

International master's programme in Outdoor and Sustainability
Education

Study guide for the course

Outdoor Learning in Theory and Practice

15 ECTS credits

Course code

947A16 (programme course)

917A22 (single subject course)

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Introduction

Welcome to the course Outdoor learning in theory and practice. The course runs between August to October 2021. The course is given full time which means a study time of 40 hours every week. Lectures, seminars and outdoor activities cover the course goals from different perspectives. Beside the scheduled time you are supposed to read literature and prepare for outdoor lessons, seminars and assignments. Minor changes in the study guide might occur. All changes will be announced on Lisam.

The logic of the course

The course departs from student-centered learning where experience and reflections are equally important and together inform the learning outcomes. The students will take part in different outdoor teaching and learning activities. These practical experiences are sometimes led by the lectures and sometimes by a smaller group of students. The students will take turns in planning, leading and evaluating outdoor lessons, conducted for peers or with a class of children. When planning and evaluating outdoor teaching, aspects of equal opportunities for learning, leadership and safety will be taken into account. The students will deepen their knowledge about how different theories of learning inform outdoor education by reading literature, plan for teaching outdoors, and reflect on own practical experiences as a teacher and as a student. The course covers different theoretical perspectives of outdoor education, such as different cultural interpretations about outdoor education, theories of learning, and place-based education. Learning theories that underpin outdoor learning are for example pragmatism and experiential learning. Students will experience practical outdoor education in different subjects and environments. The outdoor learning lessons will cover different content such as mathematics, language, social science, natural sciences and technology and practical experiences are related to the literature. The course also elaborates on the role outdoor environments play in children's development and well-being. There are regular seminars during the course where theory and practice will be discussed.

Students are requested to document outdoor experiences as well as written reflections during the course in a portfolio. This portfolio will later be used in the final assignment as a tool for reflection on the need for further development of knowledge.

Assignments

Assignment 1—Participation in the seminars (OBL 1), 6 credits, Grade: Pass/Fail

Assignment 2—Written essay (SRE1), 9 credits, Grade: ECTS scale

The seminars are supporting the final assignment, a written essay. By participating and writing reflections you prepare for writing the essay, where practical outdoor teaching and learning experiences are reflected upon in light of the course literature.

If you have questions concerning a specific outdoor activity or seminar, please contact the responsible lecturer. Contact details can be found in this study guide

Further information about for example travel information and added literature will be announced on Lisam. Make sure you check Lisam regularly or activate the Alert function.

Welcome to the course!

Intended learning outcomes

After completion of the course, the students should be able to:

- account for knowledge about the historical development, theoretical frameworks and contemporary research field of outdoor education
- describe and analyse how outdoor education, interdisciplinary as well as disciplinary, can be implemented with regards to educational theory and research
- plan for, perform and evaluate teaching and learning in different outdoor environments, with respect for leadership, safety and equal opportunities for learning
- describe and critically examine the connection between outdoor play and learning, health and well-being

Outdoor lessons and field trips

During the course you will take part in several outdoor lessons in the vicinity and also some field trips. For longer journeys, we usually travel in busses from the university but for shorter journeys, the students need to use bikes or public transport. Travel information will be announced in advance. It is important to dress appropriately for all outdoor activities. You will get cold after some hours outdoors so dress warm and be prepared for rain and wind.

Portfolio for planning, performing and evaluating outdoor education

One of the course aims is to *plan for, perform and evaluate teaching and learning in different outdoor environments, with respect for leadership, safety and equal opportunities for learning*. Therefore, some outdoor activities will also be led by the students. You will be responsible for this in smaller groups. The groups will preferably be organised according to your teaching experience/teacher degree, so one group consist of students with a preschool degree/experience, one group consist of students with a primary school degree/experience and one group consist of students with a secondary school/adult teaching experience. During the course, each group plan for one activity with a focus on the particular age group. For each lesson, there should be a focus on leadership, safety and equal opportunities for learning. One of the groups that are not planning the lesson will take the role of evaluating it. Method for doing this will be decided during the course, but you will practice methods used in research studies like field notes, interviews or questionnaires. Further information will be given during the course. At the end of the course you will be (in groups) responsible for holding an outdoor lesson with children at a school. This experience is part of the final assignment.

You are encouraged to document your outdoor learning experiences with photos and/or field notes. Collect photos/field notes on what you have learnt, challenges, what you need to develop etcetera, in a portfolio (a folder on your computer or in a notebook). Write down, for example, quotes from the literature that you want to discuss during seminars or that you think are relevant in relation to some specific outdoor experience. The idea is that you can use this portfolio for the final assignment and continue the portfolio in further courses during the year.

Overview of the course

Below is an overview of the course and the different themes in the course. You can also see how the different activities are related to the course goals. The complete schedule can be found on Time edit.

| WEEK | MAIN CONTENT | SEMINARS | OUTDOOR ACTIVITIES |
|--------------|--|------------------------|--|
| 34-35 | History, theoretical frame works and contemporary research | Seminar 1 Seminar 2 | Valla, Natur centrum, Tinnerö nature reserve |
| 36 | Outdoor education in practice/safety aspects | | Valla, Study visit to a pre-school in Norrköping |
| 37-38 | Place-based education in natural and urban environments | Seminar 3 | Field trip to Omberg, The old industrial landscape in Norrköping, Linköping City |
| 39-40 | Groups and leadership Lesson with peers | Seminar 4 | Valla, Nykvarnsparken Field trip to Bjärka Säby |
| 41 | Memory and cognition Own lessons | | Lessons with pupils |
| 42 | Own lessons | Seminar 5 | Lessons with pupils |
| 43 | Peer response/ submission of final essay | | |

Assignment 1–Seminars

There are several opportunities during the course where you have the possibility to discuss literature and practical experience. Five of the seminars are mandatory and constitute Assignment 1. Assignment 1 is graded Pass or Fail. To receive the grade Pass, you need to participate in the five seminars and/or submit a written reflection. See the study guide for further information when a written reflection is necessary. If you cannot participate in a seminar you need to do a complementary written task. See the instructions in this study guide.

Submit your written reflections in Lisam under Submissions/Name of seminar. Name your document with you name and title of the seminar (Lastname.firstname.name of seminar). Submit as a Word file and write your name in a header. Give your text a title, paginate your text, don't forget reference list and include number of words. Use APA reference style.

Preparation for the seminars

You need to read the literature before the seminars so you can discuss it with your peers. At the seminar 2 (*Interesting article*) you are supposed to describe and discuss an article you find yourself in the database Unisearch at the library. The preparation before seminar 3, 4 and 5 is to write a reflection in advance (using the literature and/or experiences).

Seminar 1: Background and theoretical constructs (Emilia Fägerstam)

30 August, Naturcentrum in Linköping City (we travel there together by bus or bike)

Literature: Dymont & Potter (2014), Chapter 1: Brookes, 2: Becker, 28: Pedersen Gurholt, 29: Martin et al in Humberstone, Prince & Henderson (2016).

Preparation for the seminar is to answer the following question. They will be discussed during the seminar.

What is your previous experience of outdoor education (OE)—what concepts or descriptions of OE in the literature are you familiar with?

Are there some concepts/practices of OE that you don't know so much about?

What are the historical roots of OE according to the literature?

This seminar does not require a written reflection, but if you can't participate, the following questions need to be answered in written form and submitted on Lisam. In

Submissions/Seminars/Background of OE. Number of words: 500-1000.

[Seminar 2: Interesting article \(Ola Uhrqvist\)](#)

03 September

Meet at Backside of Key-outdoor seminar

Search for an article, published 2015 or later, that you find interesting in the database Unisearch. There is an introduction to how to use the library the 26th of August and you have time to search together with a librarian the 27th of August. At the seminar you should be prepared to orally present your article in smaller groups for approximately 15 minutes. Why did you choose it? In what journal did you find it? Is the journal from educational science or from another field related to outdoor education? What field? What was the aim, methods, results, implications? Do you find the results trustworthy? Why? Why not? Submit a written summary based on the questions above and submit in the folder "Interesting article" in Collaborative workspace on Lisam. Number of words: approximately 500.

[Seminar 3: Outdoor learning \(Emilia Fägerstam\)](#)

15 September

All read: Becker, Lauterbach, Spengel, Dettweiler, & Mess (2017), Bentsen, Myging & Randrup (2009); Illeris, 2007; Fox (2008).

Choose reading below depending on your interest.

Pre school: Chapter 9: Hansen Sandseter & Hagen in Humberstone et al.

Primary school: Bølling, Otte, Elsborg, Nielsen & Bentsen (2018)

Secondary school: Fägerstam (2018)

Reflect on the following questions: How can we understand the concept experience and what is problematic with this word? What are the potentials and challenges of outdoor learning, from the research as well as from your own experience? What did capture your interest in the articles, and why?

Submit your reflection on Lisam. (Submissions/Seminars/Outdoor learning. Due 14 September 14.00. Number of words: 1000+/- 10%.

Seminar 4: Place-based education (Ola Uhrqvist)

1 October, Nykvarnsparken in Linköping City

Beames (2015), Gruenewald (2003), Chap. 8: Mannion & Lynch and Chap. 42: Brown & Whattchow in Humberstone et al. (2016),

During this seminar we are going to discuss the concept place-based education. You have participated in several outdoor lessons and field trips, where place have played different roles. Write a reflection where you relate some of your own experiences the suggested literature above. First, explain the concepts *place-based education* and *place-responsive teaching* with references to the literature, and elaborate on the following question: What kinds of place-based approaches have you experienced, before or during the course? How would you like to develop your place-responsive teaching in the future?

Submit a written reflection on Lisam (Submissions/Seminars/Place-based education) due 29 September. Number of words: 1000+/- 10%.

Seminar 5: Development of memory (Felix Koch)

20 October

Literature: Nelson (2014).

When writing the reflection, you summarize and explain her point of view about memory development in your words. Do not try to include everything she talks about but try to summarize and explain what you think is most interesting and relevant.

End your reflection with applying her theory (and if you want other perspectives) about memory development to outdoor education and different teaching methods. Maybe you have some experience from teaching that you can use to exemplify her theory. During the seminar, you discuss memory development based on your reflections.

Submit your reflection on Lisam (Submissions/Development of memory). Number of words: 1000+/- 10%. Due 19 October, 9.00.

Second seminar about memory development

In the second seminar, we will reflect more about memory development by discussing our own and some other common conception about memory.

This seminar does not need additional preparations.

Assignment 2–Written essay

Content of the essay

The essay should clearly refer to the course literature, but you are welcome to also use other literature. In first-hand, you are recommended to use peer reviewed literature, but a few references to non-peer reviewed literature is alright. Use your practical experience from the outdoor lesson with pupils, peers and other learning experiences during the course and relate it to the theoretical perspectives that have been discussed during the course. You are welcome

to reuse parts of your writings from the seminar reflections. Give your essay a title and use headings and subheadings.

| Content | Comment |
|---|--|
| Introduction (250-500 words) | A short introduction to the field of outdoor teaching and learning. |
| Theoretical background (1500-2000 words) | Presentation of relevant concepts/theoretical frameworks (e.g. learning theory, place, wellbeing) underpinning the rationale for outdoor teaching and learning in general, and for the planned lesson in particular. |
| Short description of your outdoor lesson, including intended learning outcomes. (1000 words) | Describe your lesson plan briefly by discussing the didactical questions– What content are you teaching? How are you doing it? Where are the lesson taking place? For whom? Why are you teaching it outdoors and, why at that particular the place? You don't need to provide a complete lesson plan, but the reader needs to get an overview of the activity. |
| Critical reflection of the performed lesson (1000-1500 words) | Analyse your lesson from an educational perspective. Consider risk, safety and equal opportunities. Were there some challenges and unexpected outcomes? |
| Outdoor learning (1000-1500 words) | Choose one outdoor experiences from the course and analyse it from a student/learning perspective by referring to the course literature about learning, place and nature/wellbeing. |
| Your own learning and need for further knowledge (500-1000 words) | What new knowledge have you acquired during the course and what do you want to learn more about/practice more in the next course? Reflect on your own learning trajectory, you don't need to write an evaluation of the course. |
| References | Use preferably APA reference style. |

Paginate your essay and **write your name in a header**. Use times new roman 12pt, double space. Submit in Lisam in Submissions/Assignment 3. Name it lastname.firstname.assignment 3. Due Sunday 24 October 23.59. Second time for submitting assignment 2 is 28 November. Third time is 9 January 2022.
Grading: ECTS scale (A-F).

Grade criteria

Assignment 2–Written essay (SRE1)

Fail

F

The student fails to meet the requirements indicated under E. Extensive work is required before the grade can be awarded.

Fx

The student fails to meet the requirements indicated under E. Some more work is required before the grade can be awarded.

E

Sufficient

The student can present a text but with some shortcomings in structure and disposition. The student can integrate some relevant course literature, but the use of the course literature is poor. The student demonstrates a sufficient understanding of the research and practice field of outdoor education, but the text lack coherence and central concepts and theoretical perspectives are not accounted for in a satisfactory way. Citing and references are used but with many shortcomings.

D

Satisfactory

The student can present a text and articulate ideas in a mainly clear manner using acceptable academic language. The student demonstrates a basic understanding of the research and practice field of outdoor education and the use of the course literature is satisfactory but could be improved. Central concepts and theoretical understanding of the research and practice field of outdoor education could be more elaborated. Citing and references are used satisfactory but with some shortcomings.

C

Good

The student can select, relate and integrate relevant research findings/course literature in the text. The text is written in a clear and coherent manner, using a logical structure and adequate academic language. The student demonstrates a clear and concrete understanding of the research and practice field of outdoor education. Citing and references is mainly done correct.

B

Very good

The student shows a thorough understanding of the research and practice field of outdoor education. The student is able to critically relate to relevant previous research in the field and contribute with independent ideas and conclusions. The student uses scholarly writing presenting ideas in a well-developed line of argument using adequate academic language. The student use citing and references correct.

A

Excellent

The student shows comprehensive and nuanced understanding of the research and practice field of outdoor education. The student is able to critically relate to relevant previous research in the field, to contribute with original analysis and to draw independent conclusions. The student uses an extensive amount of literature to underpin independent reasoning. The student masters scholarly writing presenting ideas in a well-developed line of argument using adequate academic language. The student use citing and references correct.

Contact details

Course director

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Plagiarism and Copyright

The following text is taken from the Liu Library. They have many resources in order to help you with your studies, so make sure you use the library during your year at LiU. You will have a workshop about plagiarism 28 August 10.15-12. Before the workshop you need to do the library's self-study tutorial

[NoPlagiat](#).

In the academic world it is essential to have a grasp of issues pertaining to plagiarism and copyright, issues that are often clouded in confusion.

What is plagiarism?

To plagiarize means using somebody else's work and presenting it as your own without referring to the source. It may be a text, idea, theory, image, chart, figure, music, computer program or a product. Even reformulation, paraphrasing, text to your own words, without referencing the source is plagiarism. Plagiarism may also violate Copyright laws.

More at LiU Student on [Cheating](#).

What is self-plagiarism?

Self-plagiarism is when you re-use your own previously published / submitted texts in a new work. You should refer to your own texts in the same way as you do with other sources.

What happens if I plagiarize?

Plagiarism is a serious offense against good academic practice and can if worse comes to worst result in temporary suspension from studies by decision of The Disciplinary Board at Linköping University. A student who is suspended may not participate in lectures, laboratory sessions, seminars, exams, tutorials, assignments, and may not access to LiU's computer labs. The suspension may also affect payment of student support.

More at LiU Student on [Disciplinary measures](#).

How do I avoid plagiarism?

- When using other writers' work, re-write the original entirely in your own words. When giving exact quotes from someone else's work use the original text in quotations marks and give a correct reference.
- Always refer and quote in accordance with good academic practice. You can read more about this on the page [Citation technique and styles](#).
- Always ask the copyright holder's permission to use photographs, figures, diagrams in your own work. Not doing so is a violation of copyright law.
- Learn more about how to avoid plagiarism through the library's self-study tutorial [NoPlagiat](#).
-

What plagiarism detection systems are used at Linköping University?

Linköping University can submit student texts to Urkund, which is a plagiarism-checking tool for teachers. Submitted texts are checked against a very large database of material taken from the internet, published material and student material.

Plagiarism-check of publications at a higher scientific level and theses, can be done using Similarity Check which check against academic sources such as journal articles and the internet. For further details, contact the [library](#).

Literature list

Further readings might be added.

Aasen, W., Grindheim, L. T., & Waters, J. The outdoor environment as a site for children's participation, meaning-making and democratic learning: examples from Norwegian kindergartens. *Education, 3-13*, 44(4), 391-406.

Bell, P., Greene, T., Fisher, J., & Baum, A. (2001). Chapter 2: Nature and human nature. In *Environmental Psychology*. London: Lawrence Erlbaum Associates Publishers. (on lisam)

Beames, S. (2015). Place-based education: A reconnaissance of the literature. Pathways. *The Ontario Journal of Outdoor Education*, 28(1). (On lisam).

Becker, C., Lauterbach, G., Spengel, S., Dettweiler, U., & Mess, F. (2017). Effects of regular classes in outdoor education settings: A systematic review on students' learning, social and health dimensions. *International Journal of Environmental Research and Public Health*, 14, 485; doi:10.3390/IJERPH14050485.

Bentsen, P., Myging, E., & Randrup, T. (2009). Towards an understanding of udeskole: education outside the classroom in a Danish context. *Education 3-13*, 37(1), 29-44.

Brussoni et al (2015). What is the relationship between risky outdoor play and health in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6423-6454.

Bølling, M., Otte, C. R., Elsborg, P., Nielsen G., & Bentsen, P. (2018). The association between education outside the classroom and students' school motivation: Results from a one-year quasi-experiment. *International Journal of Educational Research*, 89, 22-35.

Bølling, M., Hartmeyer, R., & Bentsen, P. (2019). Seven place-conscious methods to stimulate situational interest in science teaching in urban environments. *Education 3-13*, 47(2), 162-175.

Dyment, J., & Potter, T. (2014). Is outdoor education a discipline? Provocations and possibilities. *Journal of Adventure Education and Outdoor Learning*, 14(1), 1-16.

Fox, K. (2008). Rethinking experience: what do we mean by this word "experience"? *Journal of Experiential Education*, 31(1), 36-54.

Fägerstam E. (2014). High school teachers' experience of the educational potential of outdoor teaching and learning. *Journal of Adventure Education and Outdoor Learning*, 14(1), 56-81.

Fägerstam, E., & Grotherus, A. (2018). Secondary school students' experience of outdoor learning: A Swedish case study. *Education*, 138(4), 378-392.

Gruenewald, D. (2003). The best of both worlds: a critical pedagogy of place. *Educational Researcher*, 32(4), 3-12.

Humberstone, B., Prince, H., & Henderson, K. (2016). (Eds.) *Routledge International Handbook of Outdoor Studies*. Routledge. (on-line book)

Chapters in the published book 1,2,3,4,6,8,9,10,11,12,13,14, 24, 25, 28, 29, 33, 34, 35, 37, 39, 42.

See the list on Lisam about the authors for each chapter! The numbers of the chapters are not the same in the book as online.

Illeris, K. (2007). What do we actually mean by experiential learning? *Human Resource Development Review*, 6(1), 84-95.

Keniger, L., Gaston, K., Irvine, K., Fuller, R (2013). What are the benefits of interacting with nature? *International journal of environmental research and public health*, 10, 913-935.

Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology*, 10: 305.

Nelson, K. (2014). Sociocultural theories of memory development. In Eds. P. Bauer & R. Fivush. *The Wiley Handbook on the development of children's memory*.

You can download a pdf of the chapter through the University Library. Here is the link (which should work if you are using a computer on campus): <https://ebookcentral.proquest.com/lib/linkoping-ebooks/detail.action?docID=1402443>. Otherwise, go to the university library web page: <https://www.bibl.liu.se/> and search for: *The Wiley Handbook on the development of children's memory*. Among the information you get, you should see a link "fulltext" for that book. Click on the link and download "pages: 111 to 165" as a pdf or read online. Katherine Nelson's chapter starts on the 5th page of the pdf.

Pennlert, L-Å. (2016) Visible Teaching. In Lindström, G., & Pennlert, L-Å. (2016). *Undervisning i teori och praktik*. Umeå: Fundo förlag. (on Lisam)

Stuler Myhre, T., & Fiskum, T. A. (2020): Norwegian teenagers' experiences of developing second language fluency in an outdoor context. *Journal of Adventure Education and Outdoor Learning*, DOI: 10.1080/14729679.2020.1769695

(Woolfolk, A. (2016). Chapter 10. Learning sciences and constructivism. *Educational Psychology*. Essex: Pearson Education Limited (distributed on Lisam) *Repetition of theory of learning if you need it.*)

Further readings

The research and practice field of outdoor education

Dillon, J., & Dickie, I. (2012). *Learning in the natural environment: review of social and economic benefits and barriers*. Natural England Commissioned Reports, Number 092.

Dyment, J. (2005). Green school grounds as sites for outdoor learning: Barriers and opportunities. *International Research in Geographical and Environmental Education*, 14(1), 28-45.

Faskunger, J., Szczepanski, A., & Åkerblom, P. (2018). *Teaching with the sky as a ceiling: a review of research about the significance of outdoor teaching*. Linköping: Linköping University Electronic Press
<http://liu.diva-portal.org/smash/record.jsf?pid=diva2%3A1253050&dswid=7232>

Fägerstam, E. (2012). *Space and Place. Perspectives on outdoor teaching and learning*. Linköping. Linköping University. (can be downloaded from DIVA/Liu Library)

Higgins, P., (2008). *Why indoors? The role of outdoor education in sustainability, health and citizenship*. (on lisam)

Nicol, R. (2002a). Outdoor education: research topic or universal value? Part one. *Journal of Adventure Education and Outdoor Learning*, 2(1), 29-41.

Nicol, R. (2002b). Outdoor education: research topic or universal value? Part two. *Journal of Adventure Education and Outdoor Learning*, 2(2), 85-99.

Nicol, R. (2003). Outdoor education: research topic or universal value? Part three. *Journal of Adventure Education and Outdoor Learning*, 3(1), 11-28.

Rickinson, M. et al. (2004). *A review of research on outdoor learning*. London: National Foundation for Educational Research and King's College. (on lisam)

Robertson, M., Lawrence, R., & Heath, G. (2015). *Experiencing the outdoors. Enhancing strategies for wellbeing*. Rotterdam: Sense publishers. (e-book)

Potter, T., & Dymont, J. (2016). Is outdoor education a discipline? Insights, gaps and future directions. *Journal of Adventure Education and Outdoor Learning*, 16(2), 146-159.

Waller, T., Årlemalm-Hagser, E., Hansen Sandster, E.B., Lee-Hammond, I., Lekies, K., Wyver, S. (2017). *The Sage handbook of outdoor play and learning*. London: SAGE (on-line book) Lots of reading for those interested in preschool practice.

Outdoor learning/didactics in different subjects

Ayotte-Beaudet, J-P., Potvin, P., Lapierre, H., & Glackin, M. (2017). Teaching and learning science outdoors in schools' immediate surroundings at K-12 levels: a meta-synthesis. *EURASIA Journal of Mathematics Science and Technology Education*, 13(9), 5343-5363.

Brage, C. (2012). *Teaching technology outdoors*. Linköping: Carina Brage (can be bought for 50 SEK by the author).

Christie, B., Beames, S., Higgins, P. (2015). Context, culture and critical thinking: Scottish secondary school teachers' and pupils' experience of outdoor learning. *British Educational Research Journal*, 12(3), 417-437.

Fägerstam, E., & Blom, J. (2013). Learning biology and mathematics outdoors : effects and attitudes in a Swedish high school context. *Journal of Adventure Education and Outdoor Learning*, 13(1), 56-75.

Fägerstam, E., & Samuelsson, J. (2014) Learning arithmetic outdoors in junior high school – influence on performance and self-regulation skills. *Education 3-13*, 42(4)

Fägerstam, E. (unpublished manuscript). Exploring Dimensions of Sense of Place in Environmental Education (on lisam).

Learning in the outdoor classroom. Vimmerby Outdoor Teaching publisher. Handbook in outdoor teaching in different subjects. <https://www.outdoorteaching.com/en/>

Mannion, G., Fenwick, A., & Lynch, J. (2013). Place-responsive pedagogy: learning from teachers' experience of excursions in nature. *Environmental Education Research*, 19(6), 792-809.

Pendrill, A-M., Ekström, P., Hansson, L., Mars, P., Ottara, L., & Ryan, U. (2014). Motion on an inclined plane and the nature of science. *Physics education*, 49(2), 180-186.

Scott, G., & Boyd, M. (2016). Getting more from getting out: increasing achievement in literacy and science through ecological fieldwork. *Education 3-13*, 44(6), 661-670.

Health aspects and the outdoors

Mårtensson, F., Jansson, M., Johansson, M., Raustorp, A., Kylin, M., & Boldeman, C. (2014). The role of greenery for physical activity play at school grounds. *Urban Forestry & Urban Greening*, 13, 103-113.

Schmidt, M., Benzing, V., & Kamer, M. (2016). Classroom-based physical activity breaks and children's attention: cognitive engagement works! *Frontiers in Psychology* 7, article 1474.

Schneller, M., Duncan, S., Schipperijn, J., Nielsen, G., Mygind, E., & Bentsen, P. (2017). Are children participating in a quasi-experimental education outside the classroom intervention more physically active? *BMC Public Health*, 17, 523-535.

Söderström, M., Boldeman, C., Sahlin, U., Mårtensson, F., Raustorp, A., & Blennow, M. (2013) The quality of the outdoor environment influences children's health—a cross-sectional study of preschools. *Acta Paediatrica*, 102, 83-91.