



## FEATURE

### Conducting Research with Pedagogues: A Case Study Conceptualizing the Playground as an Informal Learning Environment

C. Blomgreen, [cabb@via.dk](mailto:cabb@via.dk)

VIA University College, Denmark

DOI: <https://doi.org/10.26203/p6y7-n435>

Copyright: © 2019 Blomgreen

**To cite this feature:** Blomgreen, C., (2019). Conducting Research with Pedagogues: A Case Study Conceptualizing the Playground as an Informal Learning Environment. *Education in the North* 26(1) pp. 71-85.



This is an open-access article distributed under the terms of the Creative Commons Attribution-Non-commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial use, distribution, and reproduction in any medium, provided the original author and source are credited.

## **Conducting Research with Pedagogues: A Case Study Conceptualizing the Playground as an Informal Learning Environment**

C. Blomgreen, [cabb@via.dk](mailto:cabb@via.dk)

VIA University College, Denmark

### **Abstract**

This feature article explores the extent to which a renewed "spatial" attention within fields like science and education (Latour, 2007; Finnegan, 2008; Fabian, 2016) can yield interesting insights for the interpretation of outdoor spaces in a Danish kindergarten context. The playground emerges as a particularly interesting site for understanding the spatial and material sensibilities in the social practice between children and adults (Gulløv and Højlund, 2005; Garnett-Silven, 1995).

Data collection and analysis were both grounded in a theoretical overview of the role and interpretation of the physical environment in everyday life (Wolcott, 1994, Krøijer & Sjørslev, 2018).

Keywords: case study, science, pedagogues, affordance, informal learning space

## Introduction

This feature article reports on the findings from the recently completed project "*The Playground as an Informal Learning Environment*." This anthropological study comprised of a single case study, through which I followed a group of children and pedagogues in a Kindergarten in Denmark over a period of two years.

In both society and in research, there is renewed attention to how humans understand, manage and think about space and materiality as a key aspect in orchestrating social activity (Gregersen and Skiveren, 2017; Fabian, 2016; Latour, 2007, Bennett, 2015). A "spatial turn" seeks to capture how phenomena and processes, which have long attracted analytical attention from anthropology, could facilitate a bridge to other scientific traditions, such as education (Fabian, 2010; Haraway, 2016).

Theoretically, this research project focuses on the interrelationship between the nature of our surroundings and our activities (Lerstrup, 2016; Gibson, 2014; Gulløv and Højlund, 2005; Flensburg, 2002; Latour, 2007). The approach to studying this interrelationship, based in a cultural post-humanistic ontology, seeks to deconstruct and disregard the established hierarchy between the active human and the passive material world (Latour, 2007; Richard, 2018). With this take, materiality becomes a non-human actor that can offer active resistance and challenge the intentions of consciousness (Latour, 2007). In other words, the material things in the outdoor spaces of the Kindergarten endow an ability to act and thereby affect the pedagogical practice and the social life of the children, as well as the relationship between the individual child and the thing or place (Latour, 2007; Gibson, 2014; Lerstrup, 2016, Rasmussen, 2014). On such basis, the project seeks to bring attention to how children play as a social practice "emerge" from a kindergartens design, interior and location. Specifically, I looked at how play activities could be related to inquiry-based science activities as a student-guided method aimed at letting the child be guided by investigations and problem description of what is taking the child (Tunncliffe, 2016, Elfstrøm etc., 2012). Through this, the 'naturally found' materials in the playground were not just the backdrop of children's play in the kindergarten, but functioned as a non-human actor providing sufficient and appropriate challenge in developing emergent conceptions of the nature of science prompted by the various possibilities offered by the surroundings (Demarest, 2015; Lerstrup, 2016, Harlen, 2010). Additionally, the case-study sought to discuss and bring attention to the pedagogues preassumptions and experience with teaching science as a 'taught' practice, or a more "hands on" practice meaning a way to learn by testing in practice on the basis of playing.

In the following, I will give an account of the methodological design and present the essential empirical findings from the study.

## Context

In 2004 a pre-school curriculum was introduced in kindergarten, daycare and nursery in Denmark. With this, the pedagogues were to a larger degree, obliged to plan and evaluate the daily work with the children (EVA, 2015). In this case, the introduction of the pedagogical curriculum contributed to a more explicit focus of the preconditions of learning through inquiry-based science.

The starting point for the case study therefore was to follow the interaction between children and the pedagogues in order to observe how the pedagogues interpreted and translated the wording in the curriculum and how and in which way the pedagogues made connections between their interactions with the children and the curriculum.

I visited the institution several times over a period of 18 months from April 2017 to August 2018 to collect data. I considered myself a newcomer during my visits. I had to learn about ways of doing things and how they interpreted their actions. Thus, I spent a lot of time in the playground.

Occasionally, I felt that I had to step out of the observant adult role and into the pedagogue role with the reflection that it restricted me from gaining important knowledge but maintained the trusting relationship that existed with the children in the "adult" category. ". A field note states: "*For ethical reasons, I had to take on a role as a pedagogue. I experienced having to act in relation to the fact that a child needed me - not necessarily as a pedagogue but as an adult, where there are certain expectations of as a child that you step in and act when the child experience insecurity or injustice*". This continuously gave me reflections on how the pedagogues saw me fieldnote 2, 2017, (Rubow, Overgaard Mogensen & Bundgaard, 2018, s. 41).

A tour led by one of the pedagogues solidified the final focus for the case-study. The pedagogue told me that the preschool was part of a project initiated by "Naturvejlederforeningen" (The Danish Rangers' Association) to inspire children to examine and explore their surrounding natural environment and its inhabitants. The project sought this objective by funding and establishing mini habitats that would function as learning opportunities by attracting critters and bugs to the playground, thus making finding, observing and studying small creatures more accessible for children and adults alike (field note, 2017) (Naturvejlederforeningen, 2018; Amit, 2000). The preschool had thus received a mini habitat with the intention of supporting children's study and knowledge of animals. However, the pedagogue giving the tour explained that the experience with the mini habitat was not entirely successful in that both children and pedagogues were unsure about how to use it. In addition, the pedagogue told me that the children found a variety of small animals under the many logs that were scattered in the outdoor environment (field note 2, 2017). This event raised several questions as to how the pedagogues and children interpreted their playground, including: how the playground milieu in which the pedagogues and children were being socialized was affecting and shaping their practical competencies in, and the knowledge of, the subject of science. These questions arose from an understanding that knowledge, experience and attention were shaped by the physical surroundings (Gibson, 1979; Fabian, 2016; Flensborg, 2004).

## Methodological Approach

The actual study timeline of the case study was arranged as two time periods with data collection, systematizing of the data, coding of the data and analysis. See the visual overview below for a clear overview of the methodology (Russel, 1994; Wadel, 1991; Amit, 2001; Møhl and Hauge Kristensen, 2018; Rytter and Fog Olwig, 2018; Bundgaard and Overgaard Mogensen, 2018).

Visual overview of the timeline of the case study:



Figure 1. Phase 1.





Figure 2. Phase 2.

Since the pedagogues at the outset were not used to talking about how the spaces and places of the playground afforded special opportunities for experience, knowledge, play and movement, photos and video throughout the case study took on greater significance in relation to detailed analysis of the social activities between material objects, places and children (Davidsen and Kjær, 2018; Krøijer and Sjørsløv, 2018, Okely, 1992). The digital media were also a nonverbal support for both pedagogues and children to develop a language for the routine acts of everyday life and to recall those situations on the playground (Davidsen & Kjær, 2018; Møhl & Hauge Kristensen, 2018, flyvberg, 2013).

### **Inquiry-based science as a social and “spatial” practice.**



Figure 3. Photos illustrating the wooden boards that the children often use to build and construct through play. The photographs are taken in the spring 2018 during the second round of the case study.

Here we see a child busy playing with the new toys of the preschool. These boards connect and are incorporated into different forms of play, often as a starting point from which to establish or develop various games. Several of the children mention the boards as a fun activity. They occupy a place with a specific materiality, which correspond with the children’s physical, cultural and social competencies in creating a variety of play (Gibson, 2014; Lerstrup, 2016; Thorbergson, 2013). One of the pedagogues discusses the children’s use of the boards: “It’s these sticks... they use them to build beds. They’re good at building with them. We’re just there to say that if they sit on the long stick, then it’ll break.” (interview 2, 2018).

While the pedagogues know that the boards have a special attraction for the children the pedagogue, however, does not seem to reflect more on the pedagogical or learning potential in this relationship between child and materiality, but rather describes their own role as a guarantee for upholding the social and institutional calm and order of the preschool (Kirkeby Gitz Johansen; Kampmann, 2005).

In the following, I discuss how the children’s social practice, given the action potential of the playground environment (Lerstrup, 2016; Gibson 2014), foster activities which the pedagogues can develop and use as an inspiration for the more structured activities in which they work to expand the children’s knowledge and scientific competencies in line with the curriculum (Elmose, 2007; Tunnicliffe, 2016).

### **Analysis--Primary findings from the field of practice**

The primary findings, which I explore below, describe the sites, which are observed as “the children’s own places”. These are places where children experience a sense of belonging; physically, visually, sonically, bodily and sensually. The findings also represent “adults’ places for children.” These are places that are planned, designed and coded by adults with specific meanings aimed at children.

Although this is purely an analytical distinction, it can be observed how children often orient themselves territorially in ways that differ from what was intended by the adults. Even so, there is a complex and integrated relationship between the categories (Rasmussen, 2006).

### **Children's Places:**

By comparing the video material and the photos from the places that are coded as "children's places" I find that places with a vague functionality are strongly represented in this category. This includes: thickets and bushes, logs, small inclines, trees, variations in terrain, hills and holes and natural spatial enclosures, such as those found in wild shrubbery (Kirkeby, Gitz Johansen & Kampmann, 2005). Children's places like: *the water playground, the elf forest and the tree logs*, thereof are places that are functionally weaker coded offer a broad spectrum of potential uses and thereby give children multiple opportunities for creative interpretation of meaning and function. In the following I will explore some of the places in details.

### **The Water Playground**

The following example is an excerpt from a video observation of a group of children playing in a steep hillside a rainy day in spring 2017. The excerpt aims to describe and comprehend the hillside, named "the water playground" as a place with a soft functionality that the children relate to. "*On the playground, the children are intrigued by a fairly steep hillside that's about 3 meters long. When it rained, there was usually a large pool of water at the foot of the hillside where there was a small indentation. The children played by having groups organize themselves and sending individual children to the top of the hill to transport and pour water down the hill while the others directed the flow of the water on its way down towards the bottom by placing little buckets in the path of the waterflow*" (video observation, 2017).

The children had thus independently initiated activity with shaping, moving, digging, building dams, mixing with other material, arranging and utilizing tools, etc. in their close surroundings--all inspired by the action potential "*water, loose objects and loose material*" inherent in their environment. (Lerstrup, 2016).

The example illustrates how children in their play show an interest for the natural phenomena that they encounter on the playground. Furthermore, I noticed how elements like water, other loose objects and materials communicate action possibilities for the children to engage in activities, such as: shaping, moving, digging, mixing with other material, arranging and utilizing tools, etc. All skills related to scientific skills, such as: observing, testing, constructing and examining develop the children's emergent conceptions of the nature of science (Suduc, 2015; Elfstrøm etc, 2012).

By applying an approach in which the material aspects of pedagogy are valued, children's experiences in play and in unstructured learning activities in their 'places are included as relevant to children's learning process. Thereby children's sensibilities and experience in informal learning environment support the child in experimenting and making the first experiences with scientific ways of thinking and analysis (Brostrøm, 2015; Frøkjær, 2017; Rasmussen, 2014).



The possible reason for the pedagogues not including those aspects of practice might be best explained by ingrained expectations in the pedagogical field as to how learning happens; that it develops in a certain manner within certain contexts (Maynard & Waters, 2007; Ahrenkiel & Rask Petersen, 2016). This is supported by the initial observation from which I learned that the pedagogues only referred to the non-structured activities as being relevant to the children's scientific learning according to the curriculum in very limited ways (interview 1; field notes 2, 2017). Accordingly, an expression of a learning vision in which "real" learning is linked to planned activities with a defined learning purpose. This does not mean that there is no learning activity with playing as a starting point, but probably indicates that a narrow understanding of learning is dominant in the educational staff.

### The Elf Forest – a secret life

Another example of children's places was a wild thicket with a small path that followed the hedge around the preschool and which the children talked about as "Troldeskoven" or "The Elf Forest." The pictures below show the passage (The Elf Forest) down along the hedge which the children generally pointed out as a good place to be.



Figure 4. The passage down along the hedge that the children call "The Elf Forest"

I followed a girl along the passageway. She told me: *"This is where I like to be--it's called The Elf Forest. Here, you can play family and you can find rain worms. You can also sit on the branches... and then there are those mushrooms... we are not allowed to eat those"* (walk and talk interview, 2018) (Jones etc., 2008).

On this guided tour, I found out about how the girl sensed, interpreted and related to her surroundings through her exploratory and examining behaviours, such as: scratching at branches; digging in the dirt; and imagining the naturally occurring spaces as part of, and inspiration for, her role play. The Elf Forest

was an example of how the children, and not just the girl, related to a specific place as a social and cultural practice in the kindergarten (Rasmussen, 2014). Through interviews with the pedagogues, I learnt that they are aware that the children play in the elf forest. One of the pedagogues told me: *“The adults trim the hedge not from the adult understanding of what is practical or pretty but rather based on observations and the children’s stories about where it is good to be and for example how the hedge or the thicket can support role play.”* (interview, 2018). This passage illustrates how the pedagogue notices where the children like to be by observing those places that they inhabit and utilize as their own.

In the follow-up and supplemental interviews with the pedagogues, I asked the pedagogues to photograph and comment on the spaces that they thought the children occupied in their daily activities on the playground (field note, 2018). I also asked them how these places could be used to support children’s acquisition of competencies related to science (Elmose, 2007). The interviews showed there is less reflection, however, on what kind of science actions these places might inspire. Furthermore, the first-hand experiences that children make through play such as which habitats earthworms prefer or how dry sand falls off the stick while wet sand stick to it are not noticed. Seemingly, these pedagogues have some blind spots – in that this knowledge could actually be qualified into more formal learning activities by using them as an inspiration and motivation to work towards establishing relevant science-related educational environments for the children, where children learn through more hands on-based practise that I argue develop their thinking skills, alongside scientific skills (Fisher, 2001; Lerstrup, 2016; Gibson, 2014; Latour, 2014; Brostrøm, 2015 ).

### The Tree Logs



Figure 5. The tree logs is a good place to be.

The 'tree logs' is an example of a place and an object that had a presence both physically on the playground but also in the children's play and interaction with each other, and which stood out in the data material in both the photographic and video observation of the children and the pedagogues' verbalizations of practice. I was especially interested in how the accessible stubs or logs that lay about on the playground took up great significance in the everyday practice of the children. Still, I was uncertain about whether the practice that I observed had emerged gradually through the children's testing, negotiations and definitions of the use and meaning of the logs, or if there were also pedagogical intentions behind, and if so, whether these intentions manifested in the actual use of the logs (Rasmussen, 2006; Gibson, 2014; Lerstrup, 2016; Latour, 2007). In an interview, one of the pedagogues talk about how they include the children's immediate interests and excitement about their surroundings by designing the playground with the logs.

Interviewer: "I have noticed that there are many logs laying around."

Pedagogue: "Yes, the City Government sometimes comes by and cut down some trees out here,. So, then we've asked if we could leave the tree logs laying around and let the children play on them, and that's not allowed. But then what we did was we sawed some of them into smaller pieces. They are so heavy that you almost can't lift them, but you can just roll them and use them to turn over and find critters." (pedagogue, interview, 2018).

In this example, the pedagogue incorporated the action potential of the surroundings as an opportunity for supporting a learning environment in which children and pedagogues together can examine and experiment in a scientific theme (Lerstrup, 2015; Latour, 2007; Gibson, 2014, Otrell Cass, 2015). Further, the pedagogue tells that: "...it is actually mostly the children's logs because when they go outside, we actually rarely go with them. But when they come and show us the little animals or tell us that they need a bucket, then we go with them." (interview, 2018).



Figure 6. A plastic box which the pedagogues gave the children for examining the little animals that they found in the logs.



Thus, the pedagogues in this example are not only attentive towards how materiality as function stimulates the children to move around, turn over, examine, pick at, catch and hold animals, but they are also working at capturing play by offering specific tools that can support the play and exploration by the children (Thorbersen, 2013; Fisher & Madsen, 2012). The logs and the interaction around the material objects that are added to the play activity were exemplary as far as showing when and how the pedagogues succeed in incorporating the functionalities of the surroundings as a pedagogical instrument in relation to creating a scientific learning environment (Rasmussen, 2014; Thorbergesen, 2013).

## **Concluding Remarks**

Generally, the findings show that space, materiality and surrounding features were implicit considerations among the pedagogues when supporting educational activity in children's play environments.

Data from the observation of and interviews about "children's places" showed that pedagogues only occasionally took into consideration the knowledge and experiences gained from children's play and behaviour in "children's own places" outside the didactic organization of adult places for children (Maynard & Waters, 2007).

When pedagogues were told about the didactic planning and intention for the outdoor space, the pedagogues referred primarily to spaces as a setting for an activity. Thus, there was not typically a thorough reflection in practice about how children's places can support scientific learning based on what the child is interested in. Observation and ongoing conversations with the pedagogues in the everyday life of the preschool did however show certain instances of reflection on how to support learning environments. Still, the outdoor surroundings as an informal learning environment was not often mentioned as an explicit consideration, unlike content, form and organization (Brostrøm & Frøkjær, 2016).

From a pedagogical perspective, it could thus be worth considering working with a functional coding of the outdoor spaces in relation to how they invite and open-up, as opposed to reject and close-off, experimenting behaviour in the child's local environment, in order to strengthen the child's experience of having the ability to understand and act within the surroundings in which we all live and relate to our everyday lives (Louv, 2008; Demarest, 2015, Sjøberg, 2015, Otrell, Cass, 2015, Harlen, 2010).

Keeping in mind that there is not a one-to-one relationship between actor and space and materiality, but that groups of children interact differently depending on experience, physical ability, imagination and interest in relation to the functions in their surroundings that can be used as an inspiration in the design of pedagogical environments (Ibid; Kirkeby, Gitz-Johansen & Kampmann; Lerstrup, 2016; Gibson, 2014; Frøkjær & Brostrøm, 2016).



## References

AMIT, V., (2000). Introduction. Constructing the field. In: V. Amit eds., *Constructing the Field Ethnographic Fieldwork in the Contemporary World*, London and new york: Routledge, ISBN: 0-415-19830.

AHRENKIEL, L, RASK PETERSEN, M. (2016). *Bør science stå på egne ben*, Mona (1).

BENNETT, J., (2015). Systems and Things: On Vital Materialism and Object-Oriented Philosophy, in: R. Grusin, eds., *The Nonhuman Turn*, Minneapolis and London: University of Minnesota Press, pp.. 223-239.

BROSTRØM, S., (2015), *science in early childhood education*, Journal of education and human development, vol. 4, no. 2(1), pp. 107-124.

BUNDGAARD & OVERGAARD MOGENSEN, (2018). Analysen: arbejdet med det etnografiske materiale, in: H. Bundgaard and Overgaard Mogensen and Rubow eds. *Antropologiske projekter en grundbog*. Samfundslitteratur, 1. udgave.

DAVIDSEN, J. AND KJÆR, M., (2018). eds.. *Videoanalyse af social interaktion*. Samfundslitteratur, 1. udgave.

DEMAREST, AMY B., (2015). Place – based curriculum design – Exceeding standards through local investigations, Routledge.

ELFSTRØM, I AND WEHNER-GODÉE, C. AND STERNER, L. AND NILSSON, B.; (2012). *Børn og naturvidenskab*, Akademisk Forlag.

ELMOSE, S., (2007). *naturfaglig kompetencer – til gavn for hvem?*, Mona – 4.

EK, R., (2018). Den rumlige vending som ontologisk vending. *Slagmark - Tidsskrift for idéhistorie*, (57), pp. 49-66.

EVA. (2015). *Natur- og naturfænomener i dagtilbud*, Danmarks Evalueringsinstitut, ISBN: 978 – 87-7958-849-3.

FABIAN, L.; BJERRE, H.J. ; (2010) eds., *“Vendingen mod rummet”*. Århus: Forlaget Slagmark.

FINNEGAN, DIARMID A, (2008), *The spatial turn: Geographical approaches in the history of science*, Journal of the history and biology, pp. 369 -388.

FISHER, U. AND LECICHT M.ADSEN, B, (2001). *Se her! Om børns opmærksomhed og pædagogens rolle*, København: Børn og Unge.

FLENSBORG, I, (1990). skolens udeareal – et lære og værested. In: Nørgaard, E. and De Connick – Smith, N. eds., *at lære og være – i hvilke rammer*, København: Kroghs forlag.

FLYVBJERG, B., (2013), in: Tanggaard and Brinkmann eds., *Kvalitative metoder*”, Hans Reitzels Forlag, pp. 463–487.

FRØKJÆR, T. AND SØNDERGAARD, S., (2017) sciencedidaktik – leg og digitale teknologier i Dagtilbud; In: Ritchie, T. and Tofteng, D. eds., Billesø og Baltzer.

GARNETT – SILVEN, E., (1995).The body and it’s materiel extensions. Practise and meaning in the work of professional housepainters, In: Ethologica Scandinavica, 25, pp 68 – 78.

GIBSON, JAMES J., (2014). The Ecological Approach to Visual Perception - Classic Edition. Taylor and Francis Ltd.

GREGERSEN, M. AND TOBIAS, S., (2017). *Litteratur og materialitet - en teoretisk overflyvning, Passage - Tidsskrift for Litteratur Og Kritik*, 32(77).

HASSE, C., (2002), *Kultur i bevægelse – fra deltagerobservation til kulturanalyse i det fysiske rum*, Samfundslitteratur.

HØJLUND, S. AND GULLØV, E., (2005), Materialitetens pædagogiske kraft, Larsen, K., eds., *Arkitektur, krop og læring*. Hans Reitzels Forlag,

HARAWAY, D., (2016). Companions in Conversation in: D. J. Haraway and C. Wolfe”, *Manifestly Haraway*, Minneapolis og London: University of Minnesota Press, s. 199-296.

HARLEN, W., (2010). *Principles and big ideas of science education*. Association for science Education, ISBN: 978 0 86357 4 313.

JONES, P.; BUNCE, G.; EVANS, J.; GIBBS, H.; HEIN; RICKETTS, J., (2008). *Exploring Space and Place with Walking Interviews, Journal of Research Practice*, v 4, n 2 article, D2 2008.

KIRKEBY, G. J. AND KAMPMANN J., (2005). Samspil mellem fysiske rum og hverdagsliv i skolen, In: Larsen, K.eds., *Arkitektur, krop og læring*, Hans Reitzels Forlag.

KRØIJER, S. AND SJØRSLEV, (2018). At gå efter tingene: Materialitet som metode, In Bundgaard H. and Overgaard Mogensen and Rubow eds., *Antropologiske projekter en grundbog*. Samfundslitteratur.

KVALE, S., (1997). interviewsituationen om interviewets kvalitet, in: S., Kvale, ed., *Interview. En introduktion til det kvalitative forskningsinterview*. København: Hans Reitzels Forlag. ISBN: 87-412-2816-2.

LATOUR, B., (2007). *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford/New York: Oxford University Press.

LERSTRUP, I. AND KONIJNENDIJK VAN DEN BOSCH, C., (2017). *Affordances of outdoor settings for children in preschool: revisiting heft's functional taxonomy*, *Landscape Research*, 42:1, 47-62.

LOUV, R., (2005), *Last child in the woods*, Atlantic books.

MAYNARD, T. AND WATERS, J., (2007). Learning in the outdoor environment: a missed opportunity?, Swansea University, UK: *Early Years*, Vol. 27, No. 3, pp. 255–265.

MØHL,P. AND HAUGE KRISTENSEN, N., (2018). At bruge billeder og lyd: sensorisk antropologi, In: H., Bundgaard and Overgaard Mogensen and Rubow eds., *Antropologiske projekter en grundbog*. Samfundslitteratur.

Naturvejlederforeningen. (2018). <http://natur-vejleder.dk/projekter/krible-krable/ansoeg-minibiotop-2018>.

OKELY, J., (1992). Anthropology and autobiography. Participatory Experience and Embodies Knowledge.in: J. Okely & H. Callaway eds., *Anthropology and Autobiography*. London: Routledge. ISBN: 0-415-05189-4.

OTREL – CASS, K. AND HARTER, C. AND NØRGAARD AGERBO, J, (2015). *Learning spaces – Ny Naturfag fremtidens naturfags lokale*, Aalborg Universitet.

RAMUSSEN, K., (2006). Steder til børn – Børns steder in: Ramussen, Kim; eds., *Om børns egne steder – og voksnes steder til børn*, Billesø og Baltzer.

RASMUSSEN, K, (2014). *Om sted, rum, krop og tid i pædagogiske kontekster*. In: Lauridsen, Søren K, Nielsen Carstens, F., *Pædagogik som viden og handling*, Akademisk Forlag.

RUSSEL, B.H., (1994). Participant Observation. in: *Research Methods in Antropology. Qualitative and quantitative approaches*, London & New Deli: Sage publications. Thousand Oaks. ISBN: 0-8039-5244-9.

SJØBERG, S., (2015). *Naturfag som almendannelse – en kritisk fagdidaktik*, Forlaget Klim, 2 udgave, 2. oplag.

SUDUC, A. AND BIZOI, M. AND GORGHIU, G.; (2015), *Inquiry Based Science Learning in Primary Education*. Procedia - Social and Behavioral Sciences, Volume 205, pp. 474-479.

THORBERGSEN, E., (2013). Lekemateriel og barns lek”. In: Krogstad, Hansen, Høyland and Moser, eds.. *Rom for barnehage*, Fagbokforlaget.

TUNNICLIFFE, S.; (2016). *Starting Inquiry-based science in the early years*, Routledge.

WADEL, C., (1991). *Feltarbeid i egen kultur*, Cappelen Damm Akademisk, 2. udgave.