grade P-6. Minimum two visits in grade 1-6.	-

## 4.4. How do nature, animals and the farm context affect learning and well-being for different categories of students in farm-based education?

The farm environment and the animals increase attention, which creates opportunities for learning. The contact with animals evokes strong emotions in the students, which makes it easier to learn and remember. It is easy to catch the students' attention with the help of animals. Most children like to watch, touch and pat various animals. Just visiting a farm without animals would not be the same thing. It is possible to do farm activities without animals, but such activities are less attractive to the students.

### 4.4.1. Interviewee 1 (I1)

The farm environment and the animals create suitable conditions for learning.

...we also see that they find it easier to concentrate, they increase their motivation when they are here, they feel a sense of security where they can be themselves, there is no need to put on a facade, but in front of the animals, everyone is equal in a way. They get movement and activity. There are so many pieces going into what we do here at the farm, which gives positive rings on the water, even in school. So we see clear improvement. It's very, very fun.

The syllabi are important, but a child needs the right conditions to be able to learn. They can build relationship with the activities and link them to the syllabi.

Children who may be loud and noisy and acting out at school calm down as soon as they sit down and start petting an animal. It's hard to explain to someone who has not seen or experienced it, but it's really cool!

The animals interact with the students and can even facilitate social interaction between students. The students first need to practise interactions with the animals and the staff, before they are ready to interact with other students, and also then the animals can act as mediators.

I1 describes the participants as having a very limited social network, unhealthy eating and sleeping patterns, no leisure activities except gaming, and that they are all overweight. But when they come out to the farm, they get inspired to move, jump, play with the dogs and run around, and become exhausted in a positive way.

I1 has observed that the relation to the horse and the riding are especially important for some students. They get self-confident when they manage to mount the big horse, and being carried affects them positively. They also enjoy being able to control the horse, since they have very limited possibilities to control their lives otherwise.

The students come every third week to the farm. Some students would like to be there more often, perhaps even live at the farm, while for others every third week is enough.

The activities the students learn the most from, and which contribute the most to the goals in the curriculum, are when they get to practice interaction and relationship building, which is the basis for further learning.

The interviewee has observed different initial reactions depending on the students' background and earlier experience of animals. But after the first occasion, also students without prior experience get used to the activities at the farm and become more secure.

The interviewee has noticed effects on the students' learning not only at the farm, but also afterwards in school, where experiences from the farm can be transferred to new situations. The animals help I1 to build relations with the students, which makes it possible for I1 to increase demands in school because the students trust her. They can also compare what happened at the farm to situations in the school, and compare relations with the animals to relations with people.

The small-scale farm environment is considered important for the participants' well-being. I1 believes that it would not work that well if there would be a lot of other people around. The students can be themselves at the farm. A riding school with a lot of other people would not work that well.

#### 4.4.2. Interviewee 2 (I2)

According to I2, farm-based education enhances learning both because of an attention enhancing effect in a new environment, because of the emotions evoked by the animals, and because you use your whole body and all your senses in learning. The emotions the children get for the animals are especially important for learning.

The farm visits create strong memories for the students, who use to talk about the visits afterwards in school. It is as if the farm environment and the animals reinforce the learning that occurs at the farm, no matter the subject. Farm visits reinforce learning also afterwards, connecting memories and experiences with each other. The special experience is easy to remember, as well as things you have done and learned in connection to that experience.

#### 4.4.3. Interviewee 3 (I3)

The interviewee considers the animals as the most important factor in farm-based education.

They think it's so much fun to watch animals, feel the rooster's comb and duck's feet, and really meet animals up close, because children today don't come into contact with this kind of animals.

So it's super... It's fun, because you really catch their attention, and they ask questions, and they wonder. The children today are so far away from these farm animals. So it's very exciting.

At the 4H farm, they had troubles with some school children with challenging behaviours, who disturbed the animals and were sometimes mean to them. The staff had discussions with the schools, and they started a cooperation where they used REDE (Respect, Empathy, Animals, Ethics: Djurskyddet Sverige, n.d.) as educational material to teach the children in preschool class about respect and empathy – experiences that can be useful for them also in their future lives. They learn that animals have emotions, and how to behave around animals.

The farm has a very nice, old-fashioned outdoor environment, but it would not work without the animals. People come to the farm mainly because they really want to watch and interact with the animals.

## 4.5. What kinds of curriculum-based and other activities can be performed at educational farms?

At all three farms the animals are central in the activities, and there are multiple animal species, which complement each other. Some students prefer horses and riding, while others prefer smaller animals, which they might feel more secure with. Vegetable growing occurs at two of the farms but is less important.

Children can learn a lot from socialising with animals, studying their behaviour and compare with human behaviour. If the children want to be with the animals, they need to behave well. Activities with animals naturally include behaviour regulation training.

The results of the interviews are summarised below and in table 4.

### 4.5.1. Interviewee 1 (I1)

The farm activities are centred around the animals, usually walking with the dog or doing things together with the horses or the sheep. The students have different favourite animals, but I1 also tries to challenge them with trying to care for the other animals too.

The rabbits recently came to the farm and it's too early to evaluate them, but they are used to being handled and they are not scared. There are some students who like rabbits the most.

The dogs may join on walks, but they are not used in any specific activities.

I1 thinks the horse and the sheep complement each other well.

It is also individual, but most people really like being with Balder, this Northern Swedish horse. He is solid and big and confident, and they think it's fun to do different things, when they get to handle him and ride him. // We usually talk while they take care of him and brush him and



things like that. And it's also usually quite relaxing for the students. Then you can weave in some questions and some useful stuff during the time there, without them even thinking that they are learning things, so that's great! // And then there are the sheep then. They are popular. Really. // Because Balder is very big, and can be experienced almost a little overwhelming sometimes, and the sheep are very good size, for those who are afraid of big horses.

Reading for the animals works well, and also going for walks with the horse or the dogs. The students also observe the animals and compare with their own group – how the animals behave in their groups, and how they solve conflicts. Sometimes the students can also transfer the experiences from the farm to the school and other situations.

Some activities are difficult for the students, particularly if the activities remind them about school.

It is these challenges, when there are a few more demands, such as if they are given a written assignment that we want them to solve, which we have also tried. They instantly make a connection to school, and then there are locks. No, that's hard, that's hard. You have to weave in school activities in a very flexible way, because they are so negative, many times. It is really difficult.

The use of paper can be an obstacle against learning for these students. Also applied tasks, such as how much feed the horse or sheep should have, can be very hard to succeed with if the students are instructed to use a paper. Oral tasks might be easier, even with the same content.

One written task that worked quite well was to write a factual text about an animal that the student could choose. “Because then they are also interested in knowing a little more about that animal, so it has kind of attracted a little.” (I1)

#### 4.5.2. Interviewee 2 (I2)

The hens at the school provide possibilities for activities. Students in grade four take care of the hens. Younger children can feed and watch the hens at after-school care.

Some activities are connected to the prepared boxes at the community farm: Sorting pictures connected to farm activities during different seasons. Search for specific things on the farm. Tip walk about the farm. Loupes to look at bees and pollination.

The students have also visited commercial farms and watched dairy cows, robot milking and cow release, tractors and sowing with modern machinery in the spring.

Some growing activities can be performed in and around the school, such as growing sunflowers or potatoes, so that the students can follow the process continuously.

Activities with animals work well and should always be included during farm visits.

### 4.5.3. Interviewee 3 (I3)

4H develops a new school material, 4H i skolan (4H In School), with lecture manuals for different visits and grades at 4H farms, linked to the school curriculum and syllabi. The material includes a teacher manual, to make it easy for schoolteachers to use it and connect the 4H farm visits to the ordinary school work. 4H In School will be available for all 4H farms, for different school subjects, including maths, that I3 already works with at the 4H farm.

We have math visits // with grades 2 and 3, where we have outdoor math where you first meet three animal species, and then you get a booklet where you can walk around and fill in how to count how many stomachs are in the pasture, how many hooves, and how much water they drink, and if you spill from the bucket, how much water is left.

The educational level of the farm visits can be adapted to the target group, from the animals' mother-father-child with the pre-schoolers to animal physiology, feed digestion and ecological farming with older students. The special school students at Farm school can muck, weigh fodder and take care of the animals together with the staff. They get physical activity, and they can pet and meet the animals.

When larger groups visit, the children are allowed to enter the enclosure where the sheep and the pigs are, in a controlled manner and under supervision. With the hens, the children can watch one hen or rooster at a time, and not enter the enclosure. With all animals, it is important that the children are calm.

During the one-hour animal guiding visits, the children meet all the animals at the farm and learn about them according to age and developmental level. I3 thinks that animal guiding is the most informative activity, while driving horse and carriage is easiest for the staff, because the children just sit happily in the carriage.

Another activity where children can learn a lot is REDE, a "foundation of values" material with different exercises. It might support children to develop respect and empathy for both humans and other animals.

You learn about animal emotions and about human emotions. Then you usually first start by asking the children if they think that animals have feelings. And then almost everyone answers that they have no feelings, strangely enough. And these are maybe 6-7 year olds. And then you usually show a picture of a dog that is terribly angry and shows its teeth. Then you usually ask: "Would you like to pat this dog?" "No!" says everyone. "But why don't you want?" "But it's angry!" they say. "But exactly. Isn't angry a feeling?" "Yes, angry is a feeling." So they get to imitate the dog, what the dog looks like, and then they get to make their own angry face, and show each other. // Then they can go out and study the animals in the enclosure and they get a form, a small piece of paper they can fill in, and then they look at pigs for example - what does

the pig do? // Then they can fill in a form and watch the pig. Then they gather again, and then we usually have a small performance where they get to practise dog meetings.

*Table 4. Short summary of curriculum-based and other activities connected to different school subjects and to the development of social skills and behaviour regulation.*

	<u>Interviewee 1</u>	<u>Interviewee 2</u>	<u>Interviewee 3</u>
<b>Mathematics</b>	Calculate feed amounts for different animals	-	4H in School: Math visits with grades 2 and 3. Outdoor math, meet three animal species, count how many stomachs, how many hooves, how much water they drink.
<b>Language</b>	Woven into all activities. Reading for the animals. Talking about the animals, the farm and activities in Swedish or English.	Woven into all activities.	Woven into all activities.
<b>Biology</b>	Write factual texts about an animal, and present it orally. Study animal behaviour.	Taking care of hens, study their behaviour, learn about their needs. Tip walk about the farm. Loupes to look at bees and pollination.	Animal guiding. Take care of animals. Study animal behaviour.
<b>Social skills</b>	Observe animals and compare with humans – how the animals behave socially, how they solve conflicts.	Children can learn a lot from socialising with animals, studying their behaviour and compare with human behaviour.	REDE teaches children about emotions. Comparing animal emotions to human emotions.
<b>Behaviour regulation</b>	Children need to behave well with the animals. Activities with animals include behaviour regulation training.	Children need to behave well with the animals. Activities with animals include behaviour regulation training.	Children need to behave well with the animals. Activities with animals include behaviour regulation training.

## 4.6. How should courses about farm-based education for teachers and teacher students be designed?

A further education course about farm-based education should include handling of different kinds of animals and the relationship between animals and children.

It is very positive to further education for teachers about farm-based education. She took a course about equine assisted interventions, but she would like a course involving other kinds of animals too. She would prefer further education on university level for teachers, rather than college level. A university level course for teachers could give a quality stamp or certification for working with farm-based

education. The course could be designed for both teacher students and experienced teachers. It could involve web-based lectures and tasks, but also physical meetings and practical exercises. A course might be possible to take beside a teacher job if the course is 25 % speed. Higher speed might be less attractive. The relationship between animals and children is very important to include in the course. It is important to stress that the animals are colleagues, not just tools.

I2: Further education could be useful for teachers and for employees at educational farms. Relationships with animals should be highlighted in the course. It may be structured like an outdoor pedagogy course, but with focus on the farm and the animals.

I3: A course about farm-based education might be interesting for those who want to work at 4H farms. Experienced 4H farm staff could help to arrange such courses. 4H has used the farm where I3 works to show staff at other 4H farms how the work can be organised.

#### **4.7. What strengths, weaknesses, opportunities and threats exist for the implementation of farm-based education?**

There are opportunities to develop the connection to school curriculum and syllabi. Lack of connection is a threat against the possibilities for farm-based education, because it is difficult to motivate the cost in time and money. There are opportunities with new, nationwide concepts for farm-based education, with educational material directly connected to the curriculum and to the syllabi for specific subjects.

There are opportunities with structure and clear concepts to attract schools. When schools invest in farm visits, they should know what they pay for and get value for their investment.

It is a strength if teachers connect the farm visits to schoolwork. The visits become less useful if the teachers do not continue working with the experiences in the classroom.

A limited group size is a strength. Too large groups can be stressful for the animals, and the students will learn less.

Weather conditions can be a threat if the students are not properly dressed for being outdoors.

High safety standard is a strength. All three farms had high safety standard and routines, to protect both the students and the animals from harm. All farms were accessible for people with physical disabilities, and were also relatively safe for students with weak impulse control. It is important for the safety that the responsible staff knows the animals and the farm.

Pedagogic competence of the farm staff is a strength. The farm staff can then focus on guiding the students, while school staff can focus on taking care of the students and keep order. The school staff might need time to get acquainted to farm-based education. It is a strength if the school staff visits the farm regularly and knows the routines.

The results for the strengths, weaknesses, opportunities and threats (SWOT) research question are summarised below and in table 5.

#### 4.7.1. Interviewee 1 (I1)

**Transportation:** Weaknesses: Some students get motion sickness in the bus. Strengths: The students can sit in the front seat if they want to. The students have chosen to accept the travel because of the positive experiences at the farm.

**Economy, resources:** Threats: Probably the biggest obstacle against farm-based education.

**Connection to school curriculum and syllabi:** Threats: Lack of connection to the syllabi. Opportunities: The curriculum is easy to include in farm activities.

**Integration with schoolwork:** Threats: Farm visit become less useful if teachers don't continue working with the experiences in the classroom. Opportunities: If the farm experiences are integrated with the ordinary schoolwork, there is a potential to enhance learning.

**Safe farm environment:** Strengths: The farm has been assessed for safety risks by a professional company, and a risk analysis has been made. The students are well informed about how to behave. The animals are selected for being safe to handle. An insurance covers unexpected events. Threats: Things can happen even with high safety standards.

**Weather:** Strengths: Weather conditions are not a big problem. During harsh weather conditions, the students are often in the stable or sheep house and do indoor activities.

**Religion and animals:** Threats: Muslim parents might consider dogs dirty and might not allow the students to visit the farm. Strengths: The staff can exclude dogs from the sessions, to avoid problems for the students.

**Personal dependence:** Threats: Often, farm-based education depends on the interest and enthusiasm of a single person, like a principal or chief in the educational hierarchy.

**Research, product development and competence:** Threats: Lack of research about effects of farm-based education. Lack of clear concepts and models for farm-based education. Weaknesses: Some schools go out to farms without having a clear plan for the visit and the follow-up work.

**Projects:** Opportunities: Projects might fund farm-based education. Threats: Project funding is always for a limited time. At least 3 years would be needed to

see effects of farm-based education, and there are not many funds allowing such long project time.

#### 4.7.2. Interviewee 2 (I2)

**Activities:** Strengths: The school has developed farm activities those are well-trying and go smoothly. This can be reached by reoccurring visits to the farm.

**Competence:** Opportunities: Having an employed educator at the farm, so that all students in grades one and three could come. If the farm educator takes care of the lectures, the schoolteachers just need to take care of the students. It should be easy for schools to visit a farm.

**Transportation:** Strengths: Having an educational farm close to the school and make spontaneous visits. Going to the farm by bike instead of bus provides physical activity.

**Economy, resources:** Threats: Costs. Opportunities: Municipalities could employ people to take care of educational farms, just like they employ gardeners or sport facility staff.

**Integration with schoolwork:** Strengths: Farm visits are an integrated part of the schoolwork. The activities at the farm reinforce the schoolwork.

**Effects on learning:** Strength: Enhanced attention gives positive effects on learning. There might be a weakness in that more regular farm visits might give a smaller effect of each visit, but there would still be an effect. The learning would still be stronger than in the classroom.

**Different farms:** Opportunities: Visits to different farms, both commercial and community ones, can complement each other.

**Keeping animals and growing crops:** Threats: Predators can kill animals. Animals can get sick. Strengths: Learning about both life and death. Weaknesses: Animals and crops need care every day. Opportunities: An educational farm with staff makes it possible for students to learn about animals and growing without the threat of animals or crops being neglected.

**Safety awareness and discipline:** Strengths: The students know the rules and usually behave well. The teachers are used to teaching outside and they know the farm. The school staff always supervises the students. The risk of injuries is small. Weaknesses: Students who are not used to outdoor teaching might think that they can do whatever they want at the farm. This can be a strength if it leads to learning.

**Allergies:** Strengths: Students with allergies against animals may take part of farm-based education outdoors, keeping some distance to the animals. Threats: Pollen allergies are a bigger problem than allergies against animals. Pollen is everywhere, unlike animal allergens.

### 4.7.3. Interviewee 3 (I3)

**Activities:** Strengths: The high number of visiting schools has made it possible to develop customized activities that work well, and gradually phase out activities which do not work.

**Competence:** Weaknesses: The 4H farm cannot afford to employ educated teachers. Strengths: The employees have solid experience in working with children and farm animals.

**Transportation:** Strengths: The 4H farm is located near municipal transportation. The schools do not lose much lecture time on travels.

**Economy, resources:** Threats: Tight budgets limit schools' opportunities to visit the farm. Some years, the municipal schools do not have money enough for farm visits. The private schools prioritize farm visits every year, because they know how important it is. The special schools have more resources for each student, which gives them opportunity to visit the farm several times with the same student group.

**Booking system:** Strengths: A safe and clear, web-based booking system.

**Farm math:** Weaknesses: The farm staff has no education in teaching maths. Strengths: The farm math is on a very basic level, so it works well.

**4H in school:** Strengths: Farm-based education might capture children's attention and stimulate learning. Opportunities: Development of 4H farm lecture concepts, connected to the school curriculum and syllabi.

**The animals:** Strengths: Animals attract schools to come to the farm. The 4H farm is open to visitors for free, but many schools choose to pay for guided visits, where they can get animal guiding and come close to the animals.

**Weather:** Threats: Children are often not properly dressed for being outdoors, and they may get cold and fuzzy. Strengths: Experienced staff notices when the children get cold and knows how to get them to start moving and get warmer.

**Accessibility:** Strengths: High accessibility for people with physical disabilities, with smooth walkways, accessible restrooms, and a ramp for mounting horses.

**Safe farm environment:** Strengths: No ordinary car traffic at the farm, just transports for disabled people and of feed and other things to the farm. The farm environment is safe and permissive. It is easy to do right, also for impulsive children. Robust fences make it physically difficult to enter animal enclosures without permission.

**Safety awareness:** Strengths: Farm staff works consciously to prevent injuries. The staff knows the animals, checks that the animals are OK, and keeps safety in mind.

**Discipline:** Threats: Larger group sizes increase the risks of discipline problems during school visits. It requires more from the accompanying teachers, who need to be very alert.

Because there is a lot that children today, they have a hard time sitting still. They are very tagged when they come out like this, and really have ants in their pants. // And then, it is the teachers who have to make sure that the kids listen, because if they are fussy, in the end sometimes they have had to leave with 2-3 kids who can't behave when you have extreme classes. So a teacher has had to pick out some children, "You cannot join, because you ruin for the others". But it is not very often, but it has happened. But most of the time it works well.

**Collaboration with schools:** Opportunities: Many teachers return again and again with new students. Some teachers have obviously persuaded their principals to visit the farm.

**The pandemic:** Threats: The schools were not allowed to go by bus, which made it difficult to visit the farm. Opportunities: Some schools paid a little extra for the farm staff to pick students and teachers up with horse and carriage for farm visits. During the pandemic it has become easier to make children and teachers wash their hands.

*Table 5. SWOT (Strengths, Weaknesses, Opportunities, Threats) for farm-based education according to the interviewees.*

<b>SWOT</b>	<b>Helpful</b>	<b>Harmful</b>
<b>Internal</b>	<b>Strengths</b>	<b>Weaknesses</b>
	Location close to municipal transport or schools	Remote location, long travel time, expensive
	Educational farms with safe farm environment	Private farms unsafe, not adapted for visitors
	Educational farms with clear structure and rules	Private farms with unclear structure
	Educational farms with clear activity concepts	Private farms with no clear activity concepts
	Staff with pedagogical competence	Staff without pedagogical competence
	Weather protection available	Outdoor guiding in rainy and cold weather
	Limited group sizes	Lack of staff, need for large group sizes
<b>External</b>	<b>Opportunities</b>	<b>Threats</b>
	Teachers and students used to outdoor teaching	Teachers and students not used to outdoor teaching
	Farm visits integrated with schoolwork	Farm visits not integrated with schoolwork
	Clear connection to curriculum and syllabi	Weak connection to curriculum and syllabi
	Economy: Many paying visitors	Economy: Lack of resources
	Project funding	Limited project time
	Educate children about how to behave	Children disturbing or harming animals
	Visitors wear suitable clothes	Harsh weather, unsuitable clothes



## 5. Discussion

The survey and the interviews had partly different focuses. The survey could answer some parts of the research questions, while the interviews covered all the research questions to a reasonable extent. Because of partly different focus and headlines, the discussion is divided. The first part of the discussion deals mainly with the results of the survey, with elements from the interviews included as comparison. The second part deals with the interviews, with some references to the survey.

### 5.1. Survey

The survey was directed to teachers in grade 7-9. In the interviews, it appeared that farm-based education might be more relevant for grade P-3, possibly also grade 4-6. This might make the survey results less relevant than if the survey would have been directed to teachers in lower grades. It might be a serious limitation of the survey, since it means a low probability to find teachers who have worked with farm-based education or outdoor teaching, and who might find it possible and suitable. On the other hand, although the questionnaire was sent to a partly randomized selection of schools in each county in Sweden, the school administration was asked to distribute it to five teachers that they thought would be interested in answering the questionnaire. Also, quite few teachers have completed the survey. There might be a bias among the respondents towards those interested in outdoor teaching and farm-based education.

The survey had four rank order questions. This turned out to be unfortunate, partly because some respondents perceived it ambiguous whether the highest or lowest number represented the highest rank. The rank order questions also turned out to be difficult to analyse statistically.

#### 5.1.1. Background of respondents and schools

The survey did not mirror the opinions of young teachers with a recent education. In a future survey, it might be interesting to compare newly educated teachers with experienced teachers who had their education many years ago. However, access to personal data about teachers is limited, and teachers have not much time to answer

surveys, so recruiting representative respondents might be difficult. The survey was sent out during the pandemic, which may also have lowered some teachers' interest in answering it.

### 5.1.2. Work with farm-based education and Outdoor/Nature-Assisted Education in schools

It is not surprising that many of the respondents work with outdoor education and NAI at least sporadically, and much fewer with farm-based education, since outdoor teaching is easier to arrange than farm-based education, and is also more established. In Sweden, natural environments are accessible more or less in the whole country with the Right of public access (Allemansrätten), which gives people the right to use nature, also privately owned land, for activities as long as they do not disturb or destroy anything (Naturvårdsverket, 2011). In Sweden, there are more than 1000 “school forests”, demarcated forest areas, which can be used by schools for lessons and outdoor activities (Skogen i Skolan, 2021). The number of educational farms in Sweden is much lower – just over 30 4H farms (Riksförbundet Sveriges 4H, n.d.<http://www.4h.se/gardar/>), and a small number of educational farms outside 4H which can arrange guided visits for school classes or accept smaller groups of students (e.g. Stadsnära Lantgård Lidköping, n.d.; Stallyckan i Mark, n.d.; Skansen, n.d.). In Sweden, the access to natural areas is higher than to educational farms.

### 5.1.3. Which school subjects could be included in farm-based education?

It is not surprising that most respondents and the three interviewees consider biology suitable for farm-based education, since the farm environment, plants and animals as such are directly connected to biology. In contrast, fewer survey respondents considered mathematics (42 %) and languages (18 %) suitable for farm-based education, while the three interviewees, based on own experience, considered both maths and languages highly compatible with farm-based education. Perhaps the fact that the respondents worked in grade 7-9 also affected the response. Mathematics is on a higher theoretical level in grade 7-9 than in lower grades. However, this does not exclude applied, experiential learning in mathematics in grade 7-9, within areas such as arithmetic and trigonometry (James et al., 2007; Fägerstam & Samuelsson, 2014). Experiential learning of mathematics can deepen understanding and make it easier for the students to remember what they have worked with (Fägerstam & Blom, 2012), and improve academic performance (Fägerstam & Samuelsson, 2014). For both Swedish and English language as school subjects, there is existing Swedish syllabus-adapted literature for outdoor

teaching up to grade 9 (Lättman-Masch et al., 2017), which might as well be adapted to farm-based education.

Surprisingly, a majority of the respondents thought that farm-based education fits into the syllabus for social study subjects (civics, geography, history, religion). However, a farm is only a limited fraction of the society. I2 emphasized the importance of using different environments for learning, both the forest, the farm, the town and other places. I1 thought that only parts of the social study subjects would be suitable in farm-based education. Çengelci (2013) found that teachers preferred to teach history and geography outdoors, rather than civics and religion.

#### **5.1.4. How students can benefit from farm-based education**

Most survey respondents thought that students could benefit from farm-based education. However, the respondents were selected by the school administration because they might be interested in answering the survey, so this might not be representative for Swedish grade 7-9 teachers in general.

There were only 31 answers to the rank order question about which student groups the respondents thought can benefit from farm-based education. The alternative “All students” got the highest rank, indicating that the respondents thought that farm-based education might be useful for everyone. However, the answers were quite few and the result might not be very trustable.

#### **5.1.5. Further education in farm-based education for teachers**

The results indicate that a mixture of online teaching and physical meetings would be optimal for a course for teachers in farm-based education. Teachers working at schools in different parts of Sweden can rarely take a campus course at a university. Like I1, the survey respondents preferred a web-based course with physical meetings rather than a fully web-based course. A course certificate was also important for the respondents. It is easy to arrange for university level courses, where a certificate for higher education credits is included.

#### **5.1.6. Implementation of farm-based education**

It might be positive that most responding teachers thought that farmers should teach the students at the farm together with educated teachers. If the teachers take active part in the planning and implementation of farm-based education, the visits become more useful for the students, according to I2.

On the question about possible weaknesses and risks with farm-based education, respondents could choose to make one or more crosses. Thus, the potential problems are not ranked according to what each respondent thought was the biggest, second biggest etc. issue, but rather according to the total number of crosses. This might not give a fair picture of the potential issues, but rather an

indication. The results show that transportation was considered the potentially biggest issue, and then time and allergies. Transportation and time were issues also according to I1 and I3, but not I2. Allergies were not a big issue according to the interviewees, at least not allergies to animals.

## 5.2. Interviews

The results of the three interviews are here discussed and compared with each other.

The different perspectives on farm-based education are reflected in the results of the interviews. There are also many connections and common experiences.

I1 focused a lot on relations and daily functioning for students with special needs. There was less focus on syllabi since the students were not yet ready to follow the syllabi.

I2 focused on physical activity, farm activities, animals and the farm environment to enhance learning. At her school, farm-based education was an integrated part of the education as a whole, and well-integrated with curriculum and syllabi.

I3 focused on competence, efficient service, standardisation and connection to curriculum and syllabi, so that customers know what they get and what they pay for.

### 5.2.1. How do teachers perceive farm-based education compared to other outdoor experiential learning and classroom teaching?

I2 emphasized that it should be easy to go outdoors or to a farm with a class. If the teachers and students are used to outdoor teaching, farm-based education easily becomes an integrated part of it, which makes it smoother than visiting a farm with students and teachers who are used to always having lectures in the classroom. This indicates that to succeed with farm-based education, it should be seen as a part of the whole, where outdoor and indoor teaching are connected to each other without artificial boundaries.

Most schools today are stuck in traditional patterns of single subject teaching in classrooms as the norm, and outdoor, experiential, cross-disciplinary teaching as the exception that confirms the norm. Most subjects are thought to be best learned with words and figures, rather than by observing and doing – in spite of our evolutionary history of learning by doing, in movement and outdoors (Raichlen & Polk, 2013). The modern school has not yet implemented the research about embodiment. Even research about AAE tends to focus on bringing animals into the classrooms rather than bringing the students out, as can be found in a recent publication about AAE (Gee et al., 2017).

Smith and Sheya (2010) and several others have stated that learning occurs as a result of our bodies' interactions with the physical world. Thus, if we want to enhance learning, it is advisable to make more use of our bodies and the physical world.

I2 also considered the complex nature of farm-based and outdoor education making them suitable for cross-disciplinary teaching, which she considered as better for learning than teaching by subject. However, the curriculum and syllabi need to be followed, and the national goals are necessary to complete (Skolverket, 2022). If farm-based, outdoor and experiential education are to be more widely implemented, more research and central guidelines would be desirable on how to accommodate syllabi for different subjects within such education.

### 5.2.2. For which subjects and students can farm-based education be suitable?

There were clear differences between the three interviewees in their experiences and their way of working with the students, which also affected their views on education. I1 and I2, who were educated and experienced teachers, thought that farm-based education might be good for all students, but extra valuable for students with special needs, considering that their needs might be well met in a permissive environment where the students had plenty of space to move around and to withdraw. I3 was not a certified teacher, but a farm guide and course-leader. She had not much experience from students in the ordinary school with need for extra support, so she had not much to add about that group of students. I1 had the most extensive experience of students with need for extra support, where most of them had ADHD, ASD or both. She considered the farm environment and particularly the animals as a possibility for the students to become more relaxed, overcome earlier failures and strengthen their social abilities. This is in accordance with studies such as Schuck et al. (2018), Rajfura and Karaszewski (2018) and Byström (2020).

All three interviewees considered farm-based education suitable for all students, possibly except for those with severe allergies, but they had not experienced allergies against animals as a problem for farm-based education, rather pollen allergies which can be a problem everywhere outdoors, not only at farms. The most common animals to be allergic against in Sweden are cats, dogs and horses (Trygghansa, 2016; 1177, 2021), rather than farm animals like hens, sheep, goats and pigs. Many educational farms have horses, which might be considered as a risk since allergy against horses is relatively common. Although keeping distance at the farm might work for the allergic student, it is also important to consider the travel from the farm as a risk, when other students might have been close to animals and carry allergens in their clothes (1177, 2021). Precautions need to be taken also for

the hygiene of other students if there is a student in the group with allergies against any of the animals at the farm.

All three interviewees thought that farm-based education could be compatible with the curriculum and the syllabi for many school subjects. I1 and I2 stated that their teacher colleagues, in different subjects, were positive to farm-based education even if they did not work with it directly. A problem that the interviewees lifted is that schools might just bring students to a farm, and then not have a plan for following up the farm visit to deepen the gained experiences and connect them to the curriculum and syllabi. In such cases, farm visits might not give full value for the invested time and money. I2 also highlighted the importance of working interdisciplinary, rather than trying to fit a farm visit into the frame of a single subject. In grade 7-9, there are usually many different teachers involved in teaching a class. When planning a farm visit, it would be an advantage if teachers in different subjects are involved and plan the visit together, and try to make connections to their respective subjects also after the visit, in order to use the farm visit in an optimal way and get value for the investment. 4H In School (Riksförbundet Sveriges 4H, n.d.b) might be one way to make it easier for teachers to connect farm visits to the curriculum and syllabi.

For students with special needs, the farm environment might add other advantages than just taking an animal into a school. Dogs working in school can be a very useful support for students in the school environment (Kotrschal & Ortbauers, 2003; Esteves & Stokes, 2008). But animals in school means that the animal is taken away from its everyday environment, into the often noisy and messy school environment, with a risk of the animal being stressed (Serpell et al., 2010). It might also be a disadvantage that students in the school environment might not get full gain from the AAI, compared to meeting animals outdoors in natural surroundings, with plenty of space for physical activity and possibility to withdraw from unwanted social pressure.

A student with NDC, for whom the school has failed to provide a suitable school environment (as for the students of I1), and who has a school experience of failures and stress, might need to be removed from the harmful school environment that obstructs learning for the student. The farm environment is completely different from the school and everyday environment (Höglund, 2020), which can be an advantage when the aim is to start from the beginning, reduce stress and build up new, positive experiences for the student. Several studies show advantages of natural, green environments for stress recovery, impulse control and attention (Kaplan, 1995; Wells, 2000; Mårtensson et al., 2009; Faber-Taylor and Kuo, 2009, 2011; Chawla et al., 2014; Amicone et al., 2018, Li et al., 2019). The farm environment may provide both the positive aspects of being in a green, natural environment (Berget et al., 2021), and the positive effects of meeting, petting and socialising with animals (Derr, 2007; Schuck et al, 2018; Byström, 2020). Thus,

farm-based education might in principle be advantageous for all students, and especially for students who do not thrive in an ordinary school environment.

The two approaches, farm-based education (with some examples in Berget et al., 2021) versus school-based AAI (as described e.g. in Gee et al., 2017), may not exclude but rather complement each other when working with students with high school absence and need for special support. Farm-based education and AAI within the school building can both act as a transition between not going to school at all, and gradually going back to an adapted school environment that meets the student's needs. Farm-based education can facilitate a slow, gradual transition back to school, possibly with the help of a team with a dog handler and an educated school dog (Larsson, 2021).

### 5.2.3. How do nature, animals and the farm context affect learning and well-being for different categories of students in farm-based education?

Some main elements of farm-based education can be identified: **outdoor environment** and **animals** which enhance involuntary attention, **physical activity** that is a natural and integrated part of the farm visit, and **embodied, experiential learning** that naturally takes place on the farm, using all senses, in contrast to the classroom which is physically alienated from the embodied reality where real actions take place.

The three interviewees consider animals as the most important factor to catch the students' attention and interest in farm-based education. The strong emotions evoked by meeting animals may enhance learning and memories, according to I2. Stress reduction with decreased cortisol levels (Beetz et al., 2011), as well as increased oxytocin levels (Beetz et al., 2012), are some suggested mechanisms behind the positive effects of meeting animals. According to New et al. (2018), faster and more accurate attention to animals than to inanimate objects has favoured our survival during evolution (see also 5.2.5).

I1 considers the small-scale, calm and predictable farm environment important for her students with ADHD and/or ASD who have difficulties with interacting with people. The calm, predictable and at the same time spacious and permissive farm environment stands in stark contrast with schools with hundreds of students and crowded classrooms, which can evoke strong stress for this group of students and in some cases make curriculum-based learning impossible. Höglund (2020) and Haubenhofer et al. (2010) describe therapeutic farms and gardens as varied and spacious environments with possibilities to choose between different passive or active interactions with the environment. Hassink et al. (2010) found that the generous space at the farm could allow withdrawal and prevent conflicts, and that the quiet environment had fewer stimuli than the clients' everyday environments. This might be questioned – are there really fewer stimuli at the farm than e.g. in a

school or a city, or are there just different stimuli, with lower demands for directed attention and more possibilities for involuntary attention and soft fascination, as described e.g. by Kaplan and Berman (2011)?

Small-scale, calm environments can be created also within a school building, by placing the most vulnerable students in a small group. I1 works in such a group. Then the students remain in the same physical environment which has evoked their stress. For some students, as I1 points out, it might be valuable to remove them from the school environment.

At the farm, factors which are difficult to provide even in a small group in the school building are the same as above: outdoor environment and animals, physical activity, and embodied, experiential learning. These factors except one (farm animals) may in many cases be provided for free just outside the school, in a nearby forest or other natural area. However, the animals appear to be very important in farm-based education, so excluding them seems to be a substantial disadvantage. A combination of outdoor education in the neighbourhood and farm-based education might be a practical solution.

There is another factor that I1 pointed out as an advantage at the farm: The possibility to stay inside the barn with the animals during harsh weather conditions. The nature close to a school usually does not provide protection from weather conditions; you are either outside or inside. At a farm, it is often possible to have activities protected from harsh weather, but still in an environment that is different from a classroom. As I3 pointed out, students who get cold and wet are not able to listen and learn. Protection against harsh weather is important for the welfare of the students, particularly if the farm visits are longer than just an hour.

I1 emphasized that the animals did an important work by taking initiatives for social interaction with the students, and even facilitating social interactions between the students. This is in accordance with studies such as McNicholas and Collis (2000), Matuszek (2010) and Maresca et al. (2020), as well as an unpublished work (Larsson, 2021), where the interviewee considered animals as a shortcut to building relations with humans.

Another important observation that I1 had made on her students with special needs was the possibility to transfer experiences from the farm to new situations, which was also observed by another interviewee (Larsson, 2021). Transferring knowledge to new situations is considered a major problem for people with ASD (Glaser & Schmidt, 2020; Parsons & Mitchell, 2002). Methods used to train social skills for children with ASD often involve intensive training of specific skills in an artificial environment, which seems to increase the difficulties to make use of the skills in normal life situations like home and school, while interventions in real life settings might be more transferable and applicable in practice (Parsons & Mitchell, 2002). The observations by I1 and by the interviewee in Larsson (2021) indicate that farm-based education, combined with skilled teachers guiding the students in



the transfer of skills in school, might be a possibility to improve social skills in students with ASD.

Perhaps current knowledge about attention restoration, and about directed versus stimulus-driven attention, can be used to improve learning for students in general, and particularly for students with ADHD and/or ASD? Could an educational system based on evolutionary-supported ways of learning (e.g. experiential, multi-modal, outdoors in nature, often in movement) combined with modern neuroscience be part of an approach to decrease some educational and social problems in the modern educational system worldwide, and perhaps also decrease the need for NDC diagnoses?

#### 5.2.4. How can farm-based education be organised?

All interviewees considered travel time to the farms an important factor for farm-based education. Schools have both limited travel budgets and limited time in the schedule. Perhaps it is possible to make transportation time more useful, such as preparing the students for the farm visit during travel.

Another problem is the availability of educational farms. All interviewees would enjoy if more students would get at least some opportunity for farm-based education. The current educational farms in Sweden are few and unevenly distributed, and many schools are not in proximity of an educational farm. Most ordinary farms are not adapted for school visits. If all schools in Sweden would have some kind of farm-based education, many more educational farms would be needed. If these farms would be geographically distributed to minimize travel time and cost, the costs and time needed for transportation would also decrease.

Economy was considered a difficulty in farm-based education by all the interviewees. I2 considered farm-based education so important that municipalities should pay for community farms, including staff for guiding and teaching students from schools. Schools usually need to pay for both travel and guiding on educational farms. Many schools will not do any farm visits at all, or perhaps a single visit per class during 10 years in school. If local politicians would consider farm-based education as an important part of the education and of the work for sustainable development, they may support local initiatives for community farms, e.g. in cooperation with farmers associations or local non-governmental organisations.

The government could also support a national platform for educational farming, by providing funding for farm-based education models and for starting and operating educational farms. Ordinary farms could be important in a national network of educational farms, where funding from the state could make it possible for farmers to adapt their farms for educational purposes.

The Swedish farming colleges, which educate students from 16 years of age within farming, forestry, equestrian sports, animal care and related areas, are

already adapted for education. They could play an important role as regional hubs in a network of educational and visitor farms, accepting groups of students for farm visits, developing models for farm-based education in cooperation with researchers at universities, and also providing education and advise for farmers who want to adapt their farms for visitors. This would also be a possibility for farming colleges to attract new students.

#### 5.2.5. What kinds of curriculum-based and other activities can be performed at educational farms?

A bit surprising in the interviews was that the animals were so dominating in the farm activities and that the interviewees highlighted the importance of animals so much. Two of the farms had some vegetable growing, but it had only a minor role in the farm activities. Farm crops and other plants are clearly of less interest than animals to the children. But this does not mean that plants are not interesting for children – just that animals are more interesting. According to Kaplan (1995), both animals and natural elements such as plants can evoke involuntary attention or soft fascination in humans. Lindemann-Matthies (2005) studied children’s interest for different animals and plants before and after an educational intervention where children studied local plants and animals. Before the study, the children were generally more interested in pets, exotic animals and well-known, colourful flowers, while after the intervention, when they had gained more knowledge about local species, they had also become more interested in the local flora and fauna. There may be a connection between knowledge and interest, which indicates that knowledge is important for preservation of species (Lindemann-Matthies, 2005). Still, children’s spontaneous fascination of animals seems to be greater than that of plants. Lindemann-Matthies (2005) highlighted some factors suggested in previous studies: Animals can make movements which easily catch children’s attention; animals can interact with humans e.g. through eye contact and sounds; animals can show fascinating behaviours and also learn new behaviours; while plants are often seen simply as a background or habitat for the animals.

New and colleagues (2007) hypothesized that our great interest for animals has evolutionary origin. The actions of humans and other animals can be of immediate importance for our survival, because of their ability to move. According to New et al., the categories “humans” and “other animals” were more important to pay immediate attention to and to monitor continuously than plants, rocks and other inanimate objects. New et al. called this phenomenon *the animate monitoring hypothesis*, which they also could confirm in the study. There is a bias in our human brain for quick and accurate detection and monitoring of animals, including humans, but not for inanimate objects such as cars, even if they are moving. New et al. mention the unfortunate effect when a modern pedestrian’s attention is involuntarily drawn to an animal, instead of paying attention to potentially

dangerous cars. Similarly, students during a farm visit spontaneously pay more attention to animals than to crops.

It might be reasonable that farm-based education tends to focus on domestic animals, if a school class spends just one or a few hours during 10 school years at a farm, since this might be the first time for many students to meet farm animals. However, many students have very limited knowledge not only about farm animals, but also about farm crops and garden vegetables which we buy in the shop. I2 and I3 highlight the importance of knowledge about the origin of our food, from both animals and plants. If this is so important, it might be advisable to use farm-based education to teach students about cultivated plants and crop production, not only about animals. As I2 pointed out, it is a bit problematic to grow plants at school because of the summer break. Educational farms do not have these problems, since they normally have their main visiting season during spring and summer. This makes educational farms suitable to teach children about crop production, the food chain and sustainable development.

As I2 points out, if the students spend some time at an educational farm, they will eventually get used to the animals a bit and become more interested in other activities at the farm. This observation indicates that a single one hour visit for 10 years is not enough for students to make full use of the farm as an educational resource. There is much more to explore and learn at an educational farm than just meeting some animals for an hour.

#### **5.2.6. How should courses about farm-based education for teachers and teacher students be designed?**

According to I1 and I2, knowledge about relations between children and animals should be included in the course. There are already courses about outdoor education. A course about farm-based education should have more focus on animals in education. Such course could also include non-farm ways of working with animals in education, such as dogs working in schools. The course could be arranged at a university which already has teacher educations.

An aspect not covered in this study is education for practitioners at farms, which is important for the wider implementation of farm-based education. In Sweden there are no specific courses for farmers about farm-based education, however Hushållningssällskapet (2021) arranges certification courses for the concept Grön Arena, which covers farm-based services within school, social care and health.

#### **5.2.7. What strengths, weaknesses, opportunities and threats exist for the implementation of farm-based education?**

Connection to the school curriculum and syllabi as well as to schoolwork in general is a strength, according to all interviewees. However, in many cases when schools

visit farms, the lack of connection might be a weakness, e.g. if teachers just bring a class to a commercial farm without having a clear plan for the visit and for the follow-up work after the visit. Lack of structure and planning might be a threat to the development of farm-based education, which might be one explanation why farm-based education in Sweden is not very common and often sporadic. The lack of connection to curriculum and syllabi may be partly connected to lack of competence in farm-based education for both teachers and farm staff. Such competence is hard to find in our modern society, where most people live far from the primary food production and where most farmers do not have experience in guiding school students.

4H develops educational material with clear connection to curriculum and syllabi, which is an opportunity to increase the interest from schools for farm-based education. This material might be used for all ages and students in the mandatory school. However, the material might be limited to a few examples of lectures, at least to start with. If some students would spend a larger part of their school time at an educational farm, this material might not be enough. In Norway, some care farms associated with Inn på tunet (n.d.) work with farm-based education for students with special needs, where students can spend one or more schooldays every week at the farm, having their ordinary education there, which makes it very important that there is good planning and cooperation between the farm staff and the school (Nasjonal veileder - Inn på tunet, 2015).

Considering safety of the physical environment and adapting to weather conditions is a strength in all farm-based education. If schools go out to random commercial farms, there is a risk that the farms are not adapted to large groups of students or to individual needs, where some students may have difficulties with allergies, physical disabilities or impulse control. There are many opportunities with letting all students have access to farm-based education during their schooltime, but it should not be at the expense of safety. It is the responsibility of teachers and parents to make sure that the students are properly dressed for farm visits, and the teachers are responsible for the students' behaviour, but the farm staff is responsible for securing the farm environment to avoid hazards. The visits should be possible to implement in varying weather conditions. Providing protection from harsh weather is the responsibility of the farm. Investing in safety and weather protection often means additional costs. Most farmers will not be able to invest without external funding or some guarantees that the investment will pay off.

I2 argues that investments in a safe and developing learning environment to build knowledge for sustainable development should be paid by the society, not by individual farmers or schools. If so, there might be a lot of changes needed in the mindsets of decision-makers.

## 6. Conclusions

This study showed that teachers consider it important with some connection to the school curriculum and syllabi in farm-based education. It can fit into the curriculum and the syllabi of many school subjects, including languages, mathematics, biology, chemistry, physics, home and consumer studies, crafts, and sports and health. It can be advantageous to work interdisciplinary at the farm.

The interviewees thought that farm animals are central in most activities and that the different species complement each other. Children can learn a lot from socialising with animals, studying their behaviour and compare with human behaviour. The farm environment and the animals increase attention, arouse emotions and create opportunities for learning.

Teachers who are familiar with farm-based education are usually positive to it, while teachers who have no such experience might be more reluctant, according to the interviewees. To be attractive to teachers, farm visits should be well organised and easy to fit into the schedule.

All the interviewees thought that farm-based education might enhance students' learning in school subjects. It may be recommended to increase availability of farm-based education and let all students in grade P-9 take part of it at least to some degree.

One of the interviewees, who worked with students with special needs, had found that farm-based education could improve the students' school attendance, health and well-being. This is also supported by some research, but farm-based education would benefit from further research and hands-on development of teaching methods and concepts based on curriculum and syllabi, adapted for students with special needs.

One conclusion from the interviews might be "the more, the better". The more quality time teachers and students spend on educational farms, the more possibilities to get working routines, to connect to the curriculum and syllabi, to observe seasonal changes and to learn about animals as well as crops, food production and sustainable development. With more scheduled time spent on the farm, there will be increased physical activity and possibilities for soft fascination and attention restoration than if the same time would be spent in the classroom. This will likely promote learning for all students, and especially for students who need embodied, situated, experiential learning to develop their full potential.

Guiding and teaching students at an educational farm is a qualified work, particularly if it should follow the curriculum and syllabi. Competence is also required for teachers to bring experiences from farm visits back to the classroom and make full use of them. If farm-based education will increase in the future, there will be a need for increased competence for practitioners at farms as well as for teachers working in schools.

In the study, some main elements of farm-based education were identified: **outdoor environment** and **animals**, which can enhance involuntary attention, **physical activity** that improves physical and mental health and concentration, and **embodied, experiential learning**, which can enhance learning. A school forest or other easily available outdoor environment can provide most of these elements, except for the animals. The additional cost of farm-based education should be weighed against known and possible benefits for different groups of students.

## 6.1. Suggestions for future research

Further research is needed to evaluate effects and suitable methods for farm-based education. There is potential for various novel research projects within the field.

Some suggestions for future research and development projects:

- Controlled trials comparing effects on students' learning and well-being of farm-based education to effects of other outdoor, experiential learning and conventional classroom teaching, for whole-class visits and/or for long-term farm-based education for students with special needs.
- How can availability of farm-based education increase? What political decisions will be needed, and how can they be implemented?
- What kinds of farms might be suitable for farm-based education, considering e.g. safety, accessibility, experience and education of staff, restorative environments, plants and animals, farm location and availability of municipal transportation?
- What animal species, breeds and individuals might be most suitable for farm-based education, for occasional whole-class visits and for long-term farm-based education for students with special needs, respectively? Options for learning, safety and welfare of animals and students as well as cost-benefit might be included in the analysis.
- Development of curriculum- and syllabus-based lecture material in several school subjects, possibly for grade P-9 but starting with the lower grades, and testing of the material in a farm context.

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# Appendix 1 Questionnaire

## Bakgrundsinformation

Din ålder  
21-35 år      36-50 år      51-65 år      Äldre än 65 år      Vill ej ange

Kön  
Man      Kvinna      Annat

Var har du vuxit upp? (1 eller flera kryss)  
Större stad (fler än 100 000 invånare i tätorten)  
Mindre stad (20 000-100 000 invånare i tätorten)  
Liten tätort (färre än 20 000 invånare)  
Landsbygd  
På lantgård

[Q] Erfarenhet av djur och natur

Hade du djur under uppväxten? Vilka? (1 eller flera kryss)

Hund  
Katt  
Häst  
Mindre sällskapsdjur  
Produktionsdjur  
Inga djur

Har du djur nu? Vilka? (1 eller flera kryss)

Hund  
Katt  
Häst  
Mindre sällskapsdjur  
Produktionsdjur  
Inga djur

Hur ofta var du ute i naturen under uppväxten (friluftsliv, scouter, ridning i naturen, fiske osv.)?

Flera gånger per vecka      Några gånger per månad      Några gånger per år  
Inte alls

Hur mycket vistas du i naturen nu?

Flera gånger per vecka      Några gånger per månad      Några gånger per år  
Inte alls

Hur stor är din erfarenhet av lantbruk? (1 eller flera kryss)

Jag har arbetat på lantbruk  
Jag besöker lantbruk flera gånger per år  
Jag har besökt lantbruk några gånger  
Jag har aldrig besökt lantbruk

[Q] Skola och undervisning

Hur länge har du arbetat som lärare?

0-2 år            3-5 år            6-10 år            11-20 år            Mer än 20 år

Vilka ämnen undervisar du i? (1 eller flera kryss)

Svenska/Svenska som andraspråk

Engelska

Moderna språk

Matematik

Biologi

Fysik/kemi/teknik

Samhällsorienterande ämnen (geografi, historia, religionskunskap, samhällskunskap)

Idrott och hälsa

Bild

Musik

Hem- och konsumentkunskap

Annat

I vilken del av landet arbetar du?

Götaland            Svealand            Norrland

Var finns skolan?

Större stad (fler än 100 000 invånare i tätorten)

Mindre stad (20 000-100 000 invånare i tätorten)

Liten tätort (färre än 20 000 invånare)

Landsbygd

[Q] Utomhuspedagogik och GSPR

Arbetar du eller andra lärare på skolan med GSPR med eleverna?

Ja, varje dag

Ja, någon gång per vecka

Ja, någon gång per månad

Ja, sporadiskt

Inte nu, men har gjort det förut

Nej, aldrig

Arbetar du eller andra lärare på skolan med utomhuspedagogik och naturunderstött lärande med eleverna?

Ja, varje dag

Ja, någon gång per vecka

Ja, någon gång per månad

Ja, sporadiskt

Nej, aldrig

Har pandemin under 2020 förändrat hur du arbetar med utomhuspedagogik och naturunderstött lärande med dina elever, jämfört med tidigare?

Ja, vi har varit utomhus varje dag, vilket vi inte var förut

Ja, vi har varit utomhus minst en gång per vecka mer än förut

Ja, vi har varit utomhus någon gång per månad mer än förut

Ja, vi har varit utomhus mindre än förut

Nej, vi har varit utomhus lika mycket som förut

[Q] Gården som pedagogisk resurs (GSPR)

Känner du till att man kan använda lantgårdar som pedagogisk resurs?

Ja

Kanske

Nej

Känner du till andra exempel där djur och/eller natur används aktivt i undervisningen (bortsett från enstaka utflykter eller liknande)? (1 eller flera kryss)

Djur

Trädgård

Natur, skog

Nej, jag känner inte till några sådana exempel

Beskriv närmare (frivilligt):

I vilka skolämnen kan GSPR passa in i kursplanerna? (1 eller flera kryss)

Språk

Matematik

Biologi

Fysik/kemi/teknik

Samhällsorienterande ämnen (historia, samhällskunskap, geografi, religion)

Idrott och hälsa

Hem- och konsumentkunskap

Slöjd

Andra skolämnen

Det passar inte in i kursplanerna för några skolämnen

Motivering (frivilligt):

Tror du att det finns elever som kan gynnas av GSPR?

Ja                      Nej (Gå vidare till Avslutande frågor)

[Q] Målgrupper och eventuella effekter

Vilka elevgrupper tror du kan gynnas av GSPR? (Rangordna)

1                      2                      3                      4                      5                      6                      7  
8

Skoltrötta

Otillräckliga ämneskunskaper

Funktionsvariationer

Hög skolfrånvaro

Mobbade

Mobbare

Andra grupper

Alla elever

Hur tror du att enskilda elever kan gynnas av GSPR? (Rangordna)

1                      2                      3                      4                      5                      6                      7

De lär sig mer

De får ökad motivation att komma till skolan

De får mer fysisk aktivitet

De får större trygghet i samvaro med andra människor

De utvecklar bättre kommunikationsförmåga

De får bättre förmåga att klara av uppgifter

De får ökad självförtroende

Tror du att GSPR skulle kunna gynna din elevgrupp?

Ja                      Nej                      Vet inte

Varför tror du att GSPR skulle kunna gynna din elevgrupp? (Rangordna)

1                      2                      3                      4                      5                      6                      7

Eleverna blir bemötta utan fördomar

Man fokuserar på andra färdigheter än enbart ämneskunskaper

Eleverna får ämneskunskaper genom upplevelsebaserat lärande där flera sinnen används

Eleverna får struktur på vardagen

Eleverna ingår i en arbetsgemenskap där de kan finna lösningar tillsammans med andra  
Eleverna blir sedda som individer, och inte som problematiska elever  
Gården är en diagnosfri zon

[Q] GSPR i skolan

Hur kan GSPR användas av den kommunala grundskolan? (1 eller flera kryss)  
Som en del av undervisningen för alla  
Som specialundervisning för specifika målgrupper  
Genom att elever från specifika målgrupper samlas från flera skolor  
Annat (frivilligt):

Vilka ämnen i grundskolan tycker du skulle kunna ingå i GSPR? (1 eller flera kryss)  
Språk  
Matematik  
Biologi  
Fysik/kemi/teknik  
Samhällsorienterande ämnen (geografi, historia, religionskunskap, samhällskunskap)  
Idrott och hälsa  
Bild  
Musik  
Hem- och konsumentkunskap  
Annat (frivilligt):

Vem ska undervisa på gårdar med GSPR?  
Lantbrukaren eller andra på gården  
Lantbrukaren i samarbete med pedagogiskt utbildad personal, anställd på gården  
Lantbrukaren i samarbete med pedagogiskt utbildad personal från skolan  
Annat (frivilligt):

Vilka yrkesgrupper tycker du skall finnas (hela tiden eller delar av tiden) på gårdar som används som pedagogisk resurs? (1 eller flera kryss)  
Lantbrukare  
Grundskollärare  
Specialpedagog  
Psykiatriker/läkare  
Fysioterapeut  
Sjuksköterska  
Annat (frivilligt):

[Q] Vidareutbildning inom GSPR

Behövs vidareutbildning, om du eller dina kolleger skulle arbeta med GSPR?

Ja                      Nej                      Vet inte

Skulle du kunna tänka dig att få vidareutbildning i GSPR?

Ja                      Nej                      Vet inte

[Q] Vidareutbildning inom GSPR

Vad skulle vara viktigt för dig i en vidareutbildning inom GSPR? (1 eller flera kryss)  
Att jag kan använda vidareutbildningen på min nuvarande arbetsplats  
Att jag kan använda vidareutbildningen på en annan arbetsplats  
Att jag kan arbeta med GSPR på heltid  
Att jag blev helt eller delvis befriad från mitt ordinarie arbete under utbildningen  
Löneförhöjning  
Annat (frivilligt):

På vilket sätt önskar du att vidareutbildningen skulle ordnas? (1 eller flera kryss)

Kursen är nätbaserad

Kursen är en blandning av nätbaserad undervisning och fysiska kursträffar

Kursen omfattar både föreläsningar och grupparbeten

Undervisningen är på svenska

Utbildningen ger kompetensbevis

Annat (frivilligt):

Vilken typ av kompetens tycker du är relevant att få mer kunskap om? (Rangordna)

1                    2                    3                    4                    5                    6

Teori om GSPR

Djur och djurhållning

Psykologi

Specialpedagogik

Hur elever med funktionsvariationer fungerar vid användning av GSPR

Annat

[Q] Genomförande av GSPR

Vad kan tala emot att genomföra GSPR? (1 eller flera kryss)

Problem med allergi

Problem med rädsla för djur

Kulturbarriärer i förhållande till elevens bakgrund

Logistiska problem om gården ligger långt ifrån skolan

Svårigheter vid dåligt väder (t ex regn, kyla, värme, blåst)

Det saknas uppbackning från skolledning, t.ex. vidareutbildning

Det skulle ta för mycket tid från annan undervisning

Det saknas forskning och praktisk erfarenhet om effekterna av GSPR

Man borde hellre använda pengarna till andra förbättringar av grundskolan

Inget talar emot GSPR

Annat (frivilligt):

Hur viktigt är det för dig att det finns dokumentation på effekten av GSPR – alltså om det faktiskt hjälper eleverna?

Mycket viktigt

Ganska viktigt

Lite viktigt

Inte alls viktigt

Inte relevant

Om du tycker att GSPR skulle vara ett bra komplement i grundskolan, hur skulle det kunna genomföras? (frivilligt):

[Q] Avslutande frågor

Är du intresserad av att få veta mera om GSPR?

Ja

Kanske

Nej

Hur vill du betygsätta enkäten?

1

2

3

4

5

Hur skulle enkäten kunna förbättras? (frivilligt):

Har du något att tillägga? (frivilligt - ange dock inga personuppgifter! På nästa sida finns kontaktuppgifter om du vill kontakta oss):

Vill du medverka i forskning kring GSPR? E-maila [malin.m.larsson@slu.se](mailto:malin.m.larsson@slu.se)

## Appendix 2 Interview protocols

Intervjufrågor GSPR (Gården som pedagogisk resurs), för lärare

1. Vad har du för erfarenheter och utbildningar inom djur och lantbruk?
2. Hur länge har du arbetat som lärare, och med vad? Vilka ämnen undervisar du i? Har du någon vidareutbildning, några specialiseringar?
3. Hur länge har du arbetat med GSPR?
4. Varför har du valt att arbeta med GSPR?
5. Var ligger skolan i relation till möjliga GSPR-gårdar? Vilka gårdar samarbetar skolan med? Hur tillgängliga är gårdarna, geografiskt och på andra sätt?
6. Vilka resurser finns på gården/gårdarna som skolan samarbetar med? Vilka djur? Odlingar? Annat?
7. På vilka sätt och i vilken utsträckning använder du GSPR i undervisningen? I vilka ämnen och för vilka elever?
8. På vilka sätt och i vilken utsträckning använder du utomhusmiljön i undervisningen, utöver GSPR?
9. I vilka skolämnen kan GSPR passa in i kursplanerna i grundskolan, och på vilka sätt?
10. Vilka elevgrupper och enskilda elever tror du kan gynnas av GSPR, och på vilka sätt?
11. Hur brukar ett gårdsbesök gå till, från bokning tills ni åker hem efter besöket? Finns fasta program och tydlig struktur? Anpassas besöken efter olika målgrupper?
  - a. Vilken skolpersonal följer med vid besöken? Hur många per tillfälle?
  - b. Vem undervisar på gårdar med GSPR – lärare från skolan eller de som arbetar på gården, eller båda? Hur fungerar samspelet mellan skolpersonal och gårdens personal vid besöken?
  - c. Vilka gruppstorlekar är optimala i GSPR, för olika aktiviteter och för elever med olika behov?
12. Vilka olika aktiviteter utförs på GSPR-gårdar? I vilka ämnen och för vilka elever?
  - a. Vilka aktiviteter brukar elever tycka mest om?
  - b. Vilka aktiviteter med elever fungerar bäst att genomföra i praktiken?
  - c. Vilka aktiviteter kan vara krångliga eller svåra för eleverna eller för dig? Vad finns det för skäl att ändå genomföra dem?
  - d. Vilka aktiviteter tror du att eleverna lär sig mest av? Vilka aktiviteter bidrar mest till målen i läroplanen?
13. Hur reagerar olika elever när de kommer ut på gården? Vilka likheter och skillnader finns mellan elever med och utan olika funktionsnedsättningar, svenskfödda och utlandsfödda elever, eller elever från stadsskolor och landsbygdsskolor?
14. Hur påverkar natur, djur och sammanhanget på gården lärandet som helhet (även övrig skoltid) för olika elever i GSPR?
15. Hur viktig är utemiljön på och omkring gården, hur viktiga är odlade grödor och gårdens produkter, och hur viktiga är djuren för elevernas lärande och engagemang? Om eleverna skulle besöka gården utan att få träffa djur, hur skulle det bli?
16. Hur upplever du undervisningssituationen vid GSPR jämfört med vanlig klassrumsundervisning? Vilka möjligheter ger GSPR som inte klassrummet ger? Vilka för- och nackdelar ser du, jämfört med att ha lektioner i klassrummet?

17. Vilka likheter och skillnader finns mellan GSPR och utomhuspedagogik i andra miljöer? För- och nackdelar? Behövs GSPR, eller går det lika bra med en skolskog? Vad kan motivera den högre kostnaden för GSPR?
18. Vilka risker finns med GSPR? Hur arbetar skolpersonalen för att förebygga att elever och djur utsätts för risker? (Värme, kyla, skaderisker, allergier, annat?)
19. Vilka hinder finns för GSPR? Ligger hindren hos lärare, rektorer, skolor och huvudmän, hos gårdarna eller båda parter? Vad kan göras för att överkomma hindren?
20. Hur tror du att rektorer och skolhuvudmän ser på GSPR?
21. Vad tycker dina lärarkolleger om GSPR? Är ni flera som jobbar med GSPR?
22. Hur kan GSPR användas av den kommunala grundskolan? Hur kan det finansieras och organiseras?
23. Behövs vidareutbildning för lärare som vill arbeta med GSPR? Vad tycker du i så fall bör ingå i den? (T.ex. kunskap om olika djurslag och om relationen mellan djur och barn, säkerhet, utomhuspedagogik)
  - a. Skulle du själv vilja gå en GSPR-utbildning? Hur vill du i så fall att den läggs upp? (T.ex. på naturbruksgymnasium eller högskola? Distanskurs med fysiska träffar, i så fall hur många? Eller enbart digitala träffar? Föreläsningar, eget arbete, grupparbeten? Studiebesök och praktiska övningar på GSPR-gårdar?)
24. Om man skulle genomföra ett GSPR-projekt för skolelever, hur tänker du att projektet bör läggas upp? Hur kan man underlätta för skolor att delta? Vilka elevgrupper bör projektet vända sig till? Hela skolklasser, eller elevgrupper med behov av särskilt stöd?
25. Vill du medverka i forskning kring GSPR? Vill du bli kontaktad senare om det blir aktuellt?
26. Har du något att tillägga?

Intervjufrågor GSPR (Gården som pedagogisk resurs), för instruktörer på gårdar

27. Vad har du för erfarenheter och utbildningar inom djur och lantbruk?
28. Hur länge har du arbetat med GSPR?
29. Har du någon utbildning inom pedagogik? Har du tidigare erfarenhet av att jobba med skolelever, i så fall vilken?
30. Varför har du valt att arbeta med GSPR?
31. Hur skulle du beskriva gården? Vilka resurser finns där för GSPR? Vilka djurslag? Odling?
32. Var ligger gården i relation till skolor? Hur tillgänglig är gården geografiskt?
33. Hur tillgänglig är gården för elever och skolpersonal med olika funktionsvariationer? Vilka olika behov är gården anpassad till? Hur har det fungerat i praktiken? (Exempel: Rörelsesvårigheter, synnedsättning, impulsiva elever)
34. Vilka skolor och vilka elever deltar i GSPR på gården? Vilka åldersgrupper? Hela skolklasser, mindre grupper eller elever med särskilda behov?
35. Hur brukar ett skolbesök på gården gå till, från bokning tills de åker hem efter besöket? Finns fasta program och tydlig struktur? Anpassas besöken efter olika målgrupper?
  - a. Vilken skolpersonal följer med vid besöken? Hur många per tillfälle?
  - b. Vem undervisar eleverna på gården – lärare från skolan eller ni som arbetar på gården, eller båda? Hur fungerar samspelet mellan er och skolpersonalen vid besöken?
  - c. Vilka gruppstorlekar fungerar bäst för olika aktiviteter, och för elever med olika behov?
36. Vilka olika aktiviteter erbjuder gården för skolelever?
  - a. Vilka aktiviteter brukar elever tycka mest om?
  - b. Vilka aktiviteter tror du att eleverna lär sig mest av?
  - c. Vilka aktiviteter med elever fungerar bäst att genomföra i praktiken?
  - d. Vilka aktiviteter kan vara krångliga eller svåra för eleverna eller för dig? Vad finns det för skäl att ändå genomföra dem?

37. Hur reagerar olika elever när de kommer ut på gården? Vilka likheter och skillnader finns? T.ex. elever med eller utan olika funktionsnedsättningar, svenskfödda och utlandsfödda elever, eller elever från stadsskolor och landsbygdsskolor?
38. Hur viktig är utemiljön på och omkring gården, hur viktiga är odlade grödor och gårdens produkter, och hur viktiga är djuren för elevernas lärande och engagemang? Om eleverna skulle besöka gården utan att få träffa djur, hur skulle det bli?
39. Vilka möjligheter ger GSPR som inte klassrummet ger? Vad tycker elever och lärare som kommer till gården? Vilka för- och nackdelar kan finnas, jämfört med att ha lektioner i klassrummet?
40. Varför behövs GSPR? Vilka för- och nackdelar finns med GSPR, jämfört med att vara ute i en skog? Vad kan motivera den högre kostnaden med GSPR? (Kostnader, tid, lärarresurser, vad barnen lär sig etc.?)
41. Hur fungerar samarbetet med olika skolor och kommuner?
42. Vilka hinder finns för GSPR? Ligger hindren hos lärare, rektorer, skolor och huvudmän, hos gårdarna eller båda parter? Vad kan göras för att överkomma hindren?
43. Vilka risker finns med GSPR? Hur arbetar du för att förebygga att elever och djur utsätts för risker? (Värme, kyla, skaderisker, allergier, annat?)
44. Behövs någon speciell utbildning för lantbrukare och andra som vill arbeta med GSPR och som inte är behöriga lärare? Vad tycker du i så fall bör ingå i utbildningen? (T.ex. kunskap om olika djurslag, marknadsföring, säkerhet, pedagogik, kunskap om elever med olika funktionsnedsättningar)
  - a. Skulle du själv vilja gå en GSPR-utbildning? Hur vill du i så fall att den läggs upp? (T.ex. på naturbruksgymnasium eller högskola? Distanskurs med fysiska träffar, i så fall hur många? Eller bara digitala träffar? Föreläsningar, eget arbete, grupparbeten?)
45. Om man skulle genomföra ett GSPR-projekt för skolelever, hur tänker du att projektet bör läggas upp? Hur kan man underlätta för skolor att delta? Vilka elevgrupper bör projektet vända sig till? Hela skolklasser, eller elevgrupper med behov av särskilt stöd?
46. Vill du medverka i forskning kring GSPR? Vill du bli kontaktad senare om det blir aktuellt?
47. Har du något att tillägga?



## Appendix 3 Citations from interviews

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Jag tror faktiskt att det bästa skulle vara att jobba arbetsområdesmässigt, ämnesövergripande helt enkelt. För det ger ett annat sammanhang för eleverna också än när vi separerar ämnena och jobbar enskilt med varje ämne. Jag tror det gynnar alla, faktiskt, att få en överblick på ett annat sätt. Men det kräver också samplanering, och det kräver lite mer utav oss. Men jag tror ändå att det skulle gynna eleverna att ha det mer så.

In fact, I think the best thing would be to work interdisciplinary. Because it also provides another context for the students than when we separate the subjects and work individually with each subject. I think it benefits everyone, in fact, to get an overview in a different way. But it also requires co-planning, and it requires a little more of us. But I still think it would benefit the students to have it more like that.

Det är också individuellt, men de flesta tycker väldigt mycket om att vara med Balder, den här nordsvensken. Han är rejäl och stor och trygg, och de tycker det är skoj att göra olika saker, när de får hantera honom och rida på honom. // Vi brukar samtala medan de sköter om honom och borstar honom och sådär. Och det brukar också vara ganska avslappnande för eleverna. Då kan man liksom väva in lite frågeställningar och lite bra grejer under tiden där, utan att de ens tänker på att de lär sig saker, så det är jättebra! // Och sedan är det ju fåren då. De är ju populära. Verkligen. // För Balder är ju väldigt stor, och kan upplevas nästan lite övermäktig ibland, och fåren är ju väldigt bra storlek, för de som är rädda för stora hästar.

It is also individual, but most people really like being with Balder, this Northern Swedish horse. He is solid and big and confident, and they think it's fun to do different things, when they get to handle him and ride him. // We usually talk while they take care of him and brush him and things like that. And it's also usually quite relaxing for the students. Then you can weave in some questions and some useful stuff during the time there, without them even thinking that they are learning things, so that's great! // And then there are the sheep then. They are popular. Really. // Because Balder is very big, and can be experienced almost a little overwhelming sometimes, and the sheep are very good size, for those who are afraid of big horses.

Det är ju de här utmaningarna, när det blir lite mer krav, som till exempel om de får en skriftlig uppgift som vi vill att de ska lösa, som vi också har testat. De drar en koppling direkt till skola, och då blir det läsningar. Nej, det är svårt, det där. Man får liksom på ett väldigt smidigt sätt väva in skolaktiviteter, för de är så negativa, många gånger. Det är jättesvårt.

It is these challenges, when there are a few more demands, such as if they are given a written assignment that we want them to solve, which we have also tried. They instantly make a connection to school, and then there are locks. No, that's hard, that's hard. You have to weave in school activities in a very flexible way, because they are so negative, many times. It is really difficult.

...det är fantastiskt att kunna jobba med eleverna tillsammans med djuren. Dels är det ett sätt att skapa relation till eleverna på ett annat sätt än vad man kanske når fram i skolmiljön. // ...det är djuren som överväger, och det är de som gör skillnaden mest. Jag behöver egentligen inte säga eller göra så mycket, utan det sköter de själva.

...it is fantastic to be able to work with the students together with the animals. It is also a way of creating a relationship with the students in a different way than what one might achieve in the school environment. // ...it is the animals that prevail, and it is they who make the difference the most. I don't really need to say or do much, but they take care of it themselves.

...vi ser ju också att de får lättare att koncentrera sig, de ökar sin motivation när de är här, de känner en trygghet där de kan vara sig själva, det behöver inte läggas på någon fasad, utan inför djuren så är liksom alla lika på något vis. De får rörelse och aktivitet. Det är så många bitar som går in i just det vi gör här på gården, som ger positiva ringar på vattnet, även i skolan. Så vi ser ju klar förbättring. Det är väldigt, väldigt roligt.

...we also see that they find it easier to concentrate, they increase their motivation when they are here, they feel a sense of security where they can be themselves, there is no need to put on a facade, but in front of the animals, everyone is equal in a way. They get movement and activity. There are so many pieces going into what we do here at the farm, which gives positive rings on the water, even in school. So we see clear improvement. It's very, very fun.

Barn som kanske är högljudda och gapiga och utagerande i skolan blir lugna bara de sätter sig och börjar klappa ett djur. Det är svårt att förklara för någon som inte har sett eller upplevt det, men det är häftigt alltså!

Children who may be loud and noisy and acting out at school calm down as soon as they sit down and start petting an animal. It's hard to explain to someone who has not seen or experienced it, but it's really cool!

12

Hönor är jättetrevliga djur! De pratar med en, de berättar när de har lagt sina ägg, och det är tydligt om de är glada eller sura, eller hur de har det. Det är så speciellt för barn att få följa detta, när de har lagt ägg och ruvar och kläcker fram kycklingar. Det är fantastiskt.

Hens are very nice animals! They talk to you, they tell when they have laid their eggs, and it is clear if they are happy or morose, or how they are doing. It is so special for children to be able to follow this, when they have laid eggs and incubate and hatch chickens. It is fantastic.

13

Så först när de kommer till gården, så presenterar vi oss och berättar vad dagen ska innehålla. Sedan får alla barn tvätta händerna och sprita händerna. // Och sedan så berättar vi att nu är det

vi som är gäster hemma hos djuren, och då måste vi liksom vara lugna och fina, för att annars tycker djuren inte om att vi hälsar på.

So first when they come to the farm, we introduce ourselves and tell what the day will contain. Then all children can wash their hands and spray their hands. // And then we tell that now we are guests at the animals' home, and then we have to be calm and nice, because otherwise the animals don't like that we visit.

Vi har mattebesök // med årskurs 2 och 3, där vi har utematte där man först träffar tre djurslag, och sedan får man ett häfte där man får gå runt och fylla i hur man räknar hur många magar som är i hagen, hur många klövar, och hur mycket vatten de dricker, och spiller man ut hinken, hur mycket vatten är det kvar.

We have math visits // with grades 2 and 3, where we have outdoor math where you first meet three animal species, and then you get a booklet where you can walk around and fill in how to count how many stomachs are in the pasture, how many hooves, and how much water they drink, and if you spill from the bucket, how much water is left.

Man lär sig om djurs känslor och om människors känslor. Då brukar man först börja med att fråga barnen om de tror att djur har känslor. Och då svarar faktiskt nästan alla att de inte har känslor, konstigt nog. Och det här är kanske 6-7-åringar. Och då brukar man visa bild på en hund som är fruktansvärt arg och visar tänderna. Så brukar man fråga: "Skulle ni vilja klappa den här hunden?" "Nej!" säger alla. "Men varför vill ni inte det?" "Men den är arg!" säger de. "Men precis. Är inte arg en känsla?" "Jo, arg är en känsla." Så får de härmna hunden, hur hunden ser ut, och så får de göra sin egna arga min, och visa varandra. // Sedan får de gå ut och studera djuren i hagen och så får de ett formulär, ett litet papper de får fylla i, och så tittar de på grisar till exempel – vad gör grisen? // Så får de fylla i ett formulär och iaktta grisen. Sedan samlas man igen, och sedan brukar vi ha en liten sketch där de får träna på hundmöten.

You learn about animal emotions and about human emotions. Then you usually first start by asking the children if they think that animals have feelings. And then almost everyone answers that they have no feelings, strangely enough. And these are maybe 6-7 year olds. And then you usually show a picture of a dog that is terribly angry and shows its teeth. Then you usually ask: "Would you like to pat this dog?" "No!" says everyone. "But why don't you want?" "But it's angry!" they say. "But exactly. Isn't angry a feeling?" "Yes, angry is a feeling." So they get to imitate the dog, what the dog looks like, and then they get to make their own angry face, and show each other. // Then they can go out and study the animals in the enclosure and they get a form, a small piece of paper they can fill in, and then they look at pigs for example - what does the pig do? // Then they can fill in a form and watch the pig. Then they gather again, and then we usually have a small performance where they get to practise dog meetings.

De tycker det är så kul, att få titta på djur, känna på tuppens kam och ankans fötter, och verkligen träffa djur på nära håll, för barn idag kommer inte i kontakt med den här typen av djur. Så det är super... Det är roligt, för man verkligen fångar deras uppmärksamhet, och de ställer frågor och de undrar. Barnen idag är så långt ifrån de här bondgårdsdjuren. Så det är jättespännande. Jättekul faktiskt.

They think it's so much fun to watch animals, feel the rooster's comb and duck's feet, and really meet animals up close, because children today don't come into contact with this kind of animals. So it's super... It's fun, because you really catch their attention, and they ask questions, and they wonder. The children today are so far away from these farm animals. So it's very exciting.

För att det är mycket det att barn idag, de har svårt att sitta still. De är jättetaggade när de kommer ut så här, och har verkligen myror i brallan. // Och sedan, det är ju lärarna som måste se till att ungarna lyssnar, för att om de är tjafsiga, till slut ibland så har man fått gå iväg med 2-3 ungar som inte kan sköta sig när man har extrema klasser. Så en lärare har fått plocka ur några barn, "Ni kan inte vara med, för ni förstör för de andra". Men det är inte jätteofta, men det har hänt. Men oftast så funkar det bra.

Because there is a lot that children today, they have a hard time sitting still. They are very tagged when they come out like this, and really have ants in their pants. // And then, it is the teachers who have to make sure that the kids listen, because if they are fussy, in the end sometimes they have had to leave with 2-3 kids who can't behave when you have extreme classes. So a teacher has had to pick out some children, "You cannot join, because you ruin for the others". But it is not very often, but it has happened. But most of the time it works well.