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Playing With Ways of Knowing

Play, Atmosphere and Experience in Danish Teacher Education

PhD Thesis

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Design School Kolding



PhD Thesis handed in 29th of June 2023

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Part I

Chapter 1: Introduction

An entry into the field

The theme of the day is geometry. The teacher educator Karen starts the lesson by standing in front of the class, telling a story 'It's a very dramatic tale'. The narrative is a made-up children's story about the edges of a 'sweet red cardboard triangle' and Karen tells it, while holding a big piece of red cardboard triangle in front of her. In a dramatic voice, while cutting the corners with a pair of scissors transforming the red cardboard triangle into a square, Karen says 'OH NO, one day the triangle loses its edges', 'suddenly' a geometrical shape with more edges than three. The students sit still at first. When realizing Karen is not stopping her dramatic storytelling after the first few sentences, some of the students start smiling, grinning; making big, surprised eyes; turning towards each other; expressions of wonder on their faces. She has captured everyone's attention...

...The students and Karen are immersed in a longer talk about schoolchildren and their fondness of the subject of geometry. One student, Nina, mentions 'if one becomes fond of geometry...'. Karen picks up on this, interrupts Nina, and says with a smile 'not *if* one gets fond of geometry, but *when* one gets fond of geometry'. Outbreak of laughter in the class...

...When the group exercise is over, Karen invites one of the volunteering students Thomas, up to the blackboard... Thomas draws a geometrical figure, the only sound is the chalk on the blackboard. Karen says with a smile on her face that he is welcome to say something while drawing on the blackboard. Thomas responds by saying with a dramatized loud and solemn tone 'I draw on the board'. Everyone burst out laughing. (Excerpt, field notes, mathematics teaching, first-year teacher students)

This thesis is an exploration of the opportunities and challenges which can emerge when bringing the concept of play into the design of teaching practices.

The above excerpt is from early in the process of this research study. To get a sense of the common practices of teaching in context of teacher education (being an unfamiliar terrain for me at the beginning of the study), I joined the mathematics class with permission from Karen. The experience of being in the atmosphere of Karen's teaching that Tuesday morning significantly aided in shaping the perspectives, through which this research is unfolded. The way Karen began the teaching lessons made a felt impact on the students as well as on me. Karen's enthusiastic narration, almost as if reading a children's book, and her way of responding to Nina's comment, confident that all schoolchildren will naturally become fond of geometry, seemed in some way to permeate, and make possible a continual playful engagement in the classroom, as sensed with Thomas' playful response while drawing on the board.

This thesis evolves around researching opportunities and challenges of pairing the concepts of play and education. Despite the sense of playful engagement in the atmosphere of the classroom of Karen's geometry lessons, play and higher education are concepts not easily paired. Based on a design-based research approach, the aim with this thesis is to contribute with new theoretical perspectives on opportunities and challenges which can emerge, when designing teaching practices through play for attuning teacher students towards playing with ways of knowing in context of the Danish teacher education.

The contribution of this thesis is theoretical, while it also bears practical pedagogical implications in how it contributes with enabling new possible considerations for educational practice. Further, by using design experiments as a methodological approach in this research, another aim of this thesis is to contribute with new perspectives on design experiments as a knowledge generating approach in design-based research within educational design research. The elements and background for these interests are unfolded in the following paragraphs.

State of play in higher education

As a way of coming closer to the opportunities of designing through play in teacher education, during the process of this research I asked students what they experience as playful in teaching. When asking this question, one of the students in class would without exception pose a counter question, with a pronounced degree of wonder in

their voice ‘Playful?’. The only right answer I could provide to these students’ counter question was the reassurance that yes, this was in fact what I had asked.

The wonder in these students’ voices seem somewhat symbolic for how attention to play in higher education is at this point albeit steadily growing, still at an early stage in educational research and practice (Boysen et al., 2022, pp. 1–2; J. B. Jensen et al., 2021, pp. 1–2; Nørgård et al., 2017, p. 273; Whitton, 2018, pp. 1–2).

Play has always been a topic of theoretical interest since at least Hellenism, while scientific and philosophical thought on the concept of play has with the Modern Era, marked by the Enlightenment in the end of the Eighteenth century, gained a renewed interest (Spurius, 1989, pp. ix–2; Sutton-Smith, 1997, pp. 6–7). As Spurius (1989) explains:

A discussion of play and contemporary science can proceed along two lines: there is play as a serious object of scientific investigation, and there is the playful “aesthetic” attitude of science toward its object of study, methodology, and so forth. There is also a correlation: an increasingly playful attitude in science has gone hand in hand with an increasing interest in studying play. (p. 165)

While the theoretical interest in play as a concept is not new, the interest has seen a significant growth in recent decades, interwoven with an increased interest in a playful attitude in science as Spurius point to. Play in relation to childhood education or - more broadly - learning in childhood, has been given vast attention theoretically and in practice, both critical and acknowledging (Dewey, 1966, p. 195; Møller et al., 2018; Nørgård, 2021, p. 142; Sand et al., 2023, p. 1; Saugstad, 2017; Skovbjerg & Sand, 2022, pp. 1–2).

Attention to play in the realm of higher education has only more recently found traction within educational research (Boysen et al., 2022; James & Nerantzi, 2019; J. B. Jensen et al., 2021; Koeners & Francis, 2020; Nørgård et al., 2017; Nørgård, 2021; Rice, 2009; Skovbjerg & Jørgensen, 2021; Whitton, 2018; Whitton & Langan, 2019).

Research broadly characterized under the terminology of playful approaches in higher education, covering both the areas of play, playful and digital game approaches (James & Nerantzi, 2019, pp. xli–xlv; Nørgård, 2021, p. 143; Whitton, 2018, p. 1) has not proceeded parallel to the research interest on play in general. Still, this more recent traction of interest in educational research on play in higher education seem as noted

by Spuriusu, affected and in part effectuated by the immense popularity of the concept of play in still more arenas of Western society (M. M. Andersen, 2019; Karoff, 2010; Karoff & Jessen, 2014; Skovbjerg, 2021b; Sutton-Smith, 1997; Thorsted, 2016).

The ambiguity of play in relation to education

While research on play in education springs from an interest on play in general, play in relation to education is not without its critics. One side in the debate about play in education are applauding an approach where play and learning are thought together as fruitful towards teaching and knowing (James & Nerantzi, 2019; Koeners & Francis, 2020, p. 150; Nørgård et al., 2017; Whitton, 2018, p. 5; Zosh et al., 2017, 2018). Another side explains how associating play and learning in a didactic context, are contrary to the whole idea of play and learning (Karoff, 2010, pp. 7–8; Karoff & Jessen, 2014, p. 9; Saugstad, 2017). In these more critical perspectives, play is associated with a free, voluntary activity which is seen at odds with a pedagogical context where there is an intentionality at stake, meaning the intention to teach someone something (Boysen et al., 2022, pp. 1–2; Johansen, 2018, p. 9; Skovbjerg & Jørgensen, 2021, p. 2).

As Huizinga (2009) writes about the characteristics of play “Here, then, we have the first characteristic of play: that it is free, is in fact freedom” (p. 8). Even though play is a complex and ambiguous phenomenon to describe and theoretically agree upon (Sutton-Smith, 1997, p. 1), many theorists interested in play agree on the most important characteristic of play is the notion of being free and voluntary as well as the activities in play is purposeful in themselves (Caillois, 2001, pp. 9–10; Gadamer, 2013, p. 107; Huizinga, 2009, p. 13; Karoff, 2010, p. 9). Gadamer (2013) explains that even though the purpose of play is to be found in play, it does not mean that play is purposeless or meaningless, but only that play finds purpose through its own activities (p. 107). This view on play is especially influential in Scandinavian play research (Karoff, 2010; M. C. Sørensen, 2015). In relation to researching play in an educational setting where the purpose of the learning activities is most often set outside of the immediacy of the activities, this view on play provides a theoretical conundrum, making yet again the issue of play stand forth as ambiguous.

While play and education together might stand forth as ambiguous, opposing or perhaps even impossible to reconcile (James, 2022, p. 278), most play theorists agree at the same time on defining play as a basic human practice (Caillois, 2001; Henricks, 2008;

Huizinga, 2009; Karoff & Jessen, 2014; Schechner, 1993; Sutton-Smith, 1997). This way as Burghardt (2005) argues, the educational context and pedagogical theories could benefit from taking play as serious as they do with human psychology and neuroscience to get an understanding of the whole person (p. xiv). This study does not evolve around solving the ambiguities but instead is a matter of exploring the ambiguity of play in relation to education and about inquiries into what this might mean and bring to the realm of teacher education.

What play and playfulness can bring to the realm of higher education

In the mathematics teaching situation from the excerpt above, judged by the students' reactions Karen seemed to do something different which surprised the students, by telling a playful children's story in the beginning of a serious mathematics lesson for adult students. This situation renders it possible to ask what such different and potentially playful teaching practices possibly open for in the context of teaching.

Some of the characteristics which in current research on the overarching field of playful learning and playful approaches assign as possible outcomes of inviting play into higher education is how it brings a sense of belonging in the educational culture for students (James, 2022, p. 263), spur empathy (Dean & Parson, 2021, p. 71), supports intrinsic motivation and courage to challenge oneself (Nørgård & Moseley, 2021, p. 4), enables the creation of a safe space for experiencing failure and for exploration (Nørgård et al., 2017, pp. 273–274) fosters engagement, imagination and creativity in learning communities (Whitton, 2018, p. 4), encourages collaboration (Boysen et al., 2022, p. 1), makes possible being in and overcoming uncertainty (Skovbjerg & Jørgensen, 2021, p. 1), and nurtures human flourishing and growth (J. B. Jensen et al., 2021, p. 2).

Furthermore, play and playful approaches in higher education is proposed in research as an opportunity of countering an increasingly performative-focused milieu in higher education (James & Nerantzi, 2019, p. xIv; J. B. Jensen et al., 2021, p. 3; Nørgård et al., 2017, p. 273; Whitton & Langan, 2019, p. 1001). It is argued across a variety of theoretical accounts of higher education how this realm in general experience neoliberal tendencies of increased commercialization and demands for external accountability (Goodwin et al., 2014, p. 299; Jones & Patton, 2020, p. 375; Lee & Day, 2016; Ramsden, 2003; Whitton & Langan, 2019, p. 1001). Nørgård et al., (2017) points to how these demands "... inevitably affects institutional cultures, academic practices, and learner

experiences, and the increasingly performative culture of higher education creates an assessment-driven environment focused on goal-oriented behaviors (Ball, 2015), characterized by avoidance of risk and fear of failure” (p. 273). Biesta (2013) argues how the tendencies towards avoidance of risk and fear of failure in the educational context generally work against how education can be viewed to involve risk, stemming from education being an encounter between human beings, where everyone enters the educational site with their own experiences, own desires and own anticipations and foreknowledge (p. 1).

Theorists claim how there politically is an unwillingness to acknowledge the risk integrated in education which forces educational research to run the errand of producing methods for ‘best practice’ and research in ‘what works’ (Biesta, 2007, p. 299; Hyldgaard, 2010, p. 8; Rømer et al., 2011). Through key performance indicators and ‘teaching to the test’ education, instead of value thinking and doing as well as continuous growth of students’ independence and freedom, is argued to be more focused towards assessment and specified external metrics (Biesta, 2013, p. 2; Nørgård et al., 2017, p. 272). Turning towards a risk averse environment in teaching practices can seem counter intuitive to the learning process, which in essence is an endeavor rooted in risk as Biesta explain.

Even though play in the realm of higher education as mentioned in educational research is praised for its opportunity to possibly counter the performativity culture and viewed as a way for educators and students to take risks in teaching, Jensen et al. (2021) points to how approaches of play and playfulness in higher education at the same time pose a challenge by indicating how students might find it too risky to enter these spaces initially (p. 8). Hence, play in educational research is advanced as a possibility for making space to take risks for students and educators, but is at the same time challenged by the same mechanisms as it is supposed to counter.

I will return to the theme of performance later in the Introduction as one of the key themes in the study, while first turning to a contextualizing of the research interest of play in teacher education more specifically as the context of this research.

Play in Danish teacher education

Simultaneously with the increased research interest in play and playful approaches in higher education, an interest in teaching through playful approaches in teacher

education in Denmark as context and focus of this research, was initiated by practice. The implementation of the nationwide practice development project, the Playful Learning Programme (2018-2022), across all University Colleges in Denmark providing professional Bachelor degrees of social education (early childhood teacher training) and teacher education, demarcated the beginning of an interest in playful approaches to teaching and learning in this realm more systematically (Playful Learning, 2021a).

Following this practice interest, the research field of play in this context has slowly gained traction in the last few years (Boysen et al., 2022; Holflod, 2022a; J. B. Jensen et al., 2021; Jørgensen et al., 2022; Skovbjerg et al., 2022; Skovbjerg & Jørgensen, 2021).

Even though this field is slowly coming into fruition, the field of play and playfulness in teacher education is not systematically addressed. Research point to how there is a lack in research on areas such as; materiality and space in relation to playful approaches (Jørgensen et al., 2022, pp. 12–13); a focus on how to further develop conceptualizations of play in relation to teacher education (Skovbjerg & Jørgensen, 2021, p. 8); how a focus on more generic skills and motivation has been highlighted, leaving a need for research specifically in relation to academic curriculum activities and; research in how playful approaches connect to other more mature fields of teaching approaches (Boysen et al., 2022, p. 8). In the list of lack in research in relation to play and playful approaches in teacher education, it can be added how research focused on playful approaches as countering a proposed performative milieu in higher education does not include a focus on teacher education specifically (James, 2019; J. B. Jensen et al., 2021; Nørgård et al., 2017; Whitton & Langan, 2019).

In relation to the above research field in teacher education, through this thesis a contribution is to be made around notions of materiality and space, performance, and the issue of relations between designing through play and other more mature fields of teaching approaches through the frame of educational design research. The central focus in this study on designing through play for attuning students towards playing with ways of knowing is elaborated upon in the following pages. This to provide the basis for positioning the focus of this thesis within this research field on play and playfulness in teacher education.

Playing with ways of knowing

In this thesis, the role of designing through play in teacher education is defined as an opportunity of playing with ways of knowing in teaching practices. This is inspired by Nørgård et al.'s (2017) proposal for the possibilities of playful approaches in higher education.

Through the concept of 'the magic circle' inspired by the conceptualization of play from Huizinga (2009), Nørgård et al. (2017) views the characteristics of freedom in choices in the educational practice and freedom towards the world for students and educators as an antidote against the performative culture of higher education. Defined by Nørgård et al. (2017):

... the magic circle is a sacred place where teachers and learners transcend the managerialism and consumerism of higher education and set out to imagine and create manifold ways of being, doing, and knowing in the world through playful attitudes and approaches. (p. 274)

Nørgård et al. points to the notion of how playful attitudes and approaches, through a safe space against a performative culture in higher education can, for both educators and students involved, create possibilities for different ways of knowing, doing and being in higher education.

Conceptualizing the role of play in the educational context by creating possibilities for playing with ways of knowing in teaching practices in this thesis is, as mentioned above, inspired by Nørgård et al.'s proposal and forms the background for the focus of the inquiry. In this way, the research is not a matter of designing play in context of teaching practices, but through this definition of the role of play in higher education instead a matter of contributing with perspectives on the opportunities and challenges of designing through play for attuning students towards playing with ways of knowing. This is a way of incorporating the intentionality of teaching as learning something about something and through the perspectives taken in this thesis additionally contributing to further this perspective on the role of designing through play in relation to teacher education.

Even though the study is not about designing play, a definition of play is important when inquiring into opportunities and challenges of designing through play in this study. Beside how a definition of play is essential for this inquiry to be unfolded, providing a

definition also takes into account how educational research on playful approaches in higher education explicit the importance of an underlying theoretical definition of play when researching within the field (Boysen et al., 2022, p. 5; J. B. Jensen et al., 2021, p. 17). In the following pages, the overarching definition of play is explained and through this, coming closer to an understanding of an interpretation of knowing and ways of knowing in this thesis.

Play as a mood practice – a conceptualization of play

Play and education is a contested subject for its (im)possibilities in connecting the rationale of teaching with the qualities of play as mentioned above, indeed making the popularity of Sutton-Smith's (1997) proposal of a 'ludic turn' in Western society (p. xi) in some areas an ambiguous one.

Reconciling the theoretical ambiguousness of play and education has been suggested in research by providing various concepts. Zosh et al. (2018) for instance suggest defining play as a spectrum between free play and scaffolded play to divert the singular focus on play as a free and voluntary activity and hence as argued a conception providing a way to better explore the benefits of play in relation to learning (pp. 1-3). Skovbjerg and Jørgensen (2021) introduce the concept of play qualities. Through an understanding of designing teaching practices in teacher education and social education through play qualities without talking about play in itself but instead about qualities of play, can according to Skovbjerg and Jørgensen (2021) provide a nuanced conceptualization which help mitigate the gap between play and education, and hence a way to talk about play and playfulness in social education and teacher education (pp. 1-2). As mentioned above Nørgård et al. takes inspiration from Huizinga in the concept of the magic circle as an understanding of how play creates a liminal and sacred or safe space. Nørgård et al. (2017) combines this concept with the conceptualizing of playfulness through Sicart (2014), to propose how playfulness can be understood as "...a way of engaging with particular contexts and objects that is similar to play but respects the purposes and goals of that object or context" (p. 273; p. 21). Instead of dealing with play in relation to designing teaching practices in higher education, Nørgård et al. use playfulness in the above understanding as a way of respecting the intentionality of educational practices and how the aim and goals outside of play is the purpose of these playful practices. In

Chapter 2, I will go into further detail with the understanding of playfulness as it is interpreted in this thesis.

In this research, the interest is an exploration of the ambiguities of the concept of play in relation to design teaching through play, focusing on the opportunities and challenges in relation to the concrete teaching practices of teacher education. Even though the above proposed conceptualizations of play and playfulness in relation to higher education is interesting and promising towards how playful approaches can be accepted and live in higher education, the research interest here falls outside of the immediate concern of using conceptualizations of play created to mitigate the proposed gap between education and play. The intention in this research is not to mitigate or solve the ambiguities but explore how this can be understood through making designing through play an issue of attuning students towards playing with ways of knowing.

Therefore, an overarching conceptualization of play as a mood practice from Skovbjerg (Karoff, 2010, 2013b; 2021a) is the conceptualization of play to be followed in this research. In relation to the aim of this thesis, I argue how the definition of play as a mood practice can both call forth the ambiguity of play and education, encapsulate how play is a basic human practice as well as through the phenomenological point of moods tending to how subjects always already are attuned towards the world essentially determined through the moods and atmospheres one experience through (Skovbjerg, 2021a, pp. 107–112). The conceptualization of play as a mood practice, I argue can sustain the inherent uncertainty and ambiguities of both play and education, in the way that moods are not something which can be forced upon the individual. Instead moods are an emergent structure in the interaction and configurations of situations where the individual is part (Heidegger, 1962, p. 172; Skovbjerg, 2021a), bringing forth the contingencies and ambiguities of designing teaching practices through play as central for this study.

An atmospheric outlook on experiential ways of knowing

Returning to the experience in Karen's geometry lessons. While in the moment her story of the red cardboard triangle was playful and unexpected, accounting for this experience in a strictly confined temporal way, seem to stand in relief to how it felt to participate in the geometry lesson that Tuesday morning, and how students seemed to possibly come to know through this experience.

A phenomenological premise for the individual engagement towards the world is that this engagement opens through the atmospheres and moods of the situation and is not at a distance, but instead co-determine how the individual is able to experience and know (Böhme, 1993, p. 113; Heidegger, 1962, p. 175; Sumartojo & Pink, 2019). Taking this phenomenological view as a premise for knowing and learning in this thesis, being focused on the atmospheric configurations of a situation through taking an atmospheric outlook in the thesis explained in Chapter 3, can be helpful in understanding how the individual becomes attuned in specific ways towards ongoing experiences. In this way attunement becomes a central concept in the study along with moods and atmospheres. Atmospheres and moods are connoting concepts and often interchanged in theoretical phenomenological accounts (J. Hasse, 2019), something I will elaborate on in Chapter 3 together with the concept of attunement. Through their conceptual framework of atmospheres Sumartojo and Pink (2019) explain the difference of what can be known in an atmosphere from what can be known when atmospheres are reflected upon at a distance (p. 37). Taking an atmospheric outlook in researching the subject of this thesis provides attention towards how the individual comes to know is not at a distance from the sensory and affective involvement in a situation, but rather foundational towards coming to know and arguably in this thesis *how* one knows.

Playing with practices means playing with ways of knowing

An interpretation of knowledge, knowing and learning in this thesis is further unfolded in Chapter 3 and is rooted in theories of a socially situated understanding of learning and knowing and at the same time dependent on the attuned embodied, and sensory emplaced and material configurations of learning practices (Dewey, 1966, 2015; Ingold, 2000; Lave & Wenger, 2008; Merleau-Ponty, 2014; Montgomery, 2008). Through this definition of knowing I argue for an understanding in the thesis of how different *ways of doing and participating* in teaching practices makes for different *ways of knowing* through students' active, engaged, and continuous participation (Lausen et al., 2022, p. 27; Wenger, 1998, pp. 9–10). How knowledge is practiced makes for different ways of knowing.

As mentioned above, the perspective on play followed in the thesis is the understanding of play as a mood practice. This emphasizes the characterization of play as a *practice* and makes play an experiential phenomenon. Proposing an understanding of knowledge and

learning which is rooted in an active, experiential, and embodied understanding in this research provides an initial connection between knowledge and how students can come to play with ways of knowing. Students can possibly come to play with ways of knowing through being attuned towards experientially and playfully doing and being differently in the atmospheric configurations of teaching practices, while at the same time in this research attending to the challenges which this might bring.

This way of interpreting knowledge makes it possible in the thesis to draw on Dewey's (2015) philosophy of experience in education, emphasizing student experiences as central for educational practice. Dewey's (2015) considerations on a philosophy of experience work as a background for exploring opportunities and challenges of designing through play in the thesis. Further it is a way of acknowledging the connection between opportunities and challenges of designing through play with those from the more mature field of experiential education (Dewey, 2015; Kolb, 2015; Roberts, 2012).

Design-based research as methodological framework

The perspectives on opportunities and challenges of designing through play is to be explored through the methodological approach of design-based research within education design research.

Design-based research is generally described as having the properties and challenges of producing knowledge about teaching in a situated contextual (classroom) setting through design experiments (Barab & Squire, 2004; Brown, 1992; A. Collins, 1992; McKenney & Reeves, 2019). Before Brown (1992) and Collins (1992) with their landmark papers on introducing design experiments in educational design research in real life settings, a common form (especially in the 1980's) of educational design research was of researching in educational laboratory settings to avoid confoundedness in the study (Brown, 1992, p. 147). One of the hopes with approaching educational design research through the confounded setting of the classroom was at the outset – and still is - to reduce weak links to actual educational practice, which educational research historically has been criticized for creating (McKenney & Reeves, 2019, p. 11; The Design-Based Research Collective, 2003).

Explaining the methodology of a research study is helpful in order to understand the movement into the research area of interest (Thøgersen, 2006, p. 27). Exploring aspects of designing through play in teaching practices arguably makes the movement through

design-based research into this research area a way of enabling aspects of designing through play to stand forth, by creating knowledge through design experiments in the practice setting of teaching.

Design-based research bears pragmatic epistemological implications where the understanding of the possibility of knowing arises in the concreteness of real situations (T. Anderson & Shattuck, 2012, p. 17; Barab & Squire, 2004, pp. 6–7; Baumgartner & Bell, 2002, p. 3; Ørngreen, 2015, p. 25). The pragmatic underpinning of this methodological approach fits with the epistemological stance taken in the research of phenomenologically-informed pragmatism, while I argue design-based research leaves space for including the phenomenological orientation in this study through being centered on the experiential aspects of experimenting in practice. The epistemological position of phenomenologically-informed pragmatism is to be unfolded in Chapter 4. The research activities evolve around 14 design experiments carried out in teaching practices in different ways together with five educators. How design experiments in design collaboration with educators are used in this study as knowledge generating approach is further explained in Chapter 5. Additionally, I propose an inclusion of reflections on how to interpret the role of design experiments from the realm of design research into educational design research. Through methodological considerations on design experiments in this study, I argue how there in educational design research needs to be an emphasis on the design process as not only theoretically driven (McKenney & Reeves, 2019; Wang & Hannafin, 2005). The design process is arguably also a creative, aesthetically founded process which to a greater extent is acknowledged in design research outside educational design research (Ludvigsen, 2006). In this way the overall contribution of this thesis in relation to designing through play for attuning towards playing with ways of knowing can in a sense be suggested to involve the methodological contribution of including “...designerly ways of knowing...” (Cross, 2006, p. 9) into the methodological framework of thinking design experiments as knowledge generating approach. This will be taken up as a focus in the discussion in Chapter 13.

Danish teacher education – contextualizing the research

Playing with ways of knowing is researched in the context of teacher education in Denmark. Before introducing research questions and structure of the thesis, this last part of the introductory section frames the relation of this research study to that of teacher

education and presents more broadly some foundational aspects of teacher education for contextualizing the research.

The relation to the inquiry on play in practice

The empirical field of teacher education were already before the initiation of this study, engaged in working with play and playfulness on an explorative level in the educators' own teaching practices, through the Playful Learning Programme mentioned above. A financial funding made it possible for educators' part of the project on all Danish University Colleges providing professional Bachelor degrees of teacher education and social education to allocate some of their work for exploring playful approaches in their own teaching practices. At the same time, the funding made it possible for educators in practice to spar with colleagues internally at their own institution as well as potentially across different University Colleges nationwide about playful approaches in the practice of teaching. The funding was provided in collaboration between the private LEGO Foundation and University Colleges Denmark (Playful Learning, 2021a).

This research study is part of the Danish nationwide research project Playful Learning Research Extension (2019-2024) (Playful Learning, 2021b). As the name helps reveal the research extension is an extension of the funded Playful Learning Programme which was already at the beginning of this study unfolding in practice. As a parallel but separate track to the funding given to the practice field, a grant was given in collaboration between LEGO Foundation and University Colleges Denmark to provide a possibility for researching into play and playful approaches in teacher education and social education nationwide in Denmark (Playful Learning, 2021b).

These two fundings given in parallel to explore in practice as well as research in play and playful approaches has provided me with the privilege of having educators focused at the very subject which this research study evolves around, making available 'polyphonic' voices (Holfod, 2022b, p. 78) of play and playful approaches in the empirical practice of this study. But even though, in relation to this study, there has been no involvement on research decisions in the research process from the funding parties, being part of a funded project still adds an aspect to the necessary critical reflections required as part of the research (P. Ø. Andersen, 2020, p. 63; Cheek, 2021, pp. 19–21). While funding of research creates the need for critical reflections as a researcher, through these fundings I argue that a much needed open and critical conversation on

play in teacher education has been made possible, while as mentioned earlier, research is still sparse on this area in relation to teacher education. Research on this area in relation to teacher education were even less established before the beginning of the nationwide research project which this research is part of.

Teacher education as a space for teaching how to teach

Teacher education in Denmark and other countries following the European Bologna-process (Ministry of Higher Education and Science, 2021) is a bachelor degree programme with a duration of four years (Ministry of Higher Education and Science, 2015). The primary purpose of teacher education in Denmark is educating students to be able to work in the professional practice as teachers in the Danish Folkeskole (Ministry of Higher Education and Science, 2015). The Danish Folkeskole or simply Folkeskolen is the Danish municipal primary and lower secondary school (Ministry of Children and Education, 2022a). Through the purpose of being directed towards the practice of teaching in Folkeskolen, teacher education has a profession-oriented aim following the purpose of the Danish Folkeskole in the Folkeskole Act (Folkeskoleloven, 2022). The Folkeskole Act describes the overall framework for all activities of the Danish Folkeskole (Ministry of Higher Education and Science, 2015).

One of the central points of teacher education is that students must learn how to continually develop new teaching methods in their future practice in collaboration with Folkeskolen (Ministry of Higher Education and Science, 2015). This educational aim of teacher education is grounded in the reason that teacher students in their future teaching practices of schoolchildren in Folkeskolen are to be able to create possibilities for schoolchildren to keep the enthusiasm towards learning as well as developing their imagination and confidence in their own possibilities towards the future (Ministry of Children and Education, 2022b).

The special issue of teacher education becomes that in addition to teacher educators having the task of teaching in a specific subject area, students are at the same time to be taught how to teach (Iskov, 2020, p. 93). This double focus on both teaching a subject, while teaching how-to-teach dictates a special kind of didactic aim, leading to a dual didactic perspective and a second order pedagogy when teaching in teacher education (Iskov, 2020, p. 92). Research in the area of what competences teacher educators need to be able to teach someone that are to learn how to teach themselves is scarce

(Goodwin et al., 2014, p. 284; Iskov, 2020, p. 92; Oettingen & Jensen, 2017, p. 27). Iskov (2020) propose the concept of modelling, a concept understood as the teacher educator making visible own didactic choices while teaching students at teacher education (p. 93).

The *raison d'être* for using the concept of modelling in relation to second order teaching in teacher education is that by explicating second order reflections in teaching situations, educators contributes to students' understanding of relationships between teaching at teacher education, and students own future professional practices in the Folkeskole as well as between theoretical knowledge and the practice of the teacher educator (Iskov, 2020, p. 96). The playful narrative of a 'sweet red cardboard triangle' from Karen's geometry lesson, dramatically losing its edges to the pair of scissors is an example of this form of modelling as it, in an experiential way, showed the students, an example of how to introduce the work with geometrical figures for schoolchildren in the Danish Folkeskole.

A significant amount of meta-learning is required from the educator for teacher students to get a sense of the teacher practices and theories-in-action behind the teaching, consequently working as an extra dimension in teacher education (Loughran & Berry, 2005, p. 194; White, 2011, p. 487). Also, what makes modelling a challenging part of teacher educators teaching practice is the vulnerability which can come from having to lay forth own didactic considerations and choices, because these could always be different and in that sense always available for critical reflection. As White (2011) argues "Sharing our hidden thinking is a process that needs a supportive environment and can only be done in the context of responsive relationships between teacher educator and student" (p. 488). Being open by explicating thoughts on thinking processes on teaching practices requires both students and teacher educators to be willing to do this mutually to develop both current teaching as well as students' thoughts about teaching in their future practice. Therefore this dimension is important and necessary in teacher education for teacher students to be able to develop their own teaching practices. As mentioned above, play and playfulness in relation to teaching are in research proposed as routes for creating a safe space for this form of mutual learning milieu between students and educators.

Second order teaching and the concept of modelling is not the central concern in this research, but mentioning these aspects is central in understanding the context of teacher

education and how teacher education differs from other higher educational contexts where learning how to teach is not at its center. Through the concept of modelling and second order teaching it is highlighted how teaching at teacher education in various ways always is relational to teaching practices in elementary school.

Additionally, an important part of bringing second order teaching and modelling forth as significant describers of the context and practice at teacher education is to explicate how bridging relations between teaching practices at teacher education and the Folkeskole is what according to Iskov (2020) helps students find meaning in the teaching practices at teacher education (p. 111). Hence, even though second order didactics and modelling are not the primary concern in this research, these concepts provide a contextualization to understand the context and practice which this research is part of and how students find meaning in this context.

Based on how teacher education is a professional education, focused on students becoming teachers in their future professional practice in Folkeskolen, students both need to know the theoretical knowledge on the field and the physical practice, as in making practical judgements rooted in action (H. Collins, 2011). Even though these forms of knowledge can both be thought as a form of practice, there is still a difference in what can become known through these interlinked forms of practices (H. Collins, 2011, p. 273; Lausen et al., 2022, p. 28). Both ways of knowing are argued as important for teacher students to be able to become professional teachers in their future professional practice in Folkeskolen. Coupled with how teacher students are to be prepared for being able to continuously design for new teaching methods in Folkeskolen (Boysen et al., 2022, p. 1), it is here argued that it becomes relevant in the realm of teacher education to attune students towards playing with the varied ways of knowing and in this thesis the exploration is on the opportunities and challenges of this by designing teaching practices through play.

All these above considerations in this introductory part of the thesis are taken into account in the following outline of the research questions, guiding the exploration of this study.

Research questions

The thesis unfolds around one main research question and three sub questions, presented through the following.

Play stands forth as an ambiguous concept not only in itself, but also when bringing it into the educational context. Rather than being an exploration of how to overcome ambiguousness, the thesis marks an exploration into the opportunities and challenges of designing through play in teaching practices in teacher education. Followed by the introduction of the research interest of this study throughout the above, the aim of this thesis is through a design-based research approach to explore the main research question, asking:

What opportunities and challenges do designing through play provide for attuning students towards playing with ways of knowing in teaching practices in teacher education?

This research question holds the primary focus throughout the thesis. Nørgård et al. (2017) mentions how playful approaches to learning can be viewed as a route towards ways of knowing, doing and being. With the view on how learning and knowing is to be understood in this thesis in relation to teaching practices, there is no separation between knowing, doing and being in this overarching research question. This to underline the connection and not mark a dualism between body and mind, knowing and practice. Knowing is in this thesis interpreted as per se about doing and being (Dewey, 1966, p. 336; Merleau-Ponty, 2014, pp. 154–155; Pink, 2015, p. 26).

While the above marks the overarching research question of the thesis, the inquiry into the main research question is framed through the following sub questions, highlighting interest points more specifically for the inquiry.

Sub questions

As mentioned in relation to current research on play and playfulness in context of teacher education, among other aspects there is a lack in research on materiality or learning media and space. A central focus in this study on the background of the above is an exploration of configurations in relation to *learning media* and *space* as key themes in the exploration. Alongside learning media and space, *performance* provide a key theme in this thesis. As pointed to in the above, there is a lack of research about the issue of performance in relation to research on play in teacher education. While these key themes are derived from the theoretical accounts of play and knowledge and from research in

play and playful approaches in higher education, a last theme of *assumptions* emerged in the research process of unfolding the design experiments in practice as also forming a key theme in researching the opportunities and challenges of designing through play. This way the four themes enable asking the sub question framing the exploration and contribution of the overarching research question:

What opportunities and challenges do designing teaching practices through play provide in relation to the themes of learning media, space, performance, and assumptions for attuning students towards playing with ways of knowing?

These four key themes will be analyzed in individual chapters in part V of the thesis.

In this research an atmospheric outlook encapsulating both the concept of moods and atmospheres provide an understanding of how the individual comes to know through a sensory and affective involvement. Atmosphere and mood as concepts are argued to be fundamental for bringing forth the ambiguousness of teaching practices and designing through play and in this way, support pointing towards answering the main question. Bringing these concepts into educational design research enables asking:

How can the concepts of moods and atmosphere support pointing towards opportunities and challenges of designing through play in teaching practices and how can these concepts serve as useful in educational design research going forward?

The theoretical groundwork for discussing this research question is unfolded in Chapter 3, where the research question is to be taken up in the discussion in Chapter 13.

The last frame for the research concerns the methodological level and connects to the part of the main research question emphasizing *designing* through play. In this frame, the focus is on how this study by drawing on methodological considerations from design can support a development of the understanding of how design experiments as an approach contribute to the generation of different forms of knowledge. The frame enables asking:

How can methodological considerations on design experiments in this study support a development in understanding the role of design experiments as knowledge generating approach in educational design research?

This last research question framing a methodological discussion is to be taken up in Chapter 13.

The exploration of these above research questions follows the structure outlined in the subsequent section.

Structure of the thesis

The thesis is divided into six parts representing different aspects of the study. In the following the parts of the thesis are introduced. Furthermore, the respective chapters within the parts of the thesis are introduced through the key arguments I engage in within these chapters.

Part I is comprised of the Introduction (Chapter 1) where the research and the research questions are introduced which forms the exploration of the thesis.

Part II, focus through two chapters on introducing the theoretical framework created in this study.

In Chapter 2 ‘Framing the understanding of play’ I focus on framing play theory which is central for this study and on how play is conceptualized when asking towards the opportunities and challenges of designing through play. Further I discuss how freedom is to be understood in general as freedom being characteristic of play. Through this conception the chapter highlights the experiential dimension of play and provides an understanding of the important characteristics which are focused on in the thesis in the analysis and as design framework in the research process.

Through Chapter 3 ‘Atmosphere and experiential ways of knowing’ I take up the concept of atmospheres, while designing through play as a mood practice makes not only moods but also atmosphere a central and productive concept in the design endeavor and as an analytical framework. An account of how knowledge, knowing and learning is to be understood is in this chapter further explained as foundation for an interpretation of how ways of knowing are understood as central for the exploration in the thesis. I argue for taking an atmospheric outlook on the configurations of how designing through play can enable attuning towards playing ways of knowing in teaching practices and how this atmospheric outlook set up a conceptual frame which focuses attention on the concepts of attunement, affordance, contingency and emergence in the analysis of designing through play.

Part III focuses on the epistemological and methodological positioning and methods applied as well as a clarification of the analytical process of the research.

Through Chapter 4 ‘Phenomenologically-informed pragmatism’ the epistemological positioning of the research is explained, arguing for what can be called a position of phenomenologically-informed pragmatism. This positioning makes for choosing a

methodological approach which can hold and operationalize this understanding of knowledge and provide a suitable methodological framework for inquiring into the research focus of this thesis, arguably found in a design-based research methodology.

I focus in Chapter 5 'Design-based research as methodological framework' on characteristics of design-based research and offer an explanation on how design is conceptualized in the research, as well as what researching through design entails in this research process. Further an explanation is provided of how design experiments are used as approach in the research and of methodological considerations centering around the collaborative aspect of designing experiments together with practice.

In Chapter 6 'Methods', I explain the positions taken in the collaboration with educators in the design process as well as present the different methods used as tools of inquiry into the process of the research.

Chapter 7 'The process of analysis' takes the analytical process of the inquiry of the thesis as a focus point. Even though accounting in detail for the analytical process of a research project stretching over three years is arguably difficult, the focus in this chapter is on providing some overarching thoughts on the analysis in combination with more concrete exemplary points of the analytical process as essential foundation for a sense of how the process of creating the arguments central for the thesis has emerged.

Part IV consist of Chapter 8 'Description of design experiments'. To understand the empirical foundation of the thesis, the process of designing and the different design experiments part of the research are shortly described in this chapter.

Part V is organized around the analytic section of the thesis and focus through four chapters on the key themes of the analysis consisting of: learning media, space, performance, and assumptions; all themes aiding and guiding the exploration of opportunities and challenges of designing through play in teacher education.

In Chapter 9 'Playing with learning media' I focus on the importance of media in both the educational context and in play. I argue how it becomes possible to support an understanding of learning media in the didactic context as equipment for playful inquiry, through a conceptualization of play media when designing through play. I also touch on the challenges this might bring in students learning processes towards becoming teachers in their future professional practice.

In Chapter 10 'Playing with space' the analysis from the previous chapter on learning media as equipment to play with is widened to include a conceptualization of space as

also to be defined through play media as equipment for playful inquiry when designing through play. Through the analysis in this chapter, I argue there is an opportunity in conceptualizing space as an individual and important element when designing through play while acknowledging how space can also become a challenge for educators as additional element in the design process.

Throughout Chapter 11 'Playing with performance' I analyze how different variations of performing in education makes it difficult for students to become attuned towards playing with ways of knowing in teaching practices. Through the analysis, I further argue how performance can be nuanced to not only suggest a challenge towards teaching but can also bring opportunities for attuning towards playing with ways of knowing through performance, when designing through play.

In Chapter 12 'Playing with assumptions' I focus on how assumptions about learning and teaching emerge in students' statements when they are engaged in playing. I argue, how designing through play provides a space for playing with assumptions and experiences about learning and teaching while simultaneously affords the challenge of potentially exposing students. A key argument engaged with in this chapter is how interpreting students' assumptions differently can render designing teaching practices through play, an opportunity of potentially supporting students in trusting new and different atmospheric configurations in relation to their future professional practice as teachers.

Part VI presents the last part of the thesis, discussing as well as concluding on the arguments provided throughout the earlier parts. Perspectives for further research is suggested.

Through Chapter 13 'Discussion' I discuss how the opportunities and challenges of designing through play is not marked off separately but interweave making a delineation difficult between challenges and opportunities of designing through play. I discuss the contribution of designing through play towards other more established fields of teaching approaches. The concepts of moods and atmospheres are discussed as productive concepts in relation to this research, but also how these concepts can be proposed as productive in educational design research going forward. Further the chapter provides a discussion on methodological considerations on the role of design experiments in educational design research.

Chapter 14 'Conclusion' rounds off the thesis by revisiting key themes and findings.

Part II

In the following section, the theoretical framework is created and provide a starting point for the theoretical underpinnings of the analysis in part V of the thesis.

Chapter 2: Framing the understanding of play

Exploring into elements of teaching practices designed through play, requires a positioning of how play is to be understood. Here the definition of play as a mood practice (Skovbjerg, 2021a) in combination with Bateson's (2000) theory of how the meta-communicated framing of play is constituted, and Apter's (1990) theory of how adults experience play through a 'protective frame' is described as part of the theoretical framework of play in the research. Lastly a notion of freedom through Merleau-Ponty's (2014) phenomenology is to be explained, framing how the experiential aspect of freedom in relation to play can be interpreted. This understanding of freedom function in addition as part of the theoretical framework of play for the analysis of how to design through play for playing with ways of knowing can be enabled, when accounting for play as a free activity.

In the design collaborations with the educators in practice, as will be explained in more detail in Chapter 6 on methods, I held the perspective of play as a mood practice as the theoretical background for designing these teaching practices through play. During conversations with different educators, the additional perspectives of how play is meta-communicated as well as how adults experience play through a 'protective frame' became relevant to include in the process of designing and in the analysis, forming the background for the choice of including Bateson and Apter's theories on play in addition to the perspective of play as a mood practice. In this way, by engaging in collaborations in practice with educators the need was created for including further explanations of the concept of play in the exploration of designing through play.

While as mentioned in the Introduction, the aim of the thesis is not a question of designing play but designing through play as a possibility through characteristics of the following theoretical framework of play, to explore into the opportunities and challenges of bringing the concept of play into the educational context.

The play mood perspective

Play as a mood practice is to be understood as play comes into fruition in the intersection of the doing and behaviors of play, the play media, which is the equipment or tools of play, and the play moods which is the specific ways of being when engaged in playing (Skovbjerg, 2021a, p. 11). Each aspect of this triad of the play mood perspective is shortly described below.

Play practice – what one is doing in play

Play practice is the way one is playing, both the embodied, mental, emotional, motivational and social ways of doing and behaving (Karooff, 2013a, p. 93; Skovbjerg, 2021a, p. 65). The understanding of the social in the play practice behavior is in this perspective rooted in the concept of sociability inspired by Simmel (1949) where one is together for the pleasure or cheerfulness of ‘pure’ sociability (p. 255), or in the case of play, being together only for the cheerful sake of playing (Karooff, 2013a, pp. 93–94). This ‘pure’ sociability relies on having a specific form of tact as to ‘read’ the rules of the social situation according to Simmel (1949, p. 256). In the situation of play this form of tact is according to Skovbjerg (2021a) important, where the one’s playing are to understand the specific practices of doing in play and have to be attuned towards each other’s rhythms to participate (p. 76). The awareness of the rhythm created together in play through the play practice I argue, imply how participation in playing entails a learning process of ‘reading’ the situation to participate. This I will return to in the Discussion in Chapter 13, marking an important influence on the opportunities and challenges of students participating in the processes of playing with ways of knowing, when designing teaching practices through play.

The attunement towards other’s rhythm in play is also a matter of the distinct back-and-forth movement characterizing play practices (Karooff, 2013a, p. 95). This distinct back-and-forth movement is to be understood as how the practices one is doing in play needs to be responded to by the other participants in play for the practice to continue. This response could be as simple as a laughter, a similar or a new practice related in some way to the initial doing. Returning to the geometry lesson with Karen mentioned in the Introduction for an example of this need for a response to carry on playful practices. Here both Karen and ‘Thomas’ playful comments in class were responded to with laughter which carried with it the sense of the playful engagement continuing.

One last characteristic to be mentioned here of play practices is the constant rhythm between repetition and distance being unfolded in the play practice (Skovbjerg, 2021a, p. 65). In play practices according to Skovbjerg (2021a) what one does and makes is happening in a repeatable rhythm (pp. 64-65). Still, the repeatable rhythm of the doing and making in these practices are marked by a slight difference without necessarily constituting an entire change in the configuration of the pattern (Skovbjerg, 2021a, p. 65). The repetition or distance from this repetition in the play practices vary. While a repetition always involves a degree of interpretation, there is a difference in how distinct this interpretive distance unfolds (Skovbjerg, 2021a, p. 73).

Marking a difference in how distinct the productive process, meaning the creative improvisatory process of the play practices, are part in different forms of play practices is an important notion for distinguishing different play practices from each other. The relevance of these characteristics in relation to this research is beside the point of understanding the background for the perspective on play created here, simultaneously to indicate what characteristics are important of play practices. In part to notice how these might unfold in the context of teaching practices, and in part to understand how one participates in play practices as well as providing an offset on how to possibly be able to design for these.

Summarizing, then play practice is what one is doing in play, marked by a cheerful sociability, in a back-and-forth movement where the ones involved need to be aware of the specific rhythm created together and being tactful towards this rhythm to participate. At the same time play practices are being executed in patterns of repetition-distance, varying in degree between different play practices and making the creative, improvisational process of the specific play practice vary, relative to this pattern.

Play media – playing with something

Asking towards what opportunities and challenges learning media present when designing teaching practices through play through conceptualizing these as play media makes a description of the conceptualization of play media in the perspective of play as a mood practice relevant for exploring this theme in the thesis.

Play moods rise from the practices, the doing of play, combined with the use of the media played with (Skovbjerg, 2021a, p. 60). Play always involves playing with playthings (Fink et al., 1968, p. 23). The activities of play practices as described in the former,

evolve around the media one is playing with. In play one must do something *with* something to keep play alive. Play media is used as a way of getting into play moods and at the same time for keeping play going (Skovbjerg, 2021a, p. 29).

Skovbjerg (2021a) describe how play media can be understood as only evaluated in the practice of use through the concept of equipment [g. *Zeng*] as thought through Heidegger (1962). Heidegger (1962) brings forth the phenomenological point that a primordial relationship with things – or *Zeng* - is not first and foremost a relationship with ontologically given “mere things”, meaning that one cannot come closer to what the being of things are, if it is considered as something ‘proximally given’ (pp. 96-97). Heidegger (1962) instead propose to look at equipment or *Zeng*, through “ ... what makes an item of equipment – namely its equipmentality” (p. 97). Equipmentality [da. brugstøjsmæssigheden] refers in Heidegger’s phenomenology to the point that equipment is not something which is understood without reference to the practical use of this equipment. People first and foremost have a practical and active relationship with materials. Because essentially individuals are engaged as being-in-the-world and not at a distance from an active engagement, the equipmentality of equipment is something which is revealed in relation to what one is doing in the world and not first and foremost as a thing ‘in-itself’. Equipment becomes “something in-order-to” (g. etwas um-zu; da. “til-at”) (Heidegger, 1962, p. 97). If I find myself as being-in-the-world where my intention is to reach for the highest shelf, then the chair becomes a stool for me to help reaching it. If I instead need a rest, then the equipmentality of the chair becomes ‘in-order-to’ sit on.

Heidegger’s example is the hammer. The more practical the relationship with the hammer unfolds, the more unveiled what a hammer is as equipment the hammer can become (Heidegger, 1962, p. 98). The equipmentality of the hammer is opened through the intentionality of the situation and hence equally through how one is attuned in the situation:

That with which our everyday dealings proximally dwell is not the tools themselves [die Werkzeuge selbst]. On the contrary, that with which we concern ourselves primarily is the work – that which is to be produced at the time; and this is accordingly ready-to-hand too. The work bears with it that referential totality within which the equipment is encountered. (Heidegger, 1962, p. 99)

The referential totality is a summing up of the different configurations of the situation one is in and is provided as a sense of how one is engaged or attuned in these situations. It is not tools or equipment I am occupied with, but the work I am engaged in. But as Heidegger explains in the quotation above, then the work is also 'ready-to-hand' too, which is to say work is equally not in-itself; I work because this work is engaging me in what matters to me in the situation and through my being-in-the-world. Related to the pedagogical context this translates to how teaching practices is 'ready-to-hand' for students and educators, by being meaningful through how they are engaged in these by their individual being-in-the-world.

It is not a question of how play media makes sense before the play situation 'in-itself' but rather play media work as equipment or tools 'in-order-to' play, only if they can be provided with meaning in the situation. It is on the basis of interaction in the contextual situation among those playing the meaning of the play media will be created (Skovbjerg, 2021a, pp. 38–41). How play media first and foremost can be defined and become meaningful through how it is used in the situation shows how play media and play practices are intimately related. Play media comes into being through the play practice and aid the creation of play moods, just as this practice can be a social relationship if more are playing as already mentioned (Karooff, 2010, p. 109). The play media is both defined and interpreted through the practices which again is socially constructed by the ones playing.

The definition of play media is then to be found in context and is the equivalent of posing how there is never only one way of defining equipment, such as the above example with the chair. Heidegger (1962) explains "Taken strictly, there 'is' no such thing as *an* equipment. To the Being of any equipment there always belongs a totality of equipment, in which it can be this equipment that it is" (p. 97). The meaning of the chair comes through the use which is shown through the engagement in the situation, and the meaning is dependent on whether it is understood in relation to the shelf or the table for instance.

Skovbjerg (2021a) proposes this as the 'possible possibilities' of play media in the situation (p. 37). These possible possibilities of play media are not predefined in the contextual situation of play. Still, there are not endless possibilities for the use of play media, as they also in a sense push back towards what can be possible to use these media as (Skovbjerg, 2021a, p. 42). In order to fully grasp this contextualized and situated

meaning creation of the possible possibilities of play media, the use of Gibson's (1986) concept of affordance can be helpful as explanation:

The *affordances* of the environment are what it *offers* the animal, what it provides or *furnishes*, either for good or ill. The verb *afford* is found in the dictionary, but the noun *affordance* is not. I have made it up. What I mean by it is something that refers to both the environment and the animal in the way that no existing term does. It implies the complementarity of the animal and the environment. (p. 127)

Media, things, and environment offer or provide certain possible possibilities, but what these afford is taken up in co-existence with the individual. Gibson's concept of affordance encompass both sides of the interaction and perhaps this serviceability was what made the concept gain recognition and is now to be found in the English dictionary (Merriam-Webster, 2023). At the same time as acknowledging how media and environment communicate certain possible possibilities of use, scaffolding or even pushing meaning, this meaning is always already to be understood in relation to the individual in the context and the intentions which the individual bear with them. As Gibson (1986) writes "An affordance cuts across the dichotomy of subjective-objective and helps us understand its inadequacy...An affordance points both ways, to the environment and to the observer" (p. 129). Affordances is then never exhausted in the contextual situation but could always be something else through other intentions. Simultaneously, affordances are neither something determined beforehand. The meaning of play media becomes an emergent structure in the play situation between the participants, the practices, and the play media.

Throughout the thesis the concept of affordance is going to aid the understanding of this complex intermediate and situational way of making sense of media in the ongoing emergence of situations.

To sum, the conceptualization of play media here is how these are not to be understood in themselves or as mere givens. The meaning of play media is always to be found in the context of the (play) situation where the affordances of these show themselves in an emergent structure where even though media can afford specific types of privileged use, the affordances of things are not readily available as one specific use beforehand, making the conceptualization of media interesting in relation to learning media in context of teaching. As Jørgensen et al. (2022) in research on playful learning in higher

education and Hansen (2006) in relation to research in the pedagogical context more generally argue, then materials or media in the educational context is often provided with a naturalized status, as a given ‘in-itself’ (p. 11; p. 16). The problematic aspects of providing learning media with a naturalized status in teaching practices with the aim of playing with ways of knowing, is to be unfolded in the analysis in Chapter 9, evolving around the key theme of learning media.

Play moods – being-in the moods of play

The last part of the triad in the perspective of play as a mood practice is play moods.

In the play mood perspective, play moods describe the way one is attuned when being in a situation of play (Karoff, 2013b, p. 76; Skovbjerg, 2021a, pp. 26–27).

The conceptualization of moods, Skovbjerg (2021a) propose through again turning to Heidegger (p. 108).

The existential meaning of moods offers a way of understanding how one essentially perceives things, evaluates and judges experiences and finds meaning in them is always already disclosed in one’s situatedness or ‘*befindlichkeit*’ in the world (Heidegger, 1962, p. 177). The way the individual pre-reflexively understand things, is how the individual is ‘attuned’ (g. *finden*) affectively in the actual context (Heidegger, 1962, p. 172).

Coming to know always already evolves through this attunement. Different moods then open for different ways of learning, playing, and perceiving. Being is in this sense already “... grounded in an affective structure, which Heidegger termed *Befindlichkeit* – an intricate felt sense of one’s own situatedness – and can thus only be experienced as entangled in feelings” (J. Hasse, 2019, p. 78). However rational, reflective, and preferably objective I would like my stance towards the world to be, my perception is already angled through a pre-reflective emotionally affective being-in-the-world.

The point is then, that subjects are not disconnectedly being in the world as perceivers, distanced from the world outside of themselves, but rather closely and actively

connected through being-in-the-world¹ (Heidegger, 1962, p. 176; Ødegård, 2014, pp. 2–3). Heidegger (1962) describe the working of moods, as:

...so far from being reflected upon, that precisely what they do is to assail Dasein in its unreflecting devotion to the 'world' with which it is concerned and on which it expends itself. A mood assails us. It comes neither from 'outside' or from 'inside', but arises out of Being-in-the-world, as a way of such Being. (pp. 175-176)

Heidegger neither introject moods inside the subject as a closed entity towards the world nor externalize them as coming from the outside. Instead, moods arise on the background of an engagement of being-in-the-world. Merleau-Ponty's (2014) help describe this simultaneous movement of self and world through the living body "Rather, what I discover is the profound movement of transcendence that is my very being, the simultaneous contact with my being and the being of the world" (p. 396). The world transcends in which the very notion of one's own being is found. The individual is always in a mood, this is what is meant by Dasein, always already 'Da', as a human being and the mood discloses the state of this being. Essentially this means that the mood a person is in decides as mentioned how one is attuned towards the world and in this attunement how things can be meaningful. It is not an inner or an outer attunement, but instead disclosed simultaneously through the very engagement of being-in-the-world. As Skovbjerg (2021a) in relation to play moods argues "...we have an idea of what it is that could bring meaning to a possible future. But at the same time, our comprehension of a particular meaning is not completely defined" (pp. 109-110). The mood 'assails us' and in play the individual is engaged in the world to obtain this specific assail of play moods. The meaning unfolds in the perceptual engagement in the world and on the backdrop of previous experiences while always already a continuous being-in-the-world, which makes the way for something such as preferences in ways of engaging in the world, for instance in play or in the classroom.

¹ This notion of how being is actively and intimately connected with the world is marked through the hyphens in being-in-the-world which Heidegger and following phenomenologists use after him (Merleau-Ponty, 2014; Ødegård, 2014, pp. 2–3).

While the above forms the existential background for an explanation of the concept of moods, play moods is not something which is controlled but reveals itself in the situations of play through the play practices with play media and in relation to the people one potentially plays with (Karooff, 2013b, p. 8). Play moods can emerge when the ones playing are specifically open towards meaning production and towards each other's ideas. As Skovbjerg (2021a) explain "Whenever we say 'yes' to most things and accept both one another and the inputs that can create play situations in the immediate future, - that is when play moods occur and can continue to occur" (p. 108). Saying 'yes' to most things I argue is not a matter of an inner psychological disposition only being about a mental attitude, but instead a mode of being-in-the-world as a both-and through how the situation engages the individual in a playful way.

In relation to the pedagogical context, I argue this perspective on how play is a matter of being in play moods, rooted in a Heideggerian notion of moods, can help divert too strong an emphasis on the individual as being the one responsible for taking up different ways of knowing through a mental playful attitude. When knowing and learning is thought as a social situated process, as I explain further in the following chapter, then it is important to take into account how the situation provide possibilities of engaging students and attune them towards saying 'yes to most things' and through this, engaging in playful ways with knowing.

In the figure below, a schema of play moods and associated play practices as well as qualities of these is outlined as Skovbjerg (2021a) suggests as a typology for four different forms of play moods possible to be in through the activity of playing (pp. 121-126).

Play practice	Sliding	Shifting	Displaying	Exceeding
Play moods	<i>Devotion</i>	<i>Excited</i>	<i>Tense</i>	<i>Euphoric</i>
Qualities	-Being absorbed -Sense of following the practice -Non-stop continuity	-Affected body -Butterflies in the stomach -Movement -Physicality and enthusiasm	-Tension in attention -Extrovert, showing and bling	-Feeling of manic -Bizarre -Extrovert, wild and expressive

Figure 1 With inspiration from Skovbjerg (2020, p. 44); Play practices, play moods and qualities of the play practices in the perspective of play as a mood practice

While the play practices of displaying and exceeding and the following play moods of *tense* and *euphoric* play moods are the ones utilized in the following analysis of the thesis, a short elaboration of the four different play practices and play moods are provided

here to understand some of the underlying aspects of this theoretical perspective of play.

The play mood *devotion* is followed by practices of *sliding*, characterized by concentration, focus and a sense of flow, being in the moment, absorbed and not wishing for anything else than how the rhythm of these practices are to keep going in a non-stop continuity (Skovbjerg, 2021a, p. 122). The play mood *excited* suggested by Skovbjerg (2021a) is followed by practices of *shifting* where more intense bodily experiences are present, involving movement and is bodily expressive, for instance being on a swing, in a roller coaster or dancing (p. 124). The *tense* play mood is according to Skovbjerg (2021a) followed by practices of *displaying*, showing off and being prepared to perform in front of others, showing and exploring one's own style in play (p. 124). The last play mood in the play mood perspective is the *euphoric* play mood created through practices of *exceeding*. Here the practices are the crazy, fun, silly ideas and extrovert and expressive practices (Skovbjerg, 2021a, p. 125).

In order to get into play moods, Skovbjerg (2021a) explain how this happens through an initiating play power “The play power should be seen then, as that which puts the game in motion, that which initiates the change in the ordered meaning and opens up for every-day, matter-of-course practices coming to mean new things, namely as play practice” (p. 126). Often these initiating play powers are started through the play practice of *sliding* or *shifting* for then to evolve during playing (Skovbjerg, 2021a, p. 127). Even though the four types of play moods have not been the primary focus of the study, these have aided the atmospheric outlook in the process of the research. Having an attention towards the configurations of how play moods ‘look’ when these emerge has led to some of the insights in the analysis of the key themes of the inquiry. As mentioned, the tense and euphoric play moods are the ones used as theoretical concepts exploring parts of the opportunities and challenges of designing through play in the following analysis. These specific play moods will be taken up in more detail in Chapter 11 and Chapter 12. At the same time, the four different play moods also functioned as a design constraint for students work in one of the design experiments during the study, as I will describe in Chapter 8.

Summing up, the essential point is how play is a matter of both working towards as well as being in play moods. Through different practices with different play media, it is possible to be attuned towards play moods when being engaged in playing and towards

an open meaning production in the situation. Being in play moods or being playful are not a matter of having an internalized mental attitude towards the world, but a way of being-in-the-world in the situation of play which can arise through the configurations of situation.

In the following, the open and changed meaning production characteristic of play in relation to the above outline of the perspective on play as a mood practice is going to be further elaborated which will show an important aspect when interested in designing teaching practices through play in the following analysis in the thesis. This will first be taken up through exploring how a common engagement in play is communicated through Bateson's (2000) theory on play in the following.

The meta-communicated framing of play

According to Bateson (2000), the message among players of 'this is play' is communicated on the abstraction level of metacommunication.

In verbal communication Bateson (2000), draw forth how humans communicate on more abstraction levels at once (p. 177). The abstraction level on which play is communicated according to Bateson (2000) is the metacommunicative level of abstraction, where "... the subject of discourse is the relationship between the speakers" (p. 178). This meta-communicative level speaks something about how the receiver of this message is to interpret what is said and done in this context.

Bateson (2000) introduce the concept of framing to make more concrete the abstract notion of how this metacommunication of 'this is play' is bounding action to become meaningful within a play context (pp. 184-190). Through animal behavior, as the background for Bateson's (2000) discovery of how play is meta-communicated, Bateson explain how there are three types of messages which can be communicated. The first is messages of mood-signs as Bateson (2000) refers to as 'involuntary' signs, body language and sounds for instance, the second is simulation of mood-signs when playing or wanting to communicate some specific mood-sign and the third are those messages used to enable the receiver to tell the difference between these two first forms of signs (p. 189). The metacommunicative level of 'this is play' is represented by this third form of message and set the framing of telling "...the receiver that certain nips and other meaningful actions are not messages of the first type" (Bateson, 2000, p. 189). Play is then not seen as a reference to meaningful actions outside of play according to Bateson.

What types of actions are meaningful within the framing of play and what essentially can be given meaning in this framing, are different than in other non-playful contexts, and in play has to be continuously negotiated between the players (Bateson, 2000, p. 192).

Bateson (2000) then defines play through this differentiated communicative abstraction level in this often cited quote:

“These actions, in which we now engage, do not denote what would be denoted by those actions which these actions denote.” The playful nip denotes the bite, but it does not denote what would be denoted by the bite. (p. 180)

Bateson seem to mean by this how on the relational metacommunicative level, it is possible to exchange signals carrying the message of ‘this is play’. Explained through the situation from the lesson of geometry with Karen in the beginning of the Introduction, Karen uses her body language, smiling with a particular tone of voice to meta-communicate how the story of the cardboard triangle is only ‘play’ and for instance when she corrects the student Nina’s comment on *if* students get fond of geometry to being *when* they are fond of geometry. The outburst of laughing in class after Karen’s comment, indicates how the students interprets this comment inside the meta-communicated framing of ‘this is play’ and not for instance interpret the situation as if Karen is correcting Nina in making a serious mistake. What is paradoxical here according to Bateson (2000) is how not only does the playful action denote an action outside of play, but does not denote what would be denoted by this action, also the action - or in Bateson’s example the bite - is fictional (p. 182).

Bateson’s concept of how actions within play can denote something but do not denote what these through another frame of meaning would denote and must be meta-communicated in agreement between the players aids the understanding of, as explained in the perspective of play as a mood practice, how open meaning production and consensus through for an example tact are among the most important features for staying in and co-creating play moods.

While Bateson as mentioned refers to the bite or actions within play as fictional, Sutton-Smith (1997) argues in relation to Batesons’ play theory, through Schechner (1993, 1988), how “In turn, Richard Schechner (1988) dramaturge, suggests that a playful nip is not only not a bite, it is also *not* not a bite... Which is again to say that the playful nip may not be a bite, but it is indeed what a bite means” (p. 1). Here the example with

Karen can again function as explanatory. Even though as mentioned above the storytelling of the red cardboard triangle is told through the framing of ‘this is play’ and telling the story is not a serious issue of actually telling students a children’s story; at the same time telling the story in the classroom is still what telling a story in the classroom means, the professional didactic point of in a playful experiential way modelling a method for presenting geometrical figures in Folkeskolen. This way play has been called liminal, understood as a threshold between reality and unreality, the meaning within the frame being central (Sutton-Smith, 1997, p. 1). In this thesis the concept of framing is used rather than that of play as liminal for explaining how the meaning production of teaching practices, which are designed through play, potentially carries with it another meaning than what practices outside of this designed framing might.

Play as experienced through a paratelic protective frame

While the perspective on play as a mood practice is based on a view on play as a universal human activity, the perspective is formulated primarily on the basis of empirical studies of children’s play (Karooff, 2010, p. 8; Skovbjerg, 2021a, pp. 9–16). In this study the context of research is among adults in higher education. As Nørgård et al. (2017) argue in relation to play in higher education, there can be a difference in ways of playing, barriers, motivations and the effects of playing between children and adults (p. 274). Therefore, I simultaneously draw on Apter’s (1990) theory on adult play as a further encirclement of how play is to be understood in the context of this study, and how it is possible to design through play in relation to teaching practices.

The issues which Apter touch upon in his theory of adult play also became important in the design process as something the educators I collaborated with on the design experiments were preoccupied with as will be described shortly in the description of the design experiments in Chapter 8. Further, Apter’s theory of play as experienced within a protective frame is most unfolded through the analysis in Chapter 11.

The protective frame of play

Apter’s theory of adult play is based on Apter’s reversal theory, pointing to “...the ever-shifting complex nature of experience” (Apter & Kerr, 1990, p. 163). Apter’s perspective on adult play is inspired by Bateson’s concept of framing (Kerr, 1990, p. 34). In the theory of adult play, Apter (1990) explain how “... we need to look not so

much at *what* is experienced in play... but rather the *way* of experiencing what one is doing in play” (p. 14). It is not as much the characteristics of the specific activities important for something to be play, but rather if the activities engaged in leaves space for the individual to experience different activities as playful. Through this argument, Apter (1990) state how “Golf is not necessarily play, and research is not necessarily work” (p. 13). What instead defines if the experiences engaged in are felt as playful or not for the individual, Apter (1990) explains, requires the sense of being in a ‘protective frame’ (p. 15). The protective frame can be experienced if one feels unthreatened, secure and there is not something one necessarily have to do. This explanation echo how Burghardt (2017) refers, in relation to the experience of play, as necessarily having to be unfolded within a relaxed field (p. 25).

According to Apter (1990), for an activity to be experienced as playful, the experience of the activity must make clear that what the individual is engaged in by themselves or together with others, does not have long-term consequences outside of the play situation (pp. 14-15). If the playful protective frame can no longer be upheld due to a lack of trust or confidence that the activity will have no further implications, the subject’s playful engagement disappears. The sense of lack of long-term consequences is something always individually determined but can through different means be aided. As an example, the protective frame can for instance be set through rules in a game (Apter, 1990, p. 15). In relation to the situation from geometry in the introductory section an example can be given of being within the protective frame. The activity of writing on the blackboard in the situation from geometry lesson from the Introduction seemed to be felt by the student Thomas as within a protective frame for him to be able to respond to Karen’s request to say something with a playful and fun remark of ‘I am drawing on the board’.

Being in a paratelic state in play

Apter (1990) provide an understanding of the protective frame as being within a paratelic state (p. 15). In a paratelic state as opposed to when being within in a telic state where means are used to obtain specific ends in activities, ends are instead “...used *in the service of* the activity” (Apter, 1990, p. 16). Rather than being focused on obtaining specific aims with the activities being engaged in, the individual being in the playful protective frame is more focused on the process of the activity and through this process

the ends is used to stay in the process of the activity, or connecting to the explanations from earlier, staying within the meaning order of the activity. Apter's (1990) example is sport (p. 16). Without some form of end, for instance winning or scoring a goal, the meaningfulness of the activity is lost, while in the paratelic protective frame the activity of sport is not in order to win, but winning is instead 'used in the service' of engaging fully in the activity. In this way there can be a difference in how sport is experienced within a framework of amateurism and professionalism. Apter (1990) further explains how:

Other typical characteristics of the paratelic state would seem to include: its emphasis on immediate gratification wherever possible; a preference for spontaneity and freedom of action; a willingness to experiment and 'mess around'; a disposition to fantasise and indulge in pretense and make-believe; and a tendency to prolong the activity wherever possible. (p. 17)

These characteristics which Apter mentions of the paratelic state will be taken into account further below.

Moving in and out of the protective frame

Apter (1990) explains how the sense of the protective frame "...comes and goes in our experience, during the course of our everyday lives, so we reverse backwards and forwards between these contrasting ways of 'being in the world'..." (p. 15). Play is according to Apter as also mentioned in the beginning of this section not one defined through a frame of separated experiences of either an activity is defined distinctly as play or as not being play, but rather how it is possible to move back and forth between experiencing something as play and not during everyday life. It tones down the focus on separating play distinctly from other activities as a human phenomenon as Huizinga (2009) and Caillois (2001) to a greater extent seem to emphasize (p. 13; p. 9).

In relation to this research of designing teaching practices through play, Apter's perspective on play yield space for an understanding of how students and educators can move in and out of taking part in the atmospheric configurations which can make play moods potentially emerge in the teaching practices. In relation to the aim of designing teaching practices through play this notion of moving in and out of the paratelic state of being in the protective frame can for attuning students towards playing with ways of knowing in the design process aid an acknowledgement of how designing is not a matter

of holding a constant protective frame in place, for teaching practices in this way to be completely clear of risk and consequences outside of this frame. Instead, it can be argued how the task of designing is one of setting the conditions for enabling students to move in and out of the paratelic state of being in a protective frame through for instance creating space for spontaneity, freedom of action, experimenting or to ‘mess around’, fantasize and pretense as characteristics of being in the protective frame as Apter propose in the quotation earlier above.

Summing up, Apter propose through inspiration in Bateson’s concept of framing that for adults’, play can be experienced through the paratelic state of how actions taken in play is guarded through a sense of a protective frame against long-term consequences outside of this frame. Adults can move in and out of a playful paratelic state of being through the course of everyday life. While when having the experience of being in this protective frame, what in normal circumstances outside play would be the aim of the activity is instead put to use in service of unfolding and staying in the playful activity.

The experience of freedom in relation to play

Merleau-Ponty (2014) discuss freedom in its generality in relation to the individuals’ perceptual engagement of being-in-the-world. In that regard, Merleau-Ponty’s phenomenological account of freedom might seem as taking the reflection too far away from the main purpose of this thesis. I argue that Merleau-Ponty’s understanding of freedom can provide some important pedagogical implications in relation to opportunities and challenges when designing teaching practices through play, while freedom is a basic concept to discuss in relation to play, as I have already dealt with in the Introduction. Further as explained through Apter’s definition of how play is experienced through the paratelic state of being in a playful protective frame, it is argued how choices taken in this frame is freed from long-term consequences and how characteristically, according to Apter of when being in the protective frame of play, there is a preference for freedom of action. In Merleau-Ponty’s notion of freedom, the aspect of the free choice is specifically taken up.

In light of these considerations, taking a closer look into Merleau-Ponty’s philosophical account of freedom is argued to be helpful in understanding aspects of the concept of freedom in relation to designing through play in the context of teacher education.

Against an absolute free choice

As a direct discussion and critique as well as inspiration in Sartre's (2006) existentialist concept of freedom and in discussion with other theorists, Merleau-Ponty (2014) furthers a development in the conceptualization of a phenomenological account of freedom. How Merleau-Ponty's concept of freedom stands out as a position in relation to that of Sartre's, makes it relevant to summarize Sartre's understanding of freedom. Sartre (2006) positions a conceptualization of freedom through an existentialist position where the subject through existence is bound to the absolute free choice. Sartre's (2006) definition is based on the distinction, that either the subject is absolutely free or not free at all "Man can not be sometimes slave and sometimes free; he is wholly and forever free or he is not free at all" (p. 463). This absolute free choice is for Sartre (2006) the possibility per se for the subject to transcend what is (p. 462). Merleau-Ponty (2014) critiques this understanding by arguing how "The rationalist alternative - either the free act is possible or not, either the event originates in me or is imposed from the outside - does not fit with our relations with the world and with our past" (p. 467). Merleau-Ponty positions Sartre's ultimatum of either there being absolute freedom or else there is no freedom at all as a rationalist conceptualization. This rationalist conceptualization does not fit with being-in-the-world according to Merleau-Ponty.

Individuals are according to Merleau-Ponty (2014) already intersubjectively relational and hence not defined by an inner or an outer in a dualistic notion. Even if it were to be the case that the subject could be defined as pure consciousness at a distance from the outer world, then an absolute freedom is still not possible, while according to Merleau-Ponty (2014) "A consciousness for which the world is 'self-evident,' that finds the world 'already constituted' and present even within consciousness itself, *absolutely* chooses neither its being nor its manner of being" (p. 480). In this way there is no such thing as an either-or in terms of existential freedom. There is however an ambiguity between a certain generality of the situation explained as a form of universal experience or situational 'contribution' and the particularity of the individuality as foundation for choices and for being-in-the-world (Merleau-Ponty, 2014, p. 480).

Fisher and Gaydon (2019) argue in relation to an argument about the space for play in higher education, for how play can be seen to underpin most of human activity. In this claim Fisher and Gaydon (2019) take the Sartrean existentialist position and argue for

how it through this ultimate freedom is possible to freely play with the rules in the pedagogical context while these rules are constructions which could always be different (pp. 79-80). For instance Saugstad (2017) point towards that play is a free activity and not least an activity made in freedom and hence explain why play cannot be designed for in a didactic frame, because here is not freedom, but something one has to do in the pedagogical frame (p. 10). Fisher and Gaydon (2019) present one way through inspiration in Sartre of arguing for how there can be an opportunity of designing through play in an attempt to circumvent the position of arguing against play in the educational context.

Freedom as it is experienced

Merleau-Ponty (2014) oppose Sartre's interpretation of an ultimate freedom by explaining how this is not the way freedom is *experienced* (p. 467). Even if it is agreed that the rules of life and in this research context rules in the pedagogical space can be interpreted as mere constructions, argued through Merleau-Ponty, these rules are still sedimented in the being and codetermine what is felt possible to play with and what is not. The sedimentation means that repeated actions are inhabited by the body and thus some actions become more likely than others (Merleau-Ponty, 2014, p. 145). Merleau-Ponty (2014) provide an example of this, by explaining how "It's unlikely' that I would in this moment destroy an inferiority complex in which I have been complacent now for twenty years ..." (p. 467). Rather, because of how the sedimentation of this inferiority complex is inhabited through the last twenty years, then it "has a specific weight ..." (Merleau-Ponty, 2014, p. 467). For Merleau-Ponty this is not to be understood as determinism to rule out a complete freedom, but rather how freedom is not a thought freedom, but through sedimented actions which influence the interpretation of the situation, some actions become more privileged or likely than others.

Translated to the pedagogical sphere, the interpretation could then be, that even though the present rules in this space are not to be seen as determined and never to be changed, these rules still present 'a specific weight' which might not in an instant feel changeable. The ambiguity of the experienced freedom to do something different explains how there is both possibilities for changes in the pedagogical space and why at the same time there is some form of perceived determinism of the rules of this space. Being-in-the-world

determines how there is always already a situation where one is situated socially and in which rules are part and this makes it less likely to change them immediately.

Freedom is possible through doing and action

One of the problems with viewing everything as freedom is how one would experience it in the first place. This makes Merleau-Ponty (2014) take point of departure in a concrete and actual freedom showing itself through doing or action:

If freedom has to do with *doing*, then what it does must not immediately be undone by a new freedom... If there were no cycles of behavior, no open situations that call for a certain completion and that can act as foundation, either for a decision that confirms them or for one that transforms them, then freedom would never take place ... If freedom is to have a *field to work with*, if it must be able to assert itself as freedom, then something must separate freedom from its ends, freedom must have a *field*... (p. 462)

Merleau-Ponty argues how if freedom at all is to assert itself as an experienced freedom, if there should be a felt freedom of choice, if freedom as such is to 'have a field to work with', then freedom must have a field. Freedom must have an opportunity, a field, to let itself be shown on the background of something else which is then not freedom.

Freedom lets itself be shown through the possibility of freedom in doing and action and cannot be the same as a thought Kantian freedom. Merleau-Ponty (2014) explains what is meant by a thought Kantian freedom with inspiration from an example from Scheler, stating how the "...disabled swimmer who would like to save a drowning man and the good swimmer who actually saves him do not have the same experience of autonomy" (p. 461). The experience of autonomy which here is understood as freedom to take action, cannot be freedom of consciousness or as a thought freedom of how I would like to save the drowning man.

Freedom must instead make itself become shown in actions. If there were nothing to do, freedom would not be present (Merleau-Ponty, 2014, p. 463). I am only free to the extent I experience the real possibility for the actions that I would like to take. This way of interpreting freedom as on the background of something which freedom is committed to, providing a field for freedom through actions is not stripping away opportunities for freedom, but what makes freedom appear. Freedom is a lived

freedom; an actual freedom incorporated in actions and makes itself shown in a field formed through obstacles which separate free actions from ends.

In sum, on the background of Merleau-Ponty's philosophy of how freedom is to be interpreted as a lived and experienced freedom it becomes possible to suggest how one of the opportunities as well as one of the challenges of designing teaching practices through play lies in the design process to enable and make explicit the field of freedom through the freedom of *doing* of the choices for those playing. This definition of freedom also highlight how freedom is not a question of there being no obstacles involved, but rather how freedom is obtained through these obstacles providing a field to take action within. This view on freedom in relation to providing opportunities of attuning students towards possibilities of playing with ways of knowing is something I will go into further detail with, in the analysis in Chapter 11.

Summing up

The understanding of play in the thesis is derived from the conceptualization of these above understandings of play and of freedom. Shortly, play is understood here a practice of play moods where an open meaning production is made possible through the practices with play media, meta-communicated through the relationship among the players of 'this is play', only possible if based on the experience of the practices and aims of these are situated within a protective frame from long-term consequences outside of the context of the playful situation.

This definition of play has been the underlying notion in relation to the design process in collaboration with the educators, a definition that I particularly held in the process, and as mentioned has also been formed through these design processes. Different parts of these above notions on play are at different times more in center throughout the analysis. For instance, the protective frame is more central for parts of the analysis in Chapter 11, where play media is drawn forth as central in Chapter 9.

The above theories are those used as design and analytical frames for this exploration in relation to play theory, whereas other theories on play is consulted in the analysis on an ad hoc basis providing supportive or critical views on the analyzed but are not used continuously throughout.

Chapter 3: Atmosphere and experiential ways of knowing

To explore what designing through play as a mood practice can bring of opportunities and challenges towards playing with ways of knowing is here to be aided by the concept of atmospheres through taking an atmospheric outlook and an elaboration on how learning, knowledge and knowing is conceptualized in the thesis. This chapter also lays the ground for discussing the research question in Chapter 13 of how the concepts of moods and atmosphere support answering the main research question and how these concepts can be useful in educational design research going forward.

The last part of the chapter centers around the concept of attunement as central in the study on the background of how the atmospheric configurations of teaching practices designed through play can attune students towards playing with ways of knowing.

An atmospheric turn

Different areas of research taking the concept of atmosphere to use span widely. The areas span from philosophy (Böhme, 1993; Griffero & Tedeschini, 2019; Schmitz, 2017; Slaby, 2020) philosophy of education (Bollnow, 1989; Wolf, 2019a), musicology (Riedel, 2020), early childhood education research (Winther-Lindqvist, 2021), methodological approaches in research (Pink et al., 2015; Schroer & Schmitt, 2020; Sumartojo & Pink, 2019) and design research (Akama, 2015), only to give a brief exemplary outline.

The manifold possibilities for use in research can tell something about the theoretical serviceability of the concept of atmosphere. Based on the gradually multifaceted areas in which the concept of atmosphere have been employed in the humanities recently, Griffero (2019) point towards the opportunity for stating ‘such a thing as an atmospheric turn’ in research (p. 11). Griffero and Tedeschini (2019) argue what atmosphere in general and broad terms aid is to unfold and interpret new perspectives on the affective side of being human and additionally taking into account the spatial dimension of this affective side (pp. 1-2).

Understanding atmosphere

While Schmitz (2017), Bollnow (1989) and Tellenbach (1981) utilized the concept of atmosphere in different ways theoretically before Böhme (1993), often a theoretical

starting point for exploring the concept of atmosphere have been by way of Böhme (Frølund, 2016; Sumartojo & Pink, 2019, p. 16). Böhme (1993) with inspiration from Schmitz' (2017) phenomenology of the body where atmosphere is central, introduce atmosphere as a fundamental concept for describing the human sensory embodied perception. To understand atmosphere as the fundamental concept for how the individual perceive according to Böhme (1993) "Atmospheres are evidently what are experienced in bodily presence in relation to persons and things or in spaces" (p. 119). In the same way as Heidegger posit about the role of moods, for Böhme atmospheres then become crucial in the way understandings of situations and places one is present in is formed.

Böhme's suggestion of making atmosphere fundamental aspect of human perception is helpful as an outset for explaining the concept of atmospheres connoting in some way Heidegger's concept of moods and elaborate more specifically how atmosphere as fundamental for how the individual through the sensing body perceives and hence comes to know as relevant in this research. In relation to designing through play within the frame of play as a mood practice, how students are emplaced in the learning situation bodily becomes relevant to reflect upon. Böhme (1993) explains how: "What is first and immediately perceived is neither sensations nor shapes or objects or their constellations, as Gestalt psychology thought, but atmospheres, against whose background the analytic regard distinguishes such things as objects, forms, colours etc." (p. 125). This way of viewing sensation can be helpful in an understanding of how sensing is not to be understood as separated out in distinct senses, but instead how the perception is multisensory (Pink, 2015, p. 40).

Despite this initial aid of Böhme's account of atmospheres as related to the sensing body, Sumartojo and Pink (2019) point to how Böhme's understanding of atmospheres make these stand forth as uniform and distinct, as something one is simply placed in, and in this way not sufficiently attending to the emergent and ongoing structures of atmospheres (pp. 16-17).

In describing atmospheres, Anderson (2016), I argue, moves close to Heidegger's notion of moods as not stemming from the inside or outside as mentioned in the previous chapter, and explains instead how atmospheres are ongoing and:

An atmosphere's openness to change as it is emanated,
expressed and qualified makes it less a property, a finished

thing in itself, and more a condition constantly being taking up in experience. We are in the midst of atmospheres that constantly flip between the objective and subjective, undoing the distinction between the two terms. (p. 147)

When designing through play in teaching situations these distinctions make sense in the way that designing for configurations of making it possible for students to play with ways of knowing is not a question of designing an atmospheric ‘property’ or a finished structure or condition as a uniform atmosphere.

Defining atmosphere

Therefore, instead of focusing on a definition of atmospheres as distinct or as a finished structure making atmosphere an entity in itself, I draw on Sumartojo and Pink’s (2019) conceptualization of atmospheres. This definition is fundamental for the atmospheric outlook in the thesis. Sumartojo and Pink (2019) define how atmospheres can be understood as:

...specific configurations of sensation, temporality, movement, memory, our material and immaterial surroundings and other people, with qualities that affect how places and events feel and what they mean to people who participate in them. This shifts our focus towards the importance of the specific conditions in which atmospheres emerge and the meanings that people ascribe to them - and crucially that these meanings might then move forward with people, continuing to shape their understandings of their experiences. (p. 6)

The specificity and contextual evolvment of the different configurations making up the atmospheric which Sumartojo and Pink propose, makes it possible to get a sense of how atmosphere is not something easily defined through causal theoretical explanations. In this understanding of atmospheres there is an openness in the definition at the same time as the weighting of the contextual contingent dependency and ongoing emergence. Further, Sumartojo and Pink (2019) argue how imagination, foreknowledge and anticipation is part of the configuration of atmospheres as a way of emphasizing the way meaning help shape how atmospheres can come to be felt for the individual (pp. 5-7). Atmosphere is made up of these *intersubjective*, sensory, material and immaterial conditions, and is not ontologically independent or ‘free floating’ as for instance proposed by Schmitz (Böhme, 1993, p. 122; 2017).

Approaching atmospheres through their shifting and changing configurations in time and space calls for attending to them as emergent concepts not entirely able to be fully known or controlled (Griffero, 2019, pp. 17–18; Sumartojo & Pink, 2019, p. 18).

This resistance towards a finite and closed definition of atmosphere and moods, rendering them open as concepts describing entangled configurations of lived experience between concepts of temporality, memory, movement, imagination, and immaterial and material surroundings might make them difficult to import in the scientific realm (L. B. Jensen, 2010, pp. 22–23).

But here it is argued that this vagueness (Griffero, 2014, p. 7; Sumartojo & Pink, 2019, p. 18) is at the forefront of the usefulness of these concepts. The vagueness of the description of atmosphere, is useful exactly because it helps install what Griffero (2019) terms a healthy rebalancing of a predominant dualistic ontology between individuals and environment (p. 48). This echo the defining characteristics of atmospheres from Anderson (2009) quoted in the above and that of moods through Heidegger's definition in the previous chapter.

This rebalancing makes it possible to take seriously the phenomenological stance towards lived experience as being-in-the-world and not as a subject safely being at a distance from the world. Edensor (2015b) argues, what seems to be in agreement with Griffero's point mentioned above, how atmosphere is not a productive concept despite of its resistance towards making clear cut analytical distinctions regarding ways of being-in-the-world, but a productive concept because of it (p. 84). Through insisting on not making determined distinctions to represent atmosphere or moods but letting these be emergent and ongoing phenomena always already present, can instead attune towards an awareness of what it makes possible to get a hold of through taking an atmospheric outlook. Edensor (2015b) explains how atmosphere as a concept (and moods in the understanding undertaken in the thesis) blur the lines between emotions, senses, and affect (p. 84).

Even though analytical distinctions of these concepts can serve well for different scientific purposes, what seems to be the advantage of atmosphere is how the concept accounts for how these different affective structures are experienced in practice as indistinguishable and interwoven in space (Edensor, 2015b, pp. 83–84). Instead of being occupied with differentiating these various affective structures of emotions, senses, and

affect they can be accounted for as notions of how one through various configurations becomes attuned in the situation.

Distinguishing between moods and atmosphere

An understanding of moods and atmosphere as concepts in relation, are valuable when operating with both concepts through how play is conceptualized as a mood practice and atmospheres are claimed to be of service in the research on how students can become attuned towards playing with ways of knowing, both analytically and as design framework.

Still, for every try to distinguish moods and atmosphere from one another, it is easy to fall in the trap of this distinction also being true of the other concept, especially in the Northern Germanic languages. For instance, it makes sense in Danish to both say that there was a special mood (da. *stemning*) in the room as well as there was a special atmosphere.

Hasse (2019) point to the difficulties of distinguishing moods from atmospheres. Even those who have set out with the claim of making a philosophical distinction between moods and atmospheres have according to Hasse (2019) failed making progress towards a clear-cut distinction (p. 80). These distinctions remain as nebulous as the terms themselves. One can ask if it is then at all productive to differentiate between the two concepts, since many seem to let go of a certain differentiation, I argue for the helpfulness in this research below.

Returning to Heidegger's definition, one is always already in a mood as mentioned. Atmospheres can affect in all sorts of ways, but moods are always already affecting, making the way atmospheres are perceived in a certain way angled. Entering a classroom, the atmospheric configurations can overarchingly be one of engagement and interest, while some students might not be able to partake in the production of these atmospheric configurations. Hasse (2019) draws the conclusion on a distinction between the two concepts of moods and atmospheres, making the concepts not entirely separate:

A mood can be juxtaposed in opposition to an atmosphere and vice versa. The threshold at which an atmosphere turns into a mood is equivalent to the power of a feeling to kindle an affective concern. It is this ability which makes the difference between the two of them so that there are two

forms of subjective being-with: one from an emotional distance and one without. (p. 90)

Stating a distinction as the one introduced above, risks the possible misinterpretation that moods come from the inside while atmospheres are essentially external. It is crucial to be reminded of the way that both atmospheres and moods reference the felt being-in-the-world and as such neither comes from inside nor outside, but instead evolve in subjective and situated affective involvement by configurations of these two modes of being-with. By looking at atmospheres and moods as modes of being-with leaves the distinction between them sufficiently subtle and thus still as interdependent as experienced through everyday experiences. Conceptualizing both atmospheres and moods as modes of emotionally felt being-with binds together moods and atmospheres in the atmospheric experiences through different configurations of subject and surroundings and makes it possible to regard the individual as co-producing the atmospheres in which they are part. This possibility is productive, while as Sumartojo and Pink (2019) argue:

Atmospheres cannot *make* people feel particular things, precisely because it is the way that people feel about things that make atmospheres perceptible: anticipation, foreknowledge and pre-existing views of different material and immaterial elements play a crucial role in how atmospheres are co-constituted and perceived. (p. 5)

How anticipation, foreknowledge and pre-existing views are an important part of the perception of atmospheres, co-constituted and found meaningful for the individual, underline how it is important in the design process when designing through play to be aware of how designing cannot *make* students attuned towards playing with ways of knowing. While taking both concepts into account through an atmospheric outlook, I argue how a subtle distinguishment between moods and atmospheres as two modes of being-with is an aid towards keeping this awareness at the forefront in the design process.

Atmospheres as configurations of repetitive embodied engagement

Another and related dimension of considering an atmospheric outlook is considering the question of the felt intensity or ‘power’ of atmospheres. Sumartojo and Pink (2019) highlight how atmospheres as emotional spatial and situated structures is per se part of

an 'affective field' (p. 17), the question left is how such an affective involvement is felt by the subject. This question can help reflect on how even though everything is affective, an everyday experience is that not everything is felt affectively in the same way. In this way the argument helps divert the risk of diluting the concept of affect as Mason (2018) so pointedly reflect upon in relation to the 'affective turn' (p. 50). Edensor (2015a) address how it is not as much a discussion about how atmospheres are either powerful or not, but makes another continuum for differentially felt atmospheres through Duff's (2010) definition of 'thick' and 'thin' places:

Duff (2010) distinguishes between 'thick' and 'thin' atmospheres, the former replete with a sensual, emotional and affective belonging that is embedded over time through repetitive practical, embodied engagement, or occurring in a setting in which a collective upsurge of human (or non-human) activity generates an ongoing intensity... Thus the capacity to generate affects and stimulate emotions vary in intensity. (pp. 82-83)

The description of varying intensities of atmospheres proposed by Edensor makes it possible at the same time to consider atmospheres as omnipresent and varying in their affective and emotional involvement as well as it gives air to the very feel of how atmospheres always in some way envelope, but the variation in intensity explains how some affect more and one can become more 'overtaken' by these. At the same time describing the ongoing intensities of atmospheres as variant through the description as 'thick' and 'thin', leaves enough space for making this felt thickness and thinness be a situationally and individually qualitative different experience. An atmosphere of tension at political negotiations makes one think of the feeling of a thick atmosphere in a certain way while the different experience of for instance a particular walk at sunrise at the beach or in the forest can feel as being in a thick atmosphere too. These bodily felt variations of atmospheric experience makes it easier to grasp how atmospheres are always already a mode of how one understands and engage in situations and that it is possible for the individual to not only feel and be affected by atmospheres in various ways, but also that atmospheres are more often than not mundane and varying in intensity as well as these intensities varies in how they are felt and provided meaning by the individual.

If looking at configurations of thick atmospheres as Edensor describes, then the intensity of atmosphere is not always about atmosphere that are felt thick is sparked by instantaneous sensuous stimuli but becomes thick through an embeddedness over time. Edensor's point makes it possible through the atmospheric outlook in the analysis to be aware of how spaces afford different forms of 'thick' atmospheres over time through students and educators 'repetitive practical, embodied engagement', privileging a certain form of knowing in these spaces, an analysis unfolded in Chapter 10.

If one differentiates and opens up the discussion of atmospheres as both varying in intensity and this varying intensity in itself varies according to how it is felt depending on different practices and configurations, then such an openness in the understanding of atmospheric structures contributes to "...temper the emphasis on intensity and shifts the question away from whether atmosphere is present or at what level of intensity it might be able to be experienced..." (Sumartojo & Pink, 2019, p. 18). This bypasses the notion that designing for attuning students towards playing with ways of knowing necessarily always require the production of instantaneous felt (playful) intensities, even though in some situations these might emerge. Sumartojo and Pink (2019) argue instead looking at the specificities and everyday configurations of how atmospheres evolve, change and shift is a more productive approach when researching through atmospheres, in opposition to a focus on intensity (p. 18).

Atmospheric possibilities for knowing

As mentioned in the Introduction, Sumartojo and Pink (2019) differentiates between what can be known when being in atmospheres contrasted with what can be known about or through atmospheres (pp. 35-36). This is to be interpreted as an analytical distinction since one is always already in atmospheres. However, this way of approaching atmospheres is fertile for highlighting how atmospheric conditions open different possibilities of knowing, and in this way through the concept of atmosphere Sumartojo and Pink seem to elaborate Heidegger's point explained in the previous chapter about how one is attuned through the way one finds oneself in a situation.

As in Heidegger's conception of moods, and further in Skovbjerg's concept of play as a mood practice, Sumartojo and Pink (2019) conceptualize atmosphere as not only how experiences feel, but also not least what these atmospheres mean to the ones participating in the production of these, and simultaneously create access to what

becomes possible to imagine and know through these going forward (p. 6). Meaning is then not something only created through the experience of atmospheres. Instead meaning through foreknowledge, anticipation and pre-existing views as mentioned earlier is something which helps provide sense to the situated and sensory felt atmospheres of a situation, and emphasize atmospheres “...as emergent ongoing experiential configurations” (Sumartojo & Pink, 2019, p. 17).

In context of teacher education, attending to how the atmospheric conditions of material and immaterial and sensory intersubjective configurations in teaching practices co-constitute the ways in which students can come to know, highlights the situatedness and experiential dimension of knowing. These dimensions together with how play is conceptualized as a mood *practice* in this thesis, leads to theories of knowledge, knowing and learning which reflect this experiential premise of how coming to know is not at a distance from the emotionally attuned involvement in the teaching situation as already highlighted, but how a sensory and experiential involvement is central.

Knowing as experiential

In relation to teaching practices, knowledge is in this thesis interpreted as both socially situated and experiential and in this way inspired by how the concept of knowledge is interpreted in situated, pragmatic and social theories of learning (Dewey, 1966, 2015; Kolb, 2015; Lave & Wenger, 2008; Wenger, 1998). Common for these interpretations is how knowledge is defined as not something objective outside of the subject, but instead is both experiential, contextual, and situated “...through participation in an ongoing social world” (Lave & Wenger, 2008, p. 50).

A differentiation between knowledge and knowing is important to mark in this thesis when making the question of ways of knowing central in the study. Knowledge is defined as the competence built up ongoingly for the individual through situated practices, while knowing is based on the active and continuous engagement in these situated, experiential, and social processes of participation (Dewey, 2015, pp. 21–22; Wenger, 1998, p. 4).

Arguably, in line with how Sumartojo and Pink (2019) as mentioned point to the determination of situated, albeit emergent configurations for what can be known through different experiential relationships in, about or through atmospheres, Ingold

(2000) explain how the situated context for individual experiences, constitute what can be known in the learning situation, while:

...information, in itself, is not knowledge, nor do we become any more knowledgeable through its accumulation. Our knowledgeability consists, rather, in the capacity to situate such information, and understand its meaning, within the context of a direct perceptual engagement with our environments. And we develop this capacity, I contend, by having things *shown* to us. (p. 21)

Ingold further the point on the embodied and situated aspect of knowledge, through arguing that information in itself does not become knowledge or that an accumulation of information does not either make the individual more knowledgeable. Only situating information through a direct perceptual engagement, understood as an active sensory perceptual involvement in contextualizing information either imaginatively understood essentially as embodied (Lennon, 2015) or literally, makes this information meaningful and can hereby be turned into knowledge for the individual. Importantly, Ingold further elaborate on the point of how knowledgeability depend on having things ‘shown’. Ingold (2000) explains how showing is not meant as providing learners with keys in the understanding of ciphers, as systems of fixed rules, but instead keys understood as clues (p. 21). Providing students with clues makes for how showing is not about providing information as a symbol for something given, but about the student being guided through an orientation in the perceptual engagement towards a meaning *production* in the situated context (Ingold, 2000, p. 21).

In this way, as also highlighted by Sumartojo and Pink, the notion of meaning becomes central in coming to know and this meaningfulness is determined by how the individual is sensory attuned through an experiential engagement in the situation as ‘an ecological approach to knowledge’ (Ingold, 2000, p. 5).

In relation to designing through play in teacher education, placing meaning as essential for engaging in practices of coming to know, can aid a tempering of a focus on the sentiment for engagement through intrinsic student motivation (Deci & Ryan, 2000) as main contribution of designing through play or utilizing playful approaches in teacher education. As Whitton (2018) argue, teaching designed towards being intrinsically motivating can, due to constraints, curriculum plans and examinations “...only messily be applied in the real world of higher education” (p. 4).

Ingold's attention to an ecological approach to learning and knowing resembles how Dewey (2015) takes into account the importance of the environment as a criteria in his philosophy of experience in education. Dewey (2015) comments how:

A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth. Above all, they should know how to utilize the surroundings, physical and social, that exist so as to extract from them all that they have to contribute to building up experiences that are worth while. (p. 40)

Dewey points to how things as well as surrounding spaces should be understood as essential parts of giving rise to experience. Taking departure in experience in education as is Dewey's proposition for coming to know and learn, then the environment is part in shaping experience as a general principle both metaphorically and literally. If experience is treated through the dualist notion as essentially introjected in the individual, then according to Dewey (2015) how experience occurs for the individual is not grasped correctly. Dewey points to how educators should be aware of this general principle of how experience is affected by 'environing conditions' at the same time as the educator should be aware of how to utilize these surroundings more concretely to ensure experiences for the students which are worthwhile. At the same time, Dewey argues how both physical aspects as well as the social aspects of educational surroundings is important towards knowing and learning.

Extending surroundings by not only including social but also spatial and material organizations as Dewey argues, emphasize these parts more explicitly than formulated in Lave and Wenger's theory on situated learning. An extension which Pink (2015) formulates as providing "...an embodied and multisensorial way of knowing that is inextricable from our sensorial and material engagements with the environment and is as such an emplaced knowing" (p. 40). As Montgomery (2008) explain "...current research suggests that the environment in which learning takes place can have a significant impact on both the construction of meaning in education and the dynamic of learning" (p. 305). Emplaced knowing creates an opportunity to view how space as well as materiality in general should not only be understood as things and surroundings with which something is done in order to learn, but reversely how emplacement co-

constitutes conditions for what one can come to know (Hope & Montgomery, 2016, p. 305). The same notion as also Dewey points to in the quotation above, echo Heidegger's (1962) notion of 'befindlichkeit', mentioned in Chapter 2 as the notion of how attunement is co-constituted through how one finds oneself in the surroundings.

An active vision of knowing and teaching

These above interpretations of knowledge, knowing and learning is central in the thesis where positions of the socially situated and experiential understanding of learning and knowing are at the same time dependent on the attuned, embodied, and sensory emplaced relation to practices, materials, and world. As Laurillard (2008) states about what it takes to learn:

From John Dewey onwards, through Piaget, Vygotsky, Freire, Bruner, Papert, Marton, Lave, the common thread is that learning is *active*. Therefore, the role of the teacher is not to transmit knowledge to a passive recipient, but to structure the learner's engagement with the knowledge, practising the high-level cognitive skills that enable them to make that knowledge their own. (p. 527)

Learning is through an interpretation of all these learning theorists active according to Laurillard and an activity learners do, creating a focus on the learners' active engagement with the process of coming to know in different ways. Laurillard contrasts this understanding of knowledge and learning rooted in a focus on the active and engaged element in opposition to an understanding of learning processes, where the student is regarded as a passive recipient of knowledge transmitted from an educator.

Learning for unknown futures

Regarding the student as a passive recipient of knowledge, Dewey (1938) argue is the view on knowledge represented in traditional forms of education, essentially leaving experiential aspects counterproductive for the learning process:

The traditional scheme is, in essence, one of imposition from above and from outside... Learning here means acquisition of what already is incorporated in books and in the heads of the elders. Moreover, that which is taught is thought of as essentially static. It is taught as a finished product, with little regard either to the ways in which it was originally built up or to changes that will surely occur in the future. It is to a large

extent the cultural product of societies that assumed the future would be much like the past, and yet it is used as educational food in a society where change is the rule, not the exception. (p. 19)

If what is supposed to be learned and known is something which is objective, static, and held by the educator to disseminate for the students, then inviting a possibility for experiences of students into the classroom, might hinder this form of knowledge to be transmitted correctly from educator to student according to Dewey. This understanding of knowledge is particularly useful if one knows what the knowledge which is transmitted to students are to be used for.

While in stating how the learning process is inherently social, then as Kjærsgaard et al. (2020) argues the reality is that not everyone come into the future with the same opportunities, for instance because of cultural and geographical positions. Therefore, future, according to Kjærsgaard et al. (2020) must be viewed "...in the plural form, as multiple and heterogeneous versions..." (p. 2). In a world which consists of many possible futures, an understanding of knowledge as a finished product can be difficult to defend as the most nourishing 'educational food' which can be provided.

Barnett (2004) explains through the concept of 'supercomplexity' how the challenge of the educational system is to do with the multiplicity of answers, always only leading to new questions and more answers being incompatible with each other, and along these lines how an understanding of interpretations of the world can take infinite forms (p. 249). The changes experienced in the world is not only changes in external matters such as for instance social institutions, technological changes, and changes in engaging with the environment. According to Barnett (2004) "They are primarily to do with how individuals understand themselves, with their sense of identity (or lack of it), with their being in the world..." (p. 248). This 'supercomplexity' leaves not only uncertainty towards what should be learned for, but also uncertainty towards being-in-the-world. On this note, Barnett (2004) calls for education which not only focuses on generic skills and qualification but also includes teaching methods which bears upon it the ontological task of providing students with ways of being-in-the-world to be able to prosper in it and to act amid this uncertainty (p. 252).

Ways of knowing

Attending to how knowing is dependent on how knowledge is practiced and situated both contextually through surroundings as well as socially and embodied, ways of knowing as also mentioned in the Introduction, refers to how different ways of doing and continuously participating in teaching practices makes for different ways of knowing (Lausen et al., 2022, p. 27; Wenger, 1998, pp. 9–10). Wenger (1998) describe the close relationship between the practices in the classroom and interpretations of knowledge:

If we believe, for instance, that knowledge consists of pieces of information explicitly stored in the brain, then it makes sense to package this information in well-designed units, to assemble prospective recipients of this information in a classroom where they are perfectly still and isolated from any distraction, and to deliver this information to them as succinctly and articulately as possible. (pp. 9-10)

According to Wenger the arrangement of what practices is associated with the learning situation makes for how knowledge is interpreted. If the doing of learning is being placed in a classroom where the educator is delivering information to students, then the view on knowledge is according to Wenger one equating ‘pieces of information stored in the brain’. This way of understanding knowing and learning runs counter to the active visions of learning proposed in the above. How knowledge is practiced makes for how students become attuned through the atmospheric configurations of teaching practices and arguably determines how students can come to know.

Knowing is as mentioned earlier not to be separated out from doing and being but includes these aspects. This can make the role of designing through play to be that of attuning students towards playing with ways of knowing through playfully experientially doing and being differently a matter of both qualification but also about the ontological task of human growth (J. B. Jensen et al., 2021) and thriving as a being-in-the-world in an increasingly uncertain and changing world (Skovbjerg & Jørgensen, 2021, p. 1) as mentioned through Barnett above.

Doing, being and knowing differently is arguably also fundamental as a route for inspiring students towards creating new forms of teaching methods in their future professional practice (Boysen et al., 2022). This is an important aspect of teacher education, while as mentioned in the Introduction, teacher education has the dual

didactic aim of teaching students as well as preparing them towards their future professional practice of teaching in Folkeskolen.

Taking an atmospheric outlook

The last part of the chapter centers around an explanation of the atmospheric outlook which is taken as a theoretical analytical framework for exploring how the atmospheric configurations of teaching practices designed through play can aid an attunement of students towards playing with ways of knowing.

Taking an atmospheric outlook is a way of including both moods and atmospheres as essential concepts through distinguishing (and connecting) them as ‘two modes of being-with’ in relation to the question of attuning towards playing with ways of knowing. Heidegger’s (1962) definition of moods provides an understanding of the phenomenological account of being-in-the-world. Only this is in philosophical and generalizable terms not attending to the specific conditions in which these unfold and hence how these can aid an understanding towards how students can possibly come to play with ways of knowing in the concrete practices of teaching.

Skovbjerg’s (2021a) framework of play as a mood practice aids an operationalization of play moods as constituted between the specific configurations of play media and practices. Sumartojo and Pink (2019) aid an understanding of atmospheres through a conceptualization set in the ongoing emergent configurations of people and their material and immaterial surroundings and how this affect potentials of coming to know. Additionally Sumartojo and Pink as mentioned point to how meaning is essential in the experience of atmospheres, echoing Skovbjerg’s conception of meaning order in play inspired by Bateson mentioned in Chapter 2. In this way I argue how both Skovbjerg and Sumartojo and Pink help operationalize Heidegger’s philosophical concept of moods and render it useful in the empirical research both as theoretical orientation, but also in the design process of collaboration together with educators on design experiments through the focus of this study. These positions create the foundations for the atmospheric outlook I take in the thesis.

Focusing through this outlook on the atmospheric configurations of teaching practices gives attention to what these might make possible towards coming to know in different ways. Taking an atmospheric outlook does in this way not consequently set the concepts of atmosphere and moods at the forefront throughout the following analysis. The

atmospheric outlook function as a way of focusing on the connections between the different configurations and in different ways bringing the concepts of attunement, affordance, contingency, and emergence to the foreground.

Attunement as essential concept in designing

Of these different concepts attunement stand forth here as the most central, reflected in the main research question of the thesis.

Moods and atmospheres are concepts disclosing the existential, emotional, affective involvement of being-in-the-world so as this involvement is already attuned. The atmospheric configurations afford different ways of being attuned in a situation and these can be taken up by the individual in different ways. As Sumartojo and Pink (2019) argue, then attunement sits at the core of design practice when dealing with atmospheres, making design a way of creating potential attunements through material and immaterial surroundings (pp. 199-121). I argue how this is not least the issue in the continual design practice of designing teaching when defining knowing and learning as an active, experiential socio-material practice of participation. Recalling Ingold's (2000) notion from the above of how the conditions for transforming information into knowledge depend upon 'having things shown', but this showing is to be provided through keys as clues and not as merely being provided with the answers. This I argue call for 'atmospheric attunements' (Stewart, 2011) towards these clues as essential part of the design process towards teaching practices.

As with the concept of affordance explained in Chapter 2, attunement is not to be interpreted as a concept only describing how individuals are affected unilaterally from the outside. As Slaby (2020) explains "Somewhat more technically, I suggest that atmospheres are a type of affordance: prepared occasions for affective engagement, for absorption and attunement" (p. 275). Attunement and affordance bring with them the same form of 'complementarity' as argued through Gibson in Chapter 2. Furthermore, attunement is a way of thinking the concepts of moods and atmospheres together and while acknowledging there might be a difference between the affective concerns which these modes of being-with potentially bring, it can bypass focusing too heavily on the 'threshold' of when an atmosphere turns into a mood.

Instead it can arguably bring to the foreground how designing through play is not a matter of designing play. Instead focusing on how designing through play potentially

attune students towards playing with ways of knowing through ‘prepared occasions’ for playfully doing and being differently in the teaching practices. Through an atmospheric outlook it is argued possible attending to how different atmospheric configurations aid or hinder this attunement in relation to the key themes throughout the following analysis in part V of the thesis.

Part III

This third part of the thesis focuses on the epistemological and methodological positioning of the research and on a description of the chosen methods and analytical approaches applied. The epistemological position in this thesis is firstly discussed in the following. Here it is argued how knowledge contributed with through this research is to be understood as following a phenomenologically-informed pragmatism. After the epistemological positioning is presented, the methodological framework of design-based research is described as argued to provide a methodological framework which can hold these different positions of phenomenology and pragmatism together in the inquiry. Hereafter a presentation and reflection on methods used in the research process is provided, where lastly Chapter 7 focuses on reflections on the analytical approaches taken in the research process.

Chapter 4: Phenomenologically-informed pragmatism

Pragmatism and phenomenology as epistemological orientations

The research is placed through phenomenology and pragmatism as epistemological orientations. These philosophical orientations provide a provisional opening of how this study on designing through play in teacher education has been reflected upon.

A positioning is required, since there is both a heterogeneity within what is understood by pragmatism as well as phenomenology at the same time as there is an immediate heterogeneity between how knowledge is understood between the two philosophical positions.

A homogenous account of how pragmatism and phenomenology views knowing and the individual's relation to the world is not possible or even desirable, while arguably the heterogeneities make for productive developments of these philosophical orientations ongoingly. Due to these heterogeneities, it makes a difference in relation to the methodological reflections what positions are being employed. A positioning within these different orientations opens different possibilities for what can be reflected upon and how, and what it in turn leaves out. Dewey's (1966) pragmatism and Merleau-

Ponty's (2014) existential phenomenology are the positions which form the epistemological foundation in this study.

A pragmatic account of knowledge

Knowledge in pragmatism is understood as something that do not exist outside of experience but is instead always contextually bound and relational (Dewey, 1966). Knowledge will always through experience in a pragmatist view be bound up in practices, socially and culturally oriented (Dewey, 1966, p. 338; Gimmler, 2012, p. 48; Hildebrand, 2008, p. 46).

In a thorough account of Dewey's pragmatic philosophy, Hildebrand (2008) explains how Dewey interprets experience, as "Experience includes 'adaptive courses of action, habits, active functions, connections of doing and undergoing'" (p. 44). This provides an understanding of experience as something which relates to adaptation as well as always being relational. Viewing knowledge as something which is created in the adaptive interaction with the surroundings in connections of 'doing and undergoing' leaves the goal of research not one of representing knowledge 'out there' which is fundamentally true and pre-existing. The understanding of the subject not being at a distance from the world, but embedded and bound up in practices, Dewey (2015) relates to living *in* the world:

The statement that individuals live in a world, means, in the concrete, that they live in a series of situations. And when it is said that they live in these situations, the meaning of the word "in" is different from its meaning when it is said that pennies are "in" a pocket or paint is "in" a can. It means, once more, that interaction is going on between an individual and objects and other persons. (p. 43)

In pragmatism there is no world out 'there' to be uncovered, knowledge 'truths' can only be created in practices in these situations in which one find oneself, leaving knowledge bound up and framed through *interaction* (Gimmler, 2012, p. 49).

The 'truth' of knowledge viewed from a pragmatist perspective is something provisional, something in process and in progress and can only be viewed as a resource for further inquiries (Hildebrand, 2008, p. 62). Knowing is based on interaction which is not understood as a subject confronted with a world, but rather a world which is not clearly separated from interactions in the world echoing how knowing is interpreted in

relation to teaching practices mentioned in Chapter 3 (Hildebrand, 2008, pp. 61–62). This has ontological consequences. The world is not completely within nor without the individual. The world is changed by the actions taken in the world, which provides an ontological interpretation of the world as everchanging and complex in the pragmatist view (Hildebrand, 2008; Ørngreen, 2015).

Such an understanding of knowing about the world as always bound up in action, Bernstein (1991) suggests as the pragmatic *ēthos* (p. 324). This *ēthos* refers to how knowledge is always only provisional because of being relational and hence constructed socially, as well as being contingent and plural (Bernstein, 1991, pp. 324–329). The social structure of the self is in the pragmatic *ēthos* explained by Bernstein (1991) through how “The theme of the social character of the self and of community is played out in many variations by the pragmatic thinkers. The very idea of an individual consciousness that is independent of shared social practices is criticized” (p. 328). The self is *per se* socially constructed through a pragmatist view.

According to Gimmler (2012), in Dewey’s account, action mean both language acts as well as production or making (*poiesis*) where both forms of action produce change in the world (p. 49). Both actors, structures (including language structures) as well as materiality are to be understood as practices in Dewey’s understanding (Gimmler, 2012, p. 55). In the pragmatic account of knowledge this focus on everything as practice makes way for viewing propositional knowledge understood as language and procedural knowledge as making or production as leveled.

Leveling statements and actions as practices aid overcoming a dualistic notion of subject and world, practice, and theory. Concretely in this study viewing statements as configurations of practice has made possible integrating students and educators’ statements as equally a form of practice as the doing in the teaching practices as a focus of this study. At the same time, this perspective supports overcoming the division of critical and distanced research from application oriented research (Gimmler, 2012, p. 56), something to be further discussed in Chapter 13.

An embodied phenomenology of knowledge

Like in the pragmatist account of knowledge, an overcoming of dualistic notions of subject and world is a central influence of the phenomenological reflections about being-in-the-world. In Merleau-Ponty’s (2014) understanding of phenomenology, the

experiences of the individual is the epistemological foundation for knowledge about the world. Merleau-Ponty (2014) argues like Hegel (2017) and with inspiration and outset in Heidegger's (1962) notion of being-in-the-world for a rejection of the claim that knowledge about the world is mere representations of an objective world 'out there', while subjects can only grasp these representations more or less accurately from 'the inside' (p. xi). An understanding of an objective world 'out there' leads to an understanding of knowledge about the world as only viable if this knowledge has been obtained through a view from nowhere. In a positivist scientific understanding the view from nowhere is the standard of objectivity. Reversely, Merleau-Ponty (2014) claims, the idea of an objective form of knowledge from nowhere is not possible since "To see is always to see from somewhere" (p. 69). Although bound to see from a certain perspective, ruling out a pure objectivity, Merleau-Ponty (2014) explains that this does not have the effect of locking subjects in an inner consciousness on a distance from knowledge in the world. Like the Deweyan notion of knowledge, subjects are not in the world as a penny is *in* a pocket. Merleau-Ponty (2014) explains this understanding of the way of being-in-the-world through the bodily existence. The individual inhabits the world through the body. Merleau-Ponty (2014) explains:

All along our goal was to shed light upon the primordial function by which we make space, the object, or the instrument exist for us and through which we take them up, as well as to describe the body as the place for this appropriation. (p. 158)

The world is appropriated and known through the bodily existence where actions and practices are resting on a sensory being-in-the-world. This ensures that the world is not frozen in one singular perspective, but are open to viewing the world from different perspectives, even though always already viewing the world from *a* perspective (Merleau-Ponty, 2014, p. 211). Merleau-Ponty (2014) provides an example through an explanation of how a cube is perceived (p. 211). The different faces of the cube have not disappeared from consciousness even though only one face is visible at a time. When holding the cube in my hands, I do not have to make a mental construction of the cube to settle that there are in fact six faces on it. Through an experience with movement of the body the understanding is made on a pre-reflexive and bodily sensed basis, that what is seen of the cube from one side is not the whole cube. In this view, the individual does not represent or posit the cube through consciousness before

gaining a consciousness about it. Instead, the always already bodily existence in the world is the primordial grounds from where one perceives and hence how one comes to know about the world.

This embodied perspective underlines the possibility of taking an atmospheric outlook in this thesis as argued in Chapter 3, through the notion of how atmospheres rely on the bodily presence in sensing these as explained. Heidegger's (2017) phenomenology is essential in understanding the concept of moods in the overarching play perspective chosen in this research as play as a mood practice. Heidegger's (2017) concept of moods is a notion of giving more space to the affective structures of being-in-the-world (p. 166).

However, Merleau-Ponty's phenomenology is here accounted for as epistemological underpinning. This has been chosen while Heidegger do not explicate the coupling between these affective structures and an embodied foundation, but rather explain the affective structures through a more generalized and broader engagement of being-in-the-world.

On a methodical level, highlighting an embodied epistemological underpinning for the knowledge contributed with in this thesis has made it possible in the research to take a sensory ethnographic approach which I explain detailed in Chapter 6. Further this embodied epistemological perspective has contributed in relation with taking an atmospheric outlook in the thesis as already explained.

Phenomenologically-informed pragmatism

Including both Merleau-Ponty's phenomenology and Dewey's pragmatism in declaring the epistemological stance for the thesis is a way of underpinning the importance of human experience as the foreground for all scientific knowledge. All this could be claimed through a pragmatic stance. The reason for considering Merleau-Ponty's phenomenology at the same time, is to accentuate an understanding of the embodied existence as essential in experience and how actions and practices rest on the background of sensation through the living body, providing an underlining of how coming to know are here to be understood through an embodied perspective.

Attention can be drawn towards philosophical dilemmas of pulling together these distinct philosophical orientations for explaining experience as an epistemological foundation. As an example of this dilemma the Deweyan account of experience accepts

both first-person perspectives and third-person perspectives in descriptions of experience whereas phenomenology privilege phenomena and experience through the first-person perspective (Hills, 2013, p. 319; Merleau-Ponty, 2014, p. lxxi). Drawing on both epistemological positions support a way of including both the first- and third-person perspectives of the experiential dimensions in the research. Merging epistemic underpinnings from phenomenology and pragmatism might not be a perspective which fits with ‘pure’ phenomenology and be more of an ‘applied’ type of phenomenology. This is a discussion which is important but far out of scope and aim of this thesis (Gallagher, 2022).

Reconciling pragmatism and phenomenology is a way of attending to the aims of this inquiry and align with a pragmatic account “...of accommodating a heterogeneous inquiry... Unity, and not dualism, is pragmatism’s game” (Hills, 2013, p. 320). This reconciliation of pragmatism and phenomenology contributes to an epistemological orientation of the inquiry here, best described as ‘phenomenologically-informed pragmatism’, inspired by Hills (2013, p. 312). To stress potentials for common ground, is not the same as precluding an acknowledgement of potential differences (Mouffe, 1996, p. 1). The epistemic ramifications of a phenomenologically-informed pragmatism make it possible to overcome a dualism between an ‘inner’ and ‘outer’ world while also attending to a deeper reflection of how practices and actions are rooted in sensory embodied experience.

As Hill’s (2013) helps understand, part of this reconciliation is done through emphasizing experience as central in both pragmatism and phenomenology (p. 313). To underline how this reconciliation is primarily about usefulness, Langer’s (1967) reflections can provide an aid:

The foundations of a theory cannot be factually proven right or wrong; they are terms in which facts are expressed, essentially ways of saying things, that make for special ways of seeing things. The value of a philosophical outlook does not rest on its sole possibility, but on its serviceability, which can only prove itself in the long run... (pp. xxii-xxiii)

Here the serviceability of the philosophic outlook of a phenomenologically-informed pragmatism is in front. I argue that the serviceability of this way of ‘saying things’ can aid a specific way of ‘seeing things’. Still, as also Langer here seems to claim, making knowledge claims about the world in this research are to be viewed as provisional and

must through further experiments and explorations be revised continually as the only way of proving itself 'in the long run'.

The above reflections on the epistemological orientation of this research provide guidance and structure of framing methodological decisions in the inquiry of designing through play in the context of teacher education. When knowledge is not interpreted as at a distance from procedural knowledge acts but equally stemming from it, it demands for choosing a methodological framework which can operationalize this notion of knowledge.

Design-based research is here chosen as methodological framework. Through a focus on the method of producing design experiments in practice together with educators, design-based research provides a way of creating a mutual space of experimenting together through concrete practices and including and relying on the competence, wisdom, instincts, and contextual knowledge of practitioners. In this way design-based research arguably can unfold both the pragmatic ethos and the embodied phenomenological understanding of knowledge. In the following chapter characteristics of design-based research is described and reflected upon in relation to this study.

Chapter 5: Design-based research as methodological framework

Characteristics of design-based research

Design-based research is a methodological approach developed within educational design research being both co-participant driven in the created designs that is tried out in practice, and relevant for practice at the same time as yielding new contextually sensitive theoretical knowledge (Barab & Squire, 2004; McKenney & Reeves, 2019; Wang & Hannafin, 2005). Design-based research draws on a pragmatic understanding of knowledge by insisting on designing for and experimenting through a real world setting and by the act of ‘doing and undergoing’ the consequences of this process creating knowledge through design experiments (T. Anderson & Shattuck, 2012, p. 17; Barab & Squire, 2004, p. 9; Baumgartner & Bell, 2002, p. 3).

Further characteristics of design-based research are most often in literature described as: flexibility regarding use of research methods (McKenney & Reeves, 2019), leading to contextually sensitive design principles (Baumgartner & Bell, 2002; Hanghøj et al., 2022; Wang & Hannafin, 2005), involving iterations (T. Anderson & Shattuck, 2012; Christensen et al., 2012; Hanghøj et al., 2022), oriented towards theory development (Barab & Squire, 2004; Kolmos, 2015), at the same time striving towards improvement of practice (Amiel & Reeves, 2008; Ørngreen, 2015; Philips & Dolle, 2006; The Design-Based Research Collective, 2003).

These characteristics show a characterization which is broad and imply how design-based research is a methodological framework which leaves space for interpretation. In this research study the focus is primarily on finding inspiration in the collaborative aspects of designing with educators in practice, as well as finding inspiration in the use of design experiments as knowledge generating approach. Through the use of design experiments in this study a focus is further to contribute with reflections on aspects around design experiments as knowledge generating approach in educational design research. This contribution will be taken up in the discussion in Chapter 13.

In the following an interpretation on the aspect of design experiments as knowledge generating approach in this study is provided to explain how design experiments are

used as approach in this study and how the collaborative aspect of the research is reflected upon in relation to this study.

Design experiments as approach in this study

Design experiments as concept in the study

In design-based research literature, the concept of intervention and design experiments are often used interchangeably as descriptions for the collaborations with practice, and a debate is present on what the concepts in design-based research cover in individual studies (Gundersen, 2021, p. 81). Throughout the thesis, the concept of design experiments, experiments, or designs are primarily used. There are different reasons for this. The first reason is that the practice field of teacher education already applied the concept of design experiments, so the vocabulary existed in practice for these interventional strategies of didactically designing something to try out in practice (Playful Learning, 2021a).

Secondly, the word experiment comes from the Latin ‘experimentum’, derived from ‘experiri’ which means to try (Lübcke, 2014). This meaning fits with the aim of this study, trying something out together with the educators involved, to derive experiences from these experiments. When dealing with the concept of design experiment in this project, I refer to the individual design experiments carried out in collaboration with the educators. Intervention can be seen as an overarching concept describing the sum of all activities done in the research project, including all the individual design experiments.

Research-through-design

A distinction in design research approaches between inquiries based on an interest of researching in design, researching on design, or researching through design is a valuable methodological consideration when the research is evolving around design experiments. The division between research *through* design, research *on* design and research *in* design is a framework proposal inspired by Frayling (1993, p. 5). Within design research approaches the division between *in*, *on* and *through* carries different methodological underpinnings. Research-*through*-design, Ludvigsen (2006) explains “... is where the design process itself becomes a scientific method of inquiry. This means that the subject matter can be outside the world of design...” (p. 16). Utilizing design experiments as

primary driver for the research process places design-based research and this research project in the realm of the ‘through’ category in educational design research.

A definition of design

What it means to employ design in the research process and value the design process as a scientific method of inquiry naturally leads to the question of how the concept of design can be understood in this regard.

The concept and employment of design is subject to a heterogeneity in definitions and therefore, providing a clear and fixed conceptualization can be difficult because it will be an angled understanding that can possibly always be countered by other definitions (Redström, 2017, p. 5). This point is made to say that there is no fixed and universally agreed upon conceptualization of design in design-based research methodology or in other design research frameworks to grab onto. Secondly the point is made because the conceptualization proposed in the following is a positioning that is argued suitable for the aim of this research, but should not be seen as a fixed way of viewing the concept of design.

Baumgartner and Bell (2002) emphasize how design is not to be understood as a singular methodological procedure to be followed (p. 3). Further, Baumgartner and Bell (2002) define design specifically for design-based research as “... the act of creating or modifying materials, activities, environments or other elements of practice in order to meet specific learning goals and function within a specific set of theoretical, pragmatic, and local constraints” (pp. 2-3). This definition is very broad and leaves space for a flexibility in methodology and methods employed when using design in design-based research.

The most important part of Baumgartner and Bell’s broad conceptualization here is how the aspect of change is implied. There must be an element of situated creation or modification involved in the research process for there to be a notion of design. Baumgartner and Bell (2002) explain how their understanding of design rest on an understanding that the act of creating or modifying elements used to research in practice is based on a continual process (p. 3). Introducing the notion of process at the center of research can lead to uncertainty and several theorists critique design-based research of suffering from a lack of methodological rigor, especially in relation to insights about the process of the designed experiments (Ørngreen, 2015, p. 24; Sandoval, 2014, p. 19).

These difficulties of introducing design pose methodological challenges in academic work if predefinitions of concepts and more fixed methodological frameworks are valued. The solution to this in design-based research seems most often to involve the claim that design-based research should be theoretically informed (McKenney & Reeves, 2019, p. 12).

Theory has informed the design experiments in this project; the play perspective and the atmospheric outlook has throughout the whole research process been in center, although the process of designing together with educators has been an aesthetic and creative process as well. As Ludvigsen (2006) argue about how knowledge is created in research-through-design, then “... the central point being that discovery is attained through a creative and aesthetically founded process in which a strictly and logical progression of thoughts cannot be assumed” (p. 16). The aesthetically and creatively founded process mixed with theoretical perspectives has guided the research through taking an abductive approach (Brinkmann, 2014) in the research, described further in Chapter 7.

Further, as Sumartojo and Pink (2019) stress, design can be interpreted as possibility or potential instead of viewed solely as a way of providing solutions (p. 15). This notion of design experiments as process and possibility helps, as Baumgartner and Bell (2002) underline, to “... move away from the notion of educational reform as a dissemination of pre-existing ‘solutions’, and instead adopt the notion of education as a continual design challenge ...” (p. 3).

In alignment with Baumgartner and Bell’s view on education as a continual design challenge, the use of design experiments in this research are framed through this view and hence also guides an understanding of what role design experiments play in the unfolding of this research, reflected upon in the following.

The strategy for experimentation through design experiments

Most often a prominent characteristic of design-based research is that this methodology is iterative and based on a notion of refinement through design experiments (I. Anderson & Shattuck, 2012, p. 17; Ørngreen, 2015, p. 20; Wang & Hannafin, 2005, p. 7). Interlinked with this focus is, as mentioned through the general characteristics listed earlier, how design-based research leads to contextually sensitive design principles. The emphasis in this thesis is not on contributing with practical design principles. More than

being prescriptive and fixed on developing specific designs and design principles in and for practice, this research assumes an exploratory and descriptive orientation. This orientation is guided by the interests of this research in contributing with theoretical context design knowledge (Edelson, 2002, p. 113) of challenges and opportunities of designing through play in teacher education.

The iterative element suggests not only refinement of design experiments, but additionally that design experiments in design-based research stands in a linear and continual connection to each other (McKenney & Reeves, 2019; Wang & Hannafin, 2005, p. 7). This linearity suggested in design-based research literature is not followed in this study where the design experiments have a different and less linear connection towards each other. An explanation of what strategy are used in experimenting in the following, can provide a clearer understanding of what role the individual design experiments play in unfolding and answering the research question central for this study.

Researching through design experiments

A distinction can be made in design-based research as to whether the inquiry of research orients towards being *for*, *on* or *through* design experiments (McKenney & Reeves, 2019, p. 23). This orientation helps distinguish what role the design experiments play in the inquiry not confusing this distinction with *for*, *on* or *through* design in general as previously described. In this study the orientation of the inquiry is towards researching primarily *through* design experiments. The role of the design experiments here is not to provide a prescriptive general design framework for designing through play in teacher education and as such an orientation *on* a specific design experiment is not in itself the aim of the research.

The orientation goes through the design experiments to support more broadly the inquiry of how designing through play contributes towards playing with ways of knowing. Where naturally an initial orientation *for* design experiments is needed to create design experiments in collaboration with educators but are here to be interpreted more as an invaluable part of the overall research process than as an orientation in itself for the inquiry.

An expansive role of design experiments

Another distinction which can aid the understanding of what assigned role the design experiments pertain in this study is inspired by a typological proposition for the methodological roles of design experiments from Krogh et al. (2015). Krogh et al. (2015) point to five different experiment types applied in design research mentioned as; accumulative, comparative, serial, expansive and probing (p. 44).

To capture and explore together with the educators in this study about different ideas for designing through play in the diverse subject areas each of the educators taught in (explained further in Chapter 8), I have been inspired by the expansive approach for conducting experiments suggested by Krogh et al. (2015, p. 46). In taking the expansive approach, the role of design experiments becomes "... a mode of investigation resembling the work of geographers or biologists mapping new areas" (Krogh et al., 2015, p. 46). In further describing the expansive approach, Krogh et al. (2015) write:

Experiments and learning from this will contribute new knowledge, as the area is explored. The characterizing keyword for this method is "broadening" and "extending". Rather than deepening our knowledge of a domain, this method widens our perspective and extends the concerns we, as designers, should include in our praxis. (p. 46)

Such an experimentation strategy was to get a wider notion of what designing through play might mean in a broader variety of subjects in teacher education. This way of experimenting through an expansive strategy also lends the opportunity for not being obliged to successively improve upon experiments in following experiments. Instead letting design experiments be a part of an assemblage through their differences and more loosely draw on inspiration from experiments done prior in the research. I will return to a discussion of this in relation to understanding the role of design experiments in educational design research in Chapter 13.

A figure of the different design experiments and other research activities are illustrated below (see also Appendix 1 for a schematic overview of research activities):

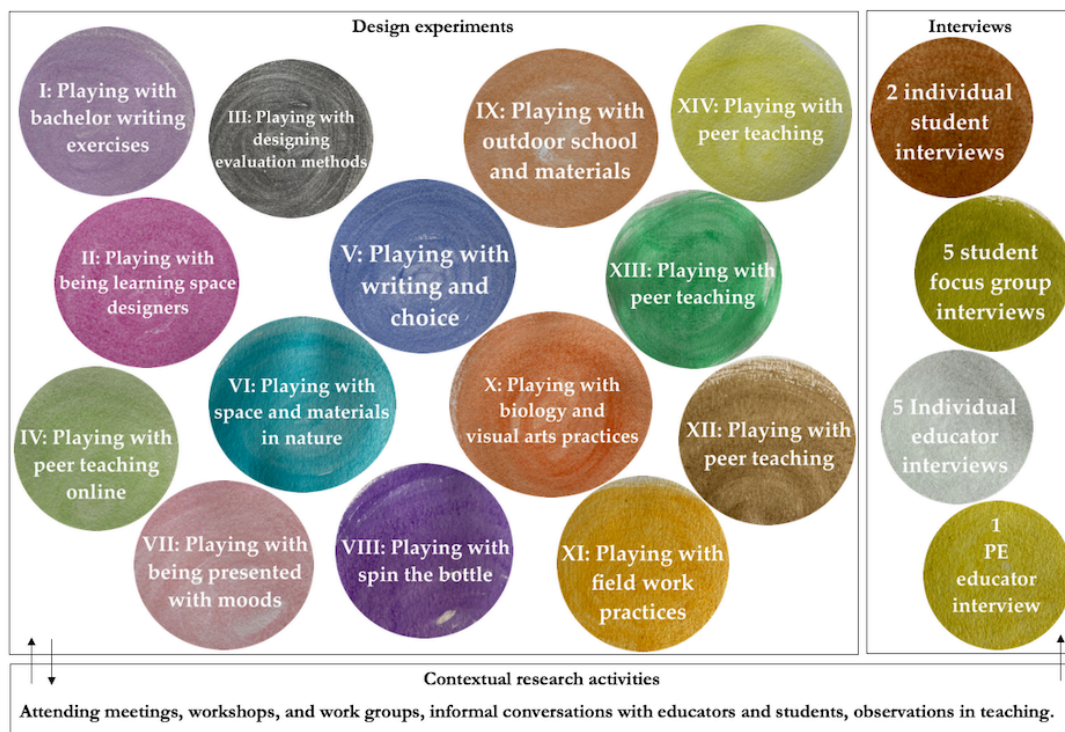


Figure 2 Illustrative overview of research activities in relation to *Playing With Ways of Knowing*

In this study, design-based research assumes a direction through the conceptualization of design as process and possibility and the iterative refining element associated with design-based research is exchanged for a focus on an expansive role of experiments. This makes it an exploration through design experiments designed together with educators in practice towards ‘broadening and extending’ the inquiry into opportunities and challenges of designing through play in the context of teaching practices in teacher education.

The collaborative aspect in design-based research

In the following paragraphs, some methodological reflections on the collaborative aspect of design-based research and how this aspect is framed in the research are discussed. In Chapter 6, I explain in more detail the practical aspects of collaborating as a method in this study as well as positions taken in the collaboration.

Collaborating with practice

As one of the basic characteristics of design-based research, the research is conducted together with practice and not only *on* or *for* practice (McKenney & Reeves, 2019, p. 14). Ejersbo et al. (2008) explains how in design-based research the collaboration rests on

an exploration of the research interest together with those in practice through design experiments. The collaborative aspect with the educators I have collaborated with, has been an invaluable part of the research process and one of the most challenging parts methodologically in regards to flexibility. The issue of flexibility has been about making the collaboration *a* collaboration from the beginning of the research study and not only a collaboration entailing researcher-initiated designs carried out in practice by educators. In collaborating from the onset of the research around design experiments, it makes space for the practice field in a sense to ‘push back’ on the research already before defining what the research is about. Lindström and Ståhl (2019) argues in relation to visiting the empirical field how “To go visiting is not without risk, for example, it means letting go of some security in terms of predefined problems, methods and forms” (p. 4). As Lindström and Ståhl explain, theoretically formulated problems determined beforehand may be challenged when visiting the field. Through this initial push I experienced from practice by visiting and being in the practice field, I changed my approach from trying to ‘sell’ the idea of a research object formulated through the theoretical interests to also listening to what the educators wanted and hoped that the lens of play could contribute to in their teaching. This listening led me early in the process to step away from the hypothesis-approach of doing design-based research to a more inclusive approach from the beginning of the research process (Amiel & Reeves, 2008, p. 35; Ejersbo et al., 2008; Ørngreen, 2015, p. 24). At the same time this change in my approach is an example of how researching together with participants is an ontological transformational process for the researcher (Akama et al., 2018, p. 6; Dalsgaard, 2017, p. 23; Pink et al., 2022, p. 31). Through ‘letting go of some security’ by visiting and listening in the field, I felt not only my research approach change, but simultaneously how I was changed through this experience towards becoming a different kind of aspiring researcher.

By way of this inclusive approach, it became a more exploratory collaboration around designing through play. Amiel and Reeves (2006) state how:

The introduction of cooperation between researchers and practitioners at an early stage of research is a unique approach...The reality check of engaging directly with practitioners and school environments has the potential to eliminate much research that is not valuable or socially responsible. (p. 36)

The involvement of educators' knowledge already in the process of deciding on the agenda of the research and in the process of designing the design experiments can according to Amiel and Reeves be referred to as a reality check. This can be posited as containing an underlying knowledge argument in an understanding of how collaboration with the practice field will provide access to knowledge from that is not obtainable otherwise. As Amiel and Reeves further mention, then it is not only a reality check but also makes way for the potential to make the research valuable and socially responsible.

However, I put the case of the argument for collaborating with educators from the onset of the research as being a reality check and an issue of making the research valuable and responsible, can be deepened. In a Deweyan sense of communication, the need for a common understanding is not the prerequisite for cooperation (Biesta, 2013, p. 30). Common understanding is instead gained through the act of cooperation. As Dewey (1966) explains, meaning in communication is created through a shared activity:

The bare fact that language consists of sounds which are mutually intelligible is enough of itself to show that its meaning depends upon connection with a shared experience. In short, the sound h-a-t gains meaning in precisely the same way that the thing "hat" gains it, by being used in a given way... The guarantee for the same manner of use is found in the fact that the thing and the sound are first employed in a *joint* activity... Similar ideas or meanings spring up because both persons are engaged as partners in an action where what each does depends upon and influences what the other does.
(p. 15)

A common understanding is not something gained before the collaboration is being formed but must be produced by the shared experience and common concern both parties have in the collaboration. Ideas and meanings are not something negotiated as a way into the collaboration, but something negotiated and understood in the 'joint activity' of the collaboration. This position of making common understanding of what is being designed and experimented a question of joint activity has formed the primary principle in the research for the collaboration with educators around designing experiments together. This principle underlining the pragmatic notion here taken of how coming to know is rooted in *interaction*. This basis for the collaboration of understanding through a joint activity also explicates the uncertainty underpinning such

collaborations and how coming to know together is based on a continuous benevolence towards the common concern and the working relationship.

To take seriously the agenda of collaborating and researching with practitioners in a 'joint' activity and not only *on* practitioners, it was important to construct the research field as a common experimental space with the educators in practice. To include the educators in the research, the collaboration was carried out inside the frame of what interested the educators around designing through play as well. The educators had their own variations of knowledge interests in the collaboration, and this difference in interests resulted in various forms of working together with different foci in the different collaborations. Amiel and Reeves (2008) define design-based research as a democratic research methodology, while including educators from the very beginning of defining goals for the experiments provides a possibility for honoring the democratic element in research (p. 37).

Improvement of practice and development of theory

An additional reason for stressing the need for bringing the practice field in as collaborative participants is the focus on improvement of practice in design-based research (McKenney & Reeves, 2019, p. 13). Design-based research can be questioned and criticized for attending to this particular aim, because of how educational research is often argued as valuable when taking a distanced and critical approach to practice (P. Ø. Andersen, 2020; Biesta, 2007). Even though design-based research primarily focus on generating theoretical insights, the dual aim of improving practice and theory generation through design experiments is in research discussed as perhaps too ambitious in its scope (Ørngreen, 2015; Philips & Dolle, 2006).

Amiel and Reeves (2008) argue "If anything should have been learned from research in the field of educational technology by researchers and practitioners alike, it is that a tool itself will not change the educational system or even implicitly encourage new pedagogy" (p. 31). Research should arguably interpret the value of application from a broader perspective than direct use and applicability while most research is used and gain some form of importance in different ways, across different places and in different contexts. Application is not according to Andersen (2020) straight forward, but instead a complex circulation of knowledge, where application cannot be planned and predicted and only documented to a limited extent (p. 62).

Therefore, application and improvement can be interpreted too narrow in application oriented research (Lehrmann et al., 2022, p. 16). The imperative of design-based research being interventionist and creating possibilities for improvement of practice, is interpreted in this research as different than the hope of finding objective true guidelines for best practice. In the collaborations around design experiments the different foci, and forms of working together also affected how (improvement of) practice was interpreted. It was not so much a direct change of current practice that was the main focus for either of the educators as it was more trying out new things in order to reflect and learn about what this might mean to better get a sense of designing through play in the educational context. Coupled with the understanding of knowledge through a phenomenologically-informed pragmatism where knowledge can never be something objective but in movement (Merleau-Ponty, 2014, p. lxxi) and always already provisional (Hildebrand, 2008, p. 62), a focus on improvement of practice must also be tempered and insulated against a focus on ‘what works’ and ‘best practice’.

Education and teaching are arguably uncertain and not an exact science but is filled with experimentation in a changing situated practice. This inherent uncertainty of education and practices in this context makes design-based research with its rootedness in a pragmatic orientation a suitable methodology, at least regarding taking seriously what kind of epistemic claims can be made through this context. A view of knowledge as always provisional and as a resource for further inquiries can be seen as fundamental for the way design-based research is used in this study. Even though improvement of practice is part of the design-based research approach, theoretical development is the primary concern as mentioned above. This primary concern aligns with the intention of this thesis of contributing with theoretical design context knowledge about designing through play in context of teacher education.

Chapter 6: Methods

Design-based research provides a wide framework for using a variety of methods in the research process (Wang & Hannafin, 2005, p. 10). In combination with design experiments as the primary methodical approach in design-based research (McKenney & Reeves, 2019, p. 7) I have employed different methods. These methods have been chosen to meet needs which evolved during the different stages of the ongoing research process and in relation to the difference of the unfolding of design experiments. The different methods will be elaborated upon in the following pages by turning first to reflections on accessing the (empirical) field and reflections on my position and that of the educators I collaborated with in the process of this research project.

Accessing the field – contextualizing the methodical decisions

During a period of almost two years, I conducted empirical field work at a University College institution in Denmark which has different professional higher educations, all of which are oriented towards diverse professional practice fields (University Colleges Denmark, n.d.). During the whole period of the research project, I had an affiliation with the institution. This provided an opportunity of getting acquainted with the various rhythms and different daily practices. It also provided an appreciated opportunity to build collegial relationships with the educators by having a regular presence at the institution and a professional affiliation to the place.

The empirical field work has primarily been conducted at teacher education as the central context in focus of the study, but two design experiments have been conducted together with an educator in social education. Having a presence and conducting empirical fieldwork at social education in addition to teacher education as the main context of focus in this study was a methodical decision that emerged based on two elements. One of these elements was that the practice field had already organized their development work in practice around playful perspectives and methods in teaching as an inquiry across the different educations of teacher education and social education (Playful Learning, 2021a). This strategy of organizing practice development around playful approaches across the different educations was thought by the educational institution and Playful Learning Programme as an explicit strategy for creating coherence and idea generation across these different higher educational realms. At the same time, the decision of experimenting together with an educator in social education

was a methodical decision which I exercised to gain access to the field at all, in a time when the educational field seemed inaccessible due to the COVID-19 related lockdown. Further, the educator, Emma, which I collaborated with in social education also taught in teacher education in the same subject oriented content and in this sense was familiarized with the primary context of this study as well as the subject orientation was in a sense transferable to the context in teacher education in this specific case.

I entered the empirical field of the educational institution in late April 2020. I entered the field online, due to the world pandemic of COVID-19 and consequential lockdown of most educational institutions in Denmark. The lockdown turned every activity at the institution from being conducted primarily in a physical setting to occurring in an online setting from meetings, seminars, teaching, networking to socializing.

My research practice had for these reasons to be formed and informed by the new conditions that was affecting almost everyone in and outside of the field I entered. Uncertainty and possibility (Akama et al., 2018) were now not only a part of my own journey as an aspiring researcher but concepts to take seriously as (even more) fundamental for the context where I was researching in collaboration with educators.

Akama et al. (2018) explain how uncertainty can be understood through the practice of ethnography as “...immersing oneself in worlds where we do not know what will happen next” (p. 6). This understanding of uncertainty as not knowing what will happen next have to a great extent been an underlying premise of researching through close collaborations with practice, underlining the emergent and contingent qualities of such collaborations around designing experiments.

The early stage of the research process consisted for me both of a process of contextualizing the research in relation to teacher education theoretically and empirically and seeking out educators in practice interested in collaborating around experimenting with designing through play in their own teaching practice. Finding collaborators for a mutual inquiry was neither straightforward nor something which ‘just happened’. Instead, finding collaborations became more of an ongoing process of accessing and contextualizing the empirical practice field of the research through practices of talking, experiencing, participating and repeatedly presenting my preliminary thoughts on the project in workshops for educators of practice. The process of participation is as Brandt et al. (2014) argues, a “...complex process that combines doing, talking, thinking, feeling, and belonging” (p. 147), and argued through my experiences with the process of

accessing and participating also infused with uncertainty of not knowing what will happen next.

When the educational institution resumed their physically present teaching lessons for what at the time came to be a fairly short period in the late summer and fall of 2020 due to the ebbs and flows of the COVID-19 related pandemic at the time, I made a general inquiry to the educators at teacher education as to whether I could attend some classes and observe (Patton, 2015b, p. 331) their practices through the lens of the subject of the research. This was an open invitation, and I was overt on the purpose of how I wanted to observe to better understand the context of the professional didactic practice. Karen, the mathematics educator referred to several times throughout these first parts of the thesis invited me into her teaching practice and made time for me to present myself in class, so that the students were at least a little familiar with me, my research subject and why I was sitting in class during the day of lessons, taking field notes. The topic of the day was geometry with first-semester mathematics students as mentioned. When the lessons were finished, I thanked Karen for inviting me into her class and for the opportunity to get a glimpse of what was happening in the classroom. From the last part of our conversation, I wrote in my field notes “Karen smiles and welcomes me again any time in her teaching and adds ‘As long as I am not supposed to change anything, because that’s not going to happen’...” (Excerpt, field notes, mathematics teaching, first-year students). Karen was happy to let me observe, take notes, and evaluate what was happening in the classroom, as long as it did not involve changing anything. Karen’s distinction between observation and changing practices became pivotal for my own approach of seeking collaborations with educators. She provided a distinction of the felt difference between letting someone (a researcher) observe and that of working together around design experiments and how the latter might come to feel differently demanding, for an example as a demand for change or simply being too time consuming in a full schedule of teaching obligations.

As mentioned in the previous chapter, the collaborations were formed by the agenda of participating in experimentation and coming to understand together through the joint activity of collaboration on what designing through play might provide for the practices of teaching. This framing became key for the invitations I made for collaborations with educators in general based on the initial experiences around accessing the field. Accessing the field and engaging in seeking out collaborations without creating a

demand for change, I argue highlights the uncertainty potentially attached to being a (novice)² researcher. A method I employed as a strategy for being in this uncertainty embedded in accessing the field and engaging in the inquiry even though I did ‘not know what was going to happen next’ was through a felt embodied understanding of what was possible, appropriate, and ethical in the situated moment of each encounter. This is an understanding of knowing and action which renders “... the body as a site of knowing” (Pink, 2015, pp. 26–27).

In combination with the embodied phenomenological understanding of knowledge underpinning this research, this led me to take a sensory approach (Pink, 2015). Not only as a sensory ethnographic basis for choices of methods appropriate for the research or as underlying approach in the doing of these chosen methods, but as a way of being attuned in the field working together and alongside educators and as a way of being a researcher in practice generally.

Methods

During the period of empirical inquiry, the ambition of nuancing the perspective on opportunities and challenges which designing through play provides I followed through methods of participant observation (Gold, 1958; Patton, 2015b; Szulevics, 2015), informal conversations with educators and students (Patton, 2015c, p. 479), semi-structured interviews (Brinkmann & Kvale, 2015, p. 6), written feedback from students and the primary method of collaboration around co-creating and carrying out design experiments in teaching practices (McKenney & Reeves, 2019; Wang & Hannafin, 2005). Methods I used for more formally documenting the research were field notes and research log notes (Emerson et al., 2011), audio recordings, photographs, and online and video recordings (Patton, 2015b, pp. 391–393; Pink et al., 2015; Sumartojo & Pink, 2019, pp. 59–60). The written documentation comprises of field notes inspired by practices described by Emerson et al. (2011) and Patton (2015b, pp. 387–389) and a separate research log where I kept notes on thoughts and questions arising from the various conversations and encounters with people about the research. The field notes I

² When I refer to being a novice I refer to being at the first step in Dreyfus and Dreyfus’ (1991) five steps to skills acquisition, going from novice to expert in a field.

kept more descriptive where I gave attention to how people were moving about, what people were doing and doing together, reporting small parts of the conversation going on as well as attending to the more sensorial aspects of being in the atmosphere of the situations, materials, surroundings, sounds. The research log notes oscillated between being anecdotal and analytical in nature, providing a space for early reflections on what I experienced through being part of meetings, teaching, and work groups together with practice educator colleagues. Field notes and research log notes varied in length and in quality over the period of the two years of empirical participation, from many pages to only a few sentences or for an example only a brief remark describing a situation.

In most situations I was allowed by the participants to audio or video record teaching situations, workshops, conversations, or parts of these. Interviews were either audio recorded, or video recorded, where face-to-face interviews were audio recorded while interviews online were recorded via the function in the online program.

In most of the teaching situations where a design experiment was carried out, the educators and I agreed on video recording or online recording in situations of online teaching with prior consent from the students, as a medium for making it possible to engage with the atmospheric configurations of the situations analytically afterwards (Pink et al., 2015, pp. 354–355). The exception in relation to recording being the first experiment in biology. Here the educator Anna did not want students having to decide whether they allowed for video or audio documentation because these lessons marked the first teaching students being together in the same space after an extended period of online teaching due to the COVID-19 related lockdown. This was the same premise in the following focus group interview with the biology students, where instead Anna helped taking notes on students' comments which I could incorporate as part of the field notes from the interview.

In the vast majority of the design process situations with educators, I recorded these through audio recording if I and the educator(s) were together, or else through online recordings. This made it easier for me to be present in the conversations about designing the experiments while also being able to go back and notice some of the design steps we took or the reflections in the process. This summed up to be a substantial amount of recordings (for schematic overview of research activities see Appendix 1). All participants in the research were given written as well as verbal information about the research and all participants gave documented explicit consent.

Design collaboration with educators

The educators I came to collaborate with on designing and unfolding the various design experiments were all affiliated with the practice project Playful Learning Programme (Playful Learning, 2021a) already unfolding in practice prior to this research project. Due to the educators' affiliation with the practice project, they already had a professional interest in the subject of play in the context of education. The educators' affiliation to the practice project suggested a shared interest in play and the playful aspects of teaching, as an intended prerequisite for the collaboration being a common interest and for making the research a matter of a shared goal (Guillemin & Gillam, 2004, p. 271).

While only including educators with an initial interest in exploring play can be argued problematic where interested educators might have been too positively attuned towards the inquiry and in this way rendering the challenges more in the background. Even though this is a consideration I had during the project I weighted educators' own interest in the collaboration as more important ethically than trying to seek out participants especially critical of designing through play (Patton, 2015a; Pink et al., 2022, p. 31). But even though the educators had an initial interest in the inquiry of designing through play, it also became apparent throughout the collaborations how this interest was not the same as the educators not being critical or ambiguous about designing through play.

As already mentioned, I collaborated with five educators. Two men and three women educators. The educators represent both diverse age groups as well as different levels of experience with the profession as educators, spanning from a couple of years to more than a decade of teaching experience. While I never intentionally aimed for a representative sample of educators because I let the collaborations emerge, the diversity in age and experience as educators provide a somewhat 'representative' span of educators working at teacher education.

The collaboration with the educator Emma from social education was established after a workshop I held for educators at the educational institution about my project where she approached me after the workshop asking if we could work together on experimenting through play in her teaching in the module of 'The Child's Learning Development and Formation'. The collaboration with the educators Louise and Benjamin in the subject 'Innovation and entrepreneurship in school' in teacher

education was formed through my invitation. I had attended different workshops, meetings, and seminars with Benjamin and on the basis of many talks about play, playfulness and designing through play in teaching I asked him if he could be interested in collaborating with me in his teaching practice. Benjamin was supposed to co-educate with Louise during 'Innovation and entrepreneurship in school' and Benjamin asked her about my request, and they accepted the invitation for a collaboration during the semester of the subject. The collaboration with Anna in the subject 'Biology' evolved serendipitously as another PhD fellow colleague of mine Marie, was working together with Anna and they got to talk about my project, where Anna on the background of their conversation invited me into her teaching for experimenting together. The design experiments with Christian in the subject 'General teaching competence' evolved during a conversation we had around the playful in teaching after some of Christian's teaching lessons where I had been invited in to observe. Christian and I agreed on carrying out design experiments together based on that conversation which included the first ideations for the design experiments later carried out together.

Even though the participating educators were all affiliated with the practice project of playful learning, suggesting an already formed interest in play or playful aspects of teaching as mentioned, the educators' interests, and focus was very different. Through explanation of how the recruitment of participants was conducted, by a certain degree of pragmatism and opportunism, it also to an extent stand out how the educators and I did not have a complete set of common understanding of what was to be experimented with before entering the collaboration, echoing how common understanding is experienced through the act of working together in the Deweyan sense of understanding.

Positions in the collaborations

Wagner (1997) points to how in educational research different forms of cooperation between educator and researcher form differentiated possible positions and "...different ways of being" (p. 14). Because there has been a reciprocity in the development of issues to be designed for and tried out in practice through a framing of designing through play, the collaborative relationship can be characterized through what Wagner (1997) defines as a clinical partnership (p. 15). Opposed to a data-extraction agreement with practice where the positions, roles, and expertise of researcher and

educators are distinct and bounded, clinical partnerships reflect instead according to Wagner (1997) a greater extent of cooperation and negotiation between educator and researcher (p. 15). Even though the collaboration with the educators in this study has been marked by a deeper commitment to cooperation and negotiation in development of a shared understanding, in the collaboration we still had complimentary but somewhat separate interests. While not easy to demarcate our interests between theoretical and the more practical implications, the difference in positions in the collaborations between the educators and my position, I argue can be broadly generalized and differentiated through how I kept an interest in the overall research question of this study and the educators being more attentive towards the workings of the particular design experiments in practice. In the two instances where I carried out the design experiments in practice as educator, the collaboration bordered more on what Wagner (1997) terms a co-learning agreement where “Co-learning agreements are even more interactive than the clinical form of cooperation... the division of labor becomes much more ambiguous, as both researchers and practitioners are regarded as agents of inquiry *and* as objects of inquiry” (p. 16). This form of collaboration where I took on the role of research-educator supported a different way of engagement between the two educators Louise and Benjamin and I as researcher in this collaboration. In these two designs I had to step away from the primary focus on my research questions and relate more to the immediate workings of the design experiments in practice as being responsible for part of students learning processes in the teaching where these design experiments were carried out. This way of working together is characterized by an especially intense collaboration and do not come without a cost as Wagner (1997) argues (pp. 15-16). But what was lost in a ‘pure’ focus on the research when putting myself at play in this way in the collaborative relationship I argue was gained in insight about carrying out this form of teaching practice designed through play, insights difficult to obtain in other ways. At the same time, as stated earlier this form of collaboration made possible different ways of being for me as researcher and possibly also for the educators in the collaboration. I was more available as a resource than might normally be expected in a research collaboration, which Benjamin and Louise could draw upon in their practice.

Participant observations

While I and the educators were equally fully involved in designing the design experiments we collaborated around, the educators were responsible for unfolding the design experiments. In the teaching lessons where the design experiments were to be carried out, except the ones I carried out as educator, I held the role as participant observer in class or online (Gold, 1958; Patton, 2015b; Szulevics, 2015). Most of the time I was observing passively, but occasionally I stepped in for a missing student in different forms of group work or I participated in the dialogue in class when asked by the educator for a comment. I sometimes asked the students what they were doing in for instance group work or when in the field in nature walking with students to a new sight, to be more acquainted with their thoughts and practices in relation to the teaching situations. While as Szulevics (2015) discusses, participation and observation are as such contrary concepts, demanding the researcher to do two distinct things at once (p. 83). But, participation can also be understood as the prerequisite for observation (C. Hasse, 2010; Szulevics, 2015).

Hasse (2010) describes in relation to an anthropological field work about physics students at a university, how this observation felt as getting a 'feel for the game' by in some sense starting to think about the world as a physics student (pp. 81-84). Getting a feel for the game are to be understood as through participation one becomes sensitized towards the embodied practices and thoughts of those researching with. I emphasize with this point and an example of this came through in a remark from the biology educator Anna. One day where Anna and I reflected together on the design experiments unfolded in biology, Anna asked me how come the practices and 'logic' of biology seemed in a sense to come easy to me. "Thinking biology" was not something to 'come easy to me' but seem rather a result of being immersed in Anna's teaching together with the biology students through this embodied participation by way of a sensory ethnographic approach. In this way participation during the observations have at least to some extent been a way of enabling me in this research getting a 'feel for the game'.

Conversations and interviews

Throughout the research process in the field, I had countless informal conversations evolving around play with the students and educators I met at the educational institution. In the initial stage of the research process, I did not use an interview format

to form conversations with participants through, but instead had conversations with educators and students at meetings and at workshops, during and after classes I attended at the institution for in a more informal way get a notion of their experiences and thoughts on the theme of play and playfulness in the educational context.

In the later stage of the research process, I used interview as a method for giving space to the voice of student groups (Brinkmann & Kvale, 2015, p. 3) about how they experienced teaching practices as playful and particularly how they experienced the design experiments. After each round of design experiments in a subject course were finalized, I conducted a focus group interview with the students in class. The focus group interviews were planned as semi-structured focus group interviews (Brinkmann & Kvale, 2015, pp. 175–176) and each had a duration of approximately 30 minutes (interview guide, Appendix 2). In total I conducted five focus group interviews (overview of conducted focus group interviews, Appendix 3).

An individual interview (Brinkmann & Kvale, 2015) with each of the educators I collaborated with around design experiments was conducted after the experiments in this subject was finalized (interview guide, Appendix 4). Even though the interviews I conducted with the different educators were planned to be semi-structured, parts of these interviews unfolded more as reflections together around the unfolding of the design experiments. The interviews with educators lasted each in general about one to two hours. Beside these more formal interview sessions with the educators, we had during and after the unfolding of the experiments several conversations informally reflecting on the experiments together. I further conducted an interview with a physical education educator Michael where I had participated in a workshop Michael held around using play actively in physical education teaching (interview guide, Appendix 5). In total, two individual interviews were additionally conducted with the students Niels and Karl Johan, not being part of the same design experiments (interview guide, Appendix 6). The same principle as in the collaborations where understanding is understood as reached in communication through joint activity I employed as a denominator for the interviews. This means that I have had shared experiences with all the interviewed around the subject of inquiry before the interview took place.

As I explained in the introductory section of the thesis, in every focus group interview my question to the teacher students of what they find playful in teaching generally in teacher education or what they found playful in the design experiments they had just

partaken in specifically, were followed by a reply through a counter question by the students full of wonder and puzzlement. Even though students were informed of the study, they seemed still uncertain if my question really did center around playfulness. Therefore, it seemed to work well in the focus group interviews in class that I could encourage the students towards that this was exactly what I meant – I was indeed very serious – and someone would carefully and daringly start with their own experiences, and by the time I finished the group interview, a great part of the students in class had commented. Furthermore, I did not ask *if* a playful atmosphere was generated, because as Pink et al. (2015) note, then atmospheres are “...felt differently by different people... Here the analytical task of the researcher is not to ask if an atmosphere was generated, but rather to ask what it meant for a certain group of people” (p. 353). I asked the students about what felt playful for them and why. This was a way of coming closer to how students felt the different atmospheric configurations of teaching practices both inside and outside of the design experiments and still not ask directly if a specific atmosphere was generated.

The two individual student interviews conducted in this study came into fruition on the background of a request I formulated at the students’ online platform after each of the design experiment rounds were finished. I wrote and asked if anyone was interested in doing an interview. Karl Johan and Niels each attending different courses responded and accepted the request. Arguably, this was the ratio of commitments I could hope for through this way of requesting as well as during a time where students educational experience was particularly influenced by managing the uncertainty of COVID-19 related lockdowns.

A greater focus on individual interviews with students could also have been valuable. But, as Guillemin and Gillam (2004) highlight, often in qualitative research people involved do not benefit directly from the research process and this is ethically problematic as it is difficult to balance a respect for the individual, while also making them subjects for the means of the research process (p. 271). I chose to focus primarily on focus group interviews in class to let the interview and the shared comments unfolded within this format be part of a hopefully valuable shared reflection in class towards each students individual learning process (Patton, 2015c, p. 478).

In relation to the collaboration with the educator Emma in social education, I used the method of video-stimulated recall (Calderhead, 1981; Nguyen et al., 2013; Rowe, 2009)

providing a visual aid for the reflection interview with Emma around the design experiments. Video-stimulated recall was a method I employed in relation to this specific interview, while Emma had set aside a substantial amount of time for the interview and had asked to see herself in the video recordings as she thought this as a beneficial part of her own professional development. In this case the video-stimulated recall from parts of the unfolding of the two different experiments in social education helped deepening the conversation unfolding in the reflective interview around these. The method of video-stimulated recall in the interview was specifically aiding in this specific situation while the focus of the interview was amongst other issues on the decision-making processes which Emma made (Calderhead, 1981, p. 211; Nguyen et al., 2013, p. 1) in the process of supporting a 'protective frame' (Apter, 1990) for the students in the situation of the design experiments in social education.

Reflections on transcription of empirical material

I have fully transcribed the interviews conducted (Brinkmann & Kvale, 2015, pp. 203–214), meaning the educator interviews, focus group interviews recorded and the two individual student interviews. While due to the vast amounts of video, online and audio recordings from the design process and unfolding of design experiments and the time-consuming activity of transcribing, I have only transcribed parts of the communication from this material where needed for more thorough analysis and quotations here in the thesis.

The logic behind the pseudonyms provided for the educators and students in the transcribed parts in thesis has followed a pragmatic notion of making sure I did not call anyone their own name or someone from the same class. This has been somewhat of a task, since more than 100 students have participated overall during the unfolding of the various design experiments. Hence, I have searched ways of accounting for this when providing the students with pseudonyms. In the interviews I am represented by my own name throughout. Further I have translated all the passages quoted in the thesis, since all interviews and design experiments are carried out in Danish. While recognizing translations do not always capture the full essence of what is meant and always imply interpretation (as of course do transcriptions), it has at the same time presented me with an opportunity of deepening the analytical interpretations by having to account for proper and (ethically) responsible translations of the material.

Chapter 7: The process of analysis

Playing With Ways of Knowing has come out of a research process of three years. Describing the analytical process of these years of research work is difficult, while I agree with Pink (2015) arguing how "...analytical processes, theoretical thought and critique, and interpretative understandings cannot be separated from the ethnographic encounters from which they emerge" (p. 141). Separation of the empirical field work process and the analysis is a somewhat disingenuous way of accounting for the analytical process which has aided the knowledge production of this thesis.

A clearcut representation of the analytical process is not possible, as it arguably is as much based on a corporeal and experiential knowing as it is a representational cognitive rational and linear process (Pink, 2015, p. 142). Still, in an attempt of avoiding the analytical process in this research becoming, as St. Pierre and Jackson (2014) with inspiration in Lather (1991) term it, too much "the 'black hole' of qualitative research" (p. 715), I will provide some thoughts in the following on the analytical approach and attend to more concrete aspects of the analysis.

An abductive approach to the analysis

Through pointing towards not being able to sharply separate the different aspects of the knowledge production process, I follow Brinkmann (2014) arguing for how the analytical process in qualitative research can be viewed not as an inductive grounded process of collecting empirical material or as a deductive theory-driven process of framing the empirical material, but instead as an abductive process (pp. 721-722). Rather than being occupied with the relationship between theory and data, the focus in an abductive process involves an inquiry into a *situation*, and is a reasoning that occurs in "...situations of breakdown, surprise, bewilderment, or wonder" (Brinkmann, 2014, p. 722). Emphasizing the situation as central, Dewey (1991) explains how "It is the *situation* that has these traits. We are doubtful because the situation is inherently doubtful" (p. 109). It is the situations that create the doubt and wonder in pragmatic abductive inquiry, not the theory or data. In the abductive analysis the situations which creates some kind of wonder or breakdown in the understanding, causing confusion or curiosity leads to a process of sensemaking. In this sensemaking process different kinds of tools are used, both theory as an analytical tool (Beck & Stolterman, 2016, p. 133), but also the researcher and others past experiences as well as methods in providing a new

understanding of the situation (Brinkmann, 2014, p. 722). The abductive process is as such also a creative and aesthetically founded process (Englund, 2005, pp. 379–382; M. C. Sørensen, 2015, p. 45).

The abductive process can lead to new understandings of a situation, but is in line with the pragmatic epistemological position, not a matter of arriving at universal and objective knowledge. As Brinkmann (2014) explains “Rather the goal is to be able to act in a specific situation” (p. 722). This acting can both be in the understanding of taking practical actions, but also theoretical understandings which provides possibilities of understanding in a new way (M. C. Sørensen, 2015, p. 50). The contribution aimed at through this thesis is as explained primarily theoretical towards providing nuanced domain theory about designing through play in context of teacher education in relation to educational design research. These theoretical accounts though also have practical implications, and acting is here understood both theoretically and practically as enabling new understandings.

The wonder setting my initial research interest into motion was as mentioned in the Introduction an interest in the ambiguity following play in relation to education, and how play as a basic human phenomenon is difficult to set into contact with the educational setting, both theoretically and in practice. As such this initial wonder in the abductive process helps take the first steps towards encircling the analytical object of the study (Hastrup, 2010, p. 15). Theory has not been given precedence over the empirical experiences from the field or vice versa. The analysis has rather taken place as a dialectical process between theory and the empirical material with the *situation* as central concern.

Reflecting together

Reflecting together with educators during the research process became an important part of the analysis process. The abductive dialectic process of analysis also in this case became helpful in providing a real space for reflecting together with educators and not only letting their thoughts be an appendix to the analysis. When researching *with* educators and not *on* educators as mentioned earlier, the focus of not only making educators co-participants in the research but also in the analysis I argue is important in making it *a* collaboration, echoing Barab and Squire’s (2004) demand for design-based research as mentioned earlier. Because the collaborations were founded based on the

educators' interest in collaborating, the course subjects which the design experiments are created and unfolded in, followed what the educators were teaching in at the time of the collaborations on the design experiments. The difference in the analytical interests between the educators and mine for the collaborations were marked by how the reflections together was centered around the educators' interest in the collaborations around the particular design experiments into their subject matters, where I kept a simultaneous analytical interest in the different design experiments across the study and in the research questions of the study.

More practically the reflections together were unfolded through conversations, mails, the individual interviews with the educators, but also through writing together with some of the educators on parts of the experiences from the design experiments. It is difficult to outline all the various collaborative reflections while these have been continually ongoing and sometimes marked by pauses for them to be taken up again later. However, these reflective conversations have been invaluable in the research process and all the educators I have collaborated with have aided the analysis on the four themes in the following analysis in part V of this thesis.

Writing as a method of analysis

In the process of the research, I used writing as a gateway to the analytical process, or in Augustine's (2014) words on a research process undertaken without data coding "...writing became my first analytic stance toward the data" (p. 749). By analyzing the empirical material through writing memos and reading theory exploratively and connecting theoretical themes in a more rhizomatic fashion to these memos (Augustine, 2014, p. 749), I used writing actively as a method of inquiry, where "...writing is validated as a method of knowing" (Richardson & St. Pierre, 2005, p. 962).

I initiated a process of writing as inquiry as a starting point and as an analytical method I used it as continual inquiry where reflections on various aspects of the research process have been interwoven in the process of analysis through writing. But as mentioned above, I have also used writing together with those of the educators interested in this process to analyze and reflect together in the process of collaboration.

Together and through writing as a method of abductive inquiry, I have used different frameworks in the process of analysis, the methodological framework of taking an

atmospheric outlook as well as making use of the conception of orienting concepts. These frameworks are explained through the following.

Analyzing in, about and through atmospheres

The methodological framework of in, about and through atmospheres inspired by Sumartojo and Pink (2019), offers both an analytical frame for how to go about researching atmospheric configurations in the empirical context and simultaneously as mentioned earlier, offers a guidepost on how to design and create interventions through the concept of atmosphere (p. 119). As explained in Chapter 3, the framework is used as an understanding of how different atmospheric conditions can make space for different ways of knowing in teaching practices as the analytical interest of this research. Analytically, the orientation of in, about, and through atmosphere has worked as the overarching analytical framework for analyzing the design experiments and across these. Analyzing in an analytical distinction of in, about and through atmospheric experience, structures in different ways the temporal experiences of knowing atmospheres. Analytically speaking, by following the students from one atmosphere to the next experientially, it has been possible by way of this analytical orientation to get a sense of how students possibly come to know in, about and through atmospheric configurations emerging in the design experiments in the different teaching practices. As an example, providing an aid in understanding differences between students' experiences of being in the teaching practices designed through play and how they come to reflect about these experiences later.

At the same time the process of researching through the framework of in, about and through not only helped to analyze what kind of knowing was made possible for students in these different atmospheric conditions. Simultaneously it aided the analytical reflections on what I in the process of the research can possibly come to know. Both when being immersed in the experiential atmospheres alongside the educators in the design process or together with students in the unfolding of the design experiments and what I can come to know differently when knowing about these atmospheres retrospectively in the following analytical process (Sumartojo & Pink, 2019, pp. 10–11). Taking an atmospheric outlook in the research towards looking at atmospheric configurations emerging from designing through play is in a way already angled through the lens of play. This provide an outlook from which to distinguish these specific

atmospheric qualities of play from the ever atmospherically involving situation of human perception (Slaby, 2020, p. 274). As Welsch (1997) so pointedly explains in relation to the issue of an increasing aestheticization of society "... where everything is beautiful, nothing is beautiful anymore. Continued excitement leads to indifference" (p. 121). Relevant to this research in context of teaching the quote led me in my analysis including the field work, to be especially focused on tendencies of differences and shifts in the moods and atmospheric configurations of the situations. This aided a sharper focus on the emergence of play moods and atmospheres making possible playing with ways of knowing for students in the diverse empirical situations and to those instances where these atmospheric configurations in contrast did not appear or disappeared.

In the interviews I attended to how students and educators talked about these atmospheric configurations. Both towards what kind of configurations enables and what configurations was talked about as disabling playing with ways of knowing for students and educators. At the same time, attending to differences in if students and educators in unfolding of design experiments and in relation to interviews were talking about or through atmospheric experiences and whether they used their foreknowledge or memory more explicitly to recall or think through these situations.

Orienting concepts as analytical tool

The focus on the concepts of play as a mood practice, play protective frame, and atmosphere in relation to the design experiments I was part of, either as researcher-educator, in the design process, or as participant observer in the unfolding of educators' design experiments, aided a narrowing of the analytical object of the study (Hastrup, 2010, p. 15) and functioned as orienting concepts of the study (Layder, 1998).

Layder (1998) explains how orienting concepts is a route through concepts, either from a theoretical area or from past experiences initially and provisionally, to orient the analysis of the study, with the acknowledgement of how researchers are not starting their research from a complete atheoretical or 'empty' standpoint (pp. 110-111).

Orienting concepts according to Layder (1998) are not supposed to be conceptualized as imposing fixed categories onto the researched (p. 113). Suggesting instead how orienting concepts allow for an orientation towards the research through theoretical concepts as well as making these orienting, meaning how in this way the empirical material might call for different theoretical concepts (Layder, 1998, pp. 110–112). This

analytical process I argue echo an abductive stance towards the research as dealt with in the above. Layder (1998) explains how "...orienting concepts are (hopefully) suggestive of further concepts that will feed into an emerging theory as the result of different mixes of deduction and induction" (p. 111). According to Layder (1998), the more creative this process is, the more "...one will begin to modify and create new ways of thinking theoretically about an area" (Layder, 1998, pp. 105–106). This creativity can be set into motion by playing around with the concepts in order to understand and possibly expand their applicability as orienting and analytical concepts through an oscillation between intuition and rational thought (Layder, 1998, pp. 106–107), echoing Brinkmann's (2014) notion of the abductive process as a 'playful, deconstructive attitude' (p. 724).

Orienting the conceptual framework through play as a mood practice kept the triad of play media, play practice, and play moods as orienting concepts through the design experiments where these worked as theoretical design framework as mentioned in the methodological section. These concepts further worked as analytical orientation. Play media as an orienting concept provided an aid in turning both learning media and space into key themes aided by the theoretical aspects of how knowledge and learning are conceptualized in the research. Play as a mood practice simultaneously created an awareness of the connoting concept of atmospheres.

As Layder suggests through the quote in the above, orienting concepts can be suggestive of further concepts for developing an emerging theory. In the process of analysis, the concept of atmosphere and moods became suggestive of the concepts of attunement, emergence, and uncertainty following the analysis throughout the thesis. In the process of analyzing the design experiments, atmosphere as orienting concept further became suggestive of the concepts of hope and trust through the abductive research approach, as important part of the analysis in Chapter 12. As mentioned above, the concept of the protective frame worked as an orienting concept in this thesis. While the educators I worked with were occupied with how students could be attuned to sense that the teaching practices were a safe space for experimenting and playing, the protective frame became a way of suggesting how performance was to be a key theme in the research and has then worked as an orienting concept in the analysis. In the abductive process of the research through performance as orienting concept I was able to inquire into different nuances and kinds of performance, making for instance impression management (Goffman, 1972) become a concept of interest in the process of analysis.

This analysis is brought up in Chapter 11. Through the work with the educators and unfolding of design experiments in practice, the concept of emergence guided a focus on what the configurations of atmospheres in the design experiments made possible. Through this orientation, attention to the key theme of assumptions emerged in the process of analysis. This is as mentioned a key theme taken up in Chapter 12.

It is not the aim here to turn the orientation of the analysis through orienting concepts into a notion of bringing a systematic and linear account of the process. Instead, the above reflects how I have not initiated the analysis from an ‘empty’ or ‘atheoretical’ standpoint in the abductive analytical process, where the ‘different mixes of’ inductive and deductive processes throughout the analysis have been guided by this web of entangled and emerging orienting concepts.

Analyzing across the different design experiments

The amount of empirical material can potentially be overwhelming in a design-based research study according to Ørngreen (2015, p. 24). Tending to this overwhelm, it has been necessary to choose a focus on some of the design experiments more thoroughly. Even though 14 design experiments are part of this study, not all of these are represented explicitly throughout the analysis in the thesis. This is not a way of stating that these were not an incremental part of the analytical process, but more how some of the design experiments also led to what was not as important towards challenges and opportunities of designing through play, or how other design experiments and situations in contrast, in a more concise way, was able to show what is at stake in the process of designing through play in teaching practices for students and educators.

Through the analytical process I developed the strategy of both analyzing the individual design experiments and material associated with these as well as across the different design experiments. Moving between the particularities of the individual experiments and across the differentiated situations of design experiments enabled a comparison and attending to a deeper understanding of some of the complexities across the different situations.

However I am also aware of how moving between the design experiments in terms of the themes in the thesis of learning media, space, performance, and the emergence of the theme of assumptions can make the particularities of the different designs opaque. I have attended to this issue of not providing a deep focus on each of the design

experiments throughout the analysis by focusing on a short description of the background and unfolding of the individual experiments through the descriptions of these in Chapter 8. Still, the analytical object of this study is not on the subject matters individually and letting the themes emerge across the design experiments has been a way of attending to this analytically, described in the following.

Analyzing across the differentiated material and experiments was more practically executed through, as already mentioned above, writing memos throughout the process of analysis. In a later stage in the analytical process I printed all the headlines of the memos from the writing on paper, headlines made through condensation of the meaning in the memos (Brinkmann & Kvale, 2015, pp. 231–234), cutting the headlines out, laying these out and moving them around in different themes. This provided an opportunity of creating new connections between the design experiments and the other materials that I was not able to obtain through a more linear approach by attending to the design experiments and other material consecutively.

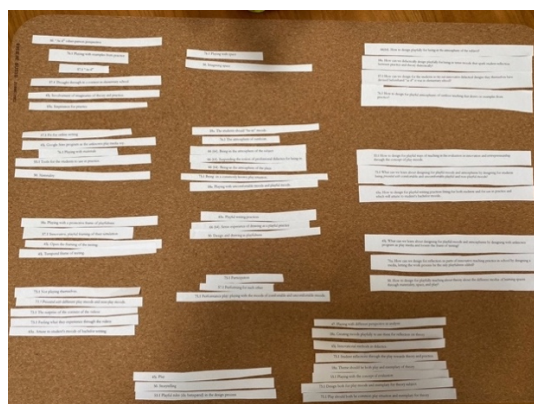


Figure 3 Playing with memo headlines in the analytical process of discovering new connections between design experiments

When looking across the different design experiments and contextual research material, the particularities of designing through play in relation to the different subject matters was both being minimized and highlighted in the same process. When reading through the memos again in the different themes, it showed possibilities across the different subject-matters and where these subject-matters were a more pronounced part of being a part of a key theme. As for instance with the theme of space, where I in Chapter 10 comment how field work as a more particular practice in the subject of biology might make playing with space more obvious. Further, in the Discussion in Chapter 13, I also attend to the issue of the specificity of subject-matters in relation to the themes created in this thesis.

Following the phenomenologically-informed pragmatic notion of knowledge in this research, the analysis does not have the intention of providing a narrow and fundamental answer to the question of the research interest. A perspective on opportunities and challenges of designing through play in teacher education is created in the following analysis, but this perspective must be seen in the light of all the possible ways opportunities and challenges can stand forth in context of teacher education when designing through play and how these opportunities and challenges inevitably evolve over time.

Part IV

Chapter 8: Description of design experiments

Central to the empirical landscape of this study, 14 design experiments were carried out in collaboration with five educators. How these were designed for and unfolded is described in this chapter.

Because of the complete conversion from analogue to digital teaching in the Danish educational system due to COVID-19 lockdown during the first part of this research process, digital technology as a tool were not only a means for parts of the pedagogical practice, but instead the foundational tool which could present educators and students with the opportunity for obtaining teaching practices at all. Instead of the assessment whether different digital technologies could be of value for the pedagogical practice as important didactic consideration (Hiim & Hippe, 2007; Qvortrup & Keiding, 2016, p. 164) the pedagogical practice needed to fit into this framework of technology to even be unfolded. This condition also affected the design experiments in this study carried out during the Covid-19 related lockdown period and is partly why the design experiments are designed for and carried out in different educational spaces specifically the classroom space, the field, and the online space.

The design of the experiments has been guided by the theoretical framework of the understanding of play unfolded in Chapter 2 and further how there is a difference between what can be known when being in atmosphere, opposed to when reflecting on or through atmosphere as well as how knowing is understood as dependent on the socially situated attunement through configurations of practices, materials, and being-in-the-world explained in chapter 3.

As mentioned in Chapter 6 on methods in the research, the educators' interests in the collaboration around the design experiments and around the subject of designing through play in teaching practices were very different and was to a great extent formed by the subjects they taught in. Still, overarchingly the common practice concern for the educators was how to involve students actively in the atmospheres of the subject in different ways through playful and experiential practices for coming to know.

The design experiments of 'IV: Playing with peer teaching online' and 'XII, XIII & XIV: Playing with peer teaching' bear resemblances in the designs. They evolve around the

same format of peer teaching even though being designed with different educators in different subjects, to be specified through the descriptions in the following pages. This resemblance is coincidental, and these peer teachings were designed on the background of very different initial interests, while also being different in how the first is unfolded online and the other design experiments were unfolded with everyone present at the educational institution.

As already touched upon earlier, not all the design experiments are explicitly part of the analysis in the thesis. Still describing all 14 design experiments in the following pages underlines how they have all contributed to the analysis. Further describing them all provide an insight into the background on which the design experiments that are primarily focused on in the thesis have been chosen. The design experiments are presented in the following as they were carried out chronologically in the process of the research together with the educators.

Every following description of the different design experiments begin with an excerpt from my field notes including parts of transcriptions from recordings of various kinds functioning as a vignette (B. Anderson & Ash, 2015, p. 35), to provide a descriptive idea about the unfolding of the design experiment.

Design experiment I: Playing with bachelor project exercises

The students and Louise, gather again in the shared online space after doing the assignments in separate group rooms online... She asks the students what they think of this very different reflection and feedback assignment. Silence in the online space. Louise again encourages the students to share their thoughts. The students write in the online chat how they think 'it was fun', 'different', 'it gave me something'... Emilia, turns on her microphone and reflects how she thinks it was a very difficult assignment, because she had to take different perspectives. She adds it was especially difficult to answer through these very different perspectives than herself. Louise explains how this was exactly the point, adding 'this was just to throw you completely off course...'.

Background and unfolding of the design experiment

Louise had previously experimented with the design of playing with different creative bachelor project exercises together with other teacher students, but she never tried it out online. In the planning of the semester of 'Innovation and entrepreneurship in school' for fourth-year teacher students, Louise, Benjamin, and I agreed on Louise trying the design in an online format to experiment with how it would work in the online space. The 16 students that were present in the three-and-a-half-hour online lesson, were individually asked to draw their problem formulation of their bachelor project and then share what they had drawn in a student group explaining it through the drawing. Afterwards the students were to provide feedback for each of the students in the group, focusing primarily on strengths of the problem formulation. The playful aspect of the feedback assignment was how the student given the feedback, had to respond to the feedback through the perspectives of different famous characters.

These famous characters were chosen by Louise beforehand as a way of framing the feedback assignment through a playful protective frame. Afterwards the students were to play with the structure of their written bachelor assignment through colored post-its, making the design evolve around using different play media. In the above vignette, the students reflect with Louise at the end of the design experiment, where the student Emilia comments how it was difficult to take the perspective of someone else. Louise explains how this was the intention, as an exercise to 'throw you completely off course'.

Design experiment II: Playing with being learning space designers

Louise asks the students online to please start writing about the characteristics and traits of their chosen toy figure. Several of the students have their cameras turned on and they sit with paper and pencil in front of the screen and begin writing. The theme song from Indiana Jones put on by Louise, blasts out of the speakers of the computer, while she provides prompts for what the students could write about their toy figure 'What is his top skills?', 'is he engaged?', 'does he do something in his spare time?'. Students concentrated writing on their paper sitting in front of their screen.

Background and unfolding of the design experiment

In planning the semester of the course 'Innovation and entrepreneurship in school' for fourth-year students, Louise, Benjamin and I agreed on Louise carrying out a design experiment centering around playing with students being learning space designers. Space was a theoretical theme on the curriculum plan, evolving around considering the importance of the physical space for schoolchildren's innovative learning processes and so we designed for attuning towards experiential and playful ways for students to engage with this theoretical theme central for these lessons. The design experiment was unfolded during a day with four lessons with 16 students, where also other activities beside the design experiment were on the lesson plan. The students were asked to bring a toy figure as play media to the screen for the day's online lessons or choose one from a picture with different toy figures on the PowerPoint slide Louise shared online. Students then had to individually write a narrative about their toy figure, go into separate online group rooms with a student partner and together design a 'friend' furniture which would fit both toy figure personalities, for then in an online program together in the group design a classroom where the friend furniture was to be placed and decorated to fit the personalities of the two toy figures. Lastly a reflection in plenum with all the students and Louise was planned with questions about the topic initiated by Louise for the students to reflect upon. The above vignette is from a situation in the beginning of the experiment, where students are to write about their chosen toy figure personality, where Louise provides prompts through asking different questions about their toy figure character.

Design experiment III: Playing with designing evaluation methods

‘Anyone cares to share their evaluation design?’ I ask the students online. First silence. Then one of the students Adam turn on his microphone and says ‘Well we talked about the mood was to be euphoric.... and then we thought that the play media should be some poop and some layer cake, and it could be in the form of a ‘squishi’ doll where one looks like a poop and one look like a layer cake... and what you had to get forth was that you had some kind of theme, it could be the election in the USA or forest fires in the Amazons or something. And then this should aid a debate on class where half of the class were to have positive opinions towards it and the other half should only have negative opinions about it, dependent on whether they had gotten a poop or a layer cake, so to speak. So, this was our thoughts for an evaluation.’

Background and unfolding of the design experiment

In this design I carried out in the course of ‘Innovation and entrepreneurship in school’. The fourth-year students were through a design process to design an innovative and playful evaluation method for schoolchildren in their future professional practice to work with the subject theme of evaluation. Louise, Benjamin and I collaborated on designing the general lines, where I did the detailed planning of the experiment.

The 20 students present in the three online lessons were in student groups through a design process (Friis, 2016), to design an imagined evaluation method. In their evaluation designs the students had to incorporate some kind of media as play media and at least one of the four play moods in the perspective of play as a mood practice, explained to them beforehand. This was designed with the intention of seeing how it was for students to work with the play mood perspective and at the same time to insert constraints in the teaching practice to explore the notion of freedom towards playing. Lastly a presentation of their student group evaluation method designs and a reflection together in plenum in the online space were planned. In the vignette above from a transcript of the online recording from the lessons, the student Adam from the first group to present, explain how they included the euphoric play mood and the play media of ‘squishi’s’ emulating either a ‘poop’ or a ‘layer cake’ in their evaluation method design.

Design experiment IV: Playing with peer teaching online

‘So, what are we supposed to do?’ Niels asks. Ina, from the ‘teacher group’ explains how she is just trying to share her screen in the online space, then they will explain it...Magnus asks, ‘Is it okay if I only have markers?’. The ‘teacher’ Ella reassures him that it's perfectly fine. Lucas quickly remarks ‘or else it just becomes fifty shades of grey’. Everyone laughs. When the ‘teacher group’ is assured that everyone can see the shared screen with the PowerPoint slide, Jonas one of the ‘teachers’, present the assignment of how the other students are to design their own Egyptian God, color it and write down what this God ‘represents’, and what special abilities this God have. Jonas explains how the lesson is imagined to be for a third-grade class in a course about Egypt in history.

Background and unfolding of the design experiment

An original plan from the side of Louise and Benjamin was for the students to make an innovation camp for schoolchildren at a local Folkeskole. This assignment was to function as one of five central examinations in the subject of ‘Innovation and entrepreneurship in school’. The original plans had to be changed, because of a prolongation of the COVID-19 related lock-down in Denmark. An ‘original’ setting with schoolchildren missing, Louise, Benjamin and I instead designed with input from students, for the students in groups to teach two or three other student groups in separate online group rooms during one day of four lessons.

The 22 students in the course were in groups to teach the other groups for 45 minutes including an evaluative reflection in the separate online group room through questions formulated by Louise and Benjamin. The peer teaching was to be designed by the students through a playful frame and include the practical unfolding of theoretical aspects from the course subject. The students were in their groups to choose what subject their peer teaching was to evolve around for an example math, history or Danish. At the end of the lessons a group reflection with everyone was planned for both students and educators to reflect on the day together. The above vignette describes a situation from the beginning of one of the peer teachings in a separate online group room where the ‘teacher’ group present their peer teaching evolving around history of Egypt. The other student groups through the perspective of third grade ‘schoolchildren’ were to create fictive Egyptian Gods.

Design experiment V: Playing with writing and choice

Twelve students are online, only one of them have the camera turned on. Smiling to the one student I can see, hoping it reaches the others as well behind the small black squares of only their initials blinking at me. I share my slide in the share screen function and explain how they have a choice between two options for the focus of the day's lessons. One choice is a focus on their own bachelor writing processes and the other choice is a focus on children's creative writing processes and desire to write. Two more students join the online space, also joining with no camera on. Through the voting in the chat, the choice land on the students' own bachelor writing processes. I tell them I have been looking forward to playing with them today.

Background and unfolding of the design experiment

Louise and Benjamin had prior experience with how students chose not to show up at the time of year when these lessons were on the semester plan of 'Innovation and entrepreneurship in school', students instead prioritizing their time for writing on their examination task for the bachelor project. Wanting to attune to this dilemma Louise, Benjamin and I designed for a design experiment of taking the fourth-year students through writing exercises and coupling it with relevant theoretical aspects for the course. Louise, Benjamin and I collaborated on designing the general lines, where I did the detailed planning of the experiment. The 14 students showing up to the three online lessons was to individually try out different writing exercises coupled with theoretical reflections on the subject. To explore the theme of choice in relation to attuning students towards playing, I designed for giving the students a choice of whether they wanted to focus on writing exercises primarily in relation to their own bachelor writing process or if they wanted to focus on writing in relation to innovative and creative processes in their future professional practice. I had designed two different teachings, but I still covered both themes in each of the choices without letting the students know initially. In the end of the lessons a common reflection together was planned, and students was invited to write anonymous feedback in an online platform on the experience of being provided with the choice. The vignette above describes the situation from the beginning of the lessons where I give the students the two choices and a majority of the students choose own bachelor writing processes.

Design experiment VI: Playing with space and materials in nature

The group of two students, Sahar and Mikkel placed further down the stream from where I sit have already finished their measurements in the stream and have both taken a clipboard and found a spot by the stream to sit on the ground. From where I am placed, I can see them sitting at different spots, each concentrated and bent over their clipboards, occasionally looking up at something in the woods. From here I can't see if they are using the paper or just sitting. Alma from one of the groups closest to me by the stream, looks down the stream and calls out Sahar's name. Alma sees her sitting with the clipboard and says loudly directed to her group 'Ah, she can't help us, she is in the middle of the exercise. They were really quick to finish'.

Background and unfolding of the design experiment

This experiment in the subject course of biology was designed in collaboration between Anna, a fellow PhD student colleague Marie and I. Anna was to go out in the field with her biology students from third and fourth year and wanted to experiment with playfully attuning students towards being aware of other aspects of field work in biology than instrumental field work practices, for students to potentially be able to plan for diverse teaching practices in their future professional practice. Together Anna, Marie and I designed for the 24 students to attune towards nature in different ways through an assignment where students were to individually go out in the field with a clipboard and pencils as play media and sit in nature for ten minutes only having to focus on what they noticed. In the next ten minutes they were to walk around in the landscape individually or stay placed where they already sat as they felt like with the same premise of only having to focus on what they noticed. Immediately after the assignment we planned to gather for a reflection together in the field under the premise of Anna only asking about their experiences and not towards professional didactic reflections of the exercise in relation to their future professional practice. This was for letting the assignment be framed through a playful protective frame of not being linked to future oriented purposes. The above vignette describes a situation where the two students Sahar and Mikkel had finished their field work measurements in the stream earlier than the other student groups and had walked further away to place themselves with clipboards at different spots in nature to do the design experiment assignment.

Design experiment VII: Playing with being presented with moods

After Emma's presentation of the assignment, the students place themselves in their student groups in different sections in the classroom... The last of the groups comes up to the desk and get the paper with the QR codes. Other groups are already involved in finding the videos online on their shared computer. When the different groups start viewing the videos, the students take notes on paper while they silently watch the videos together.

Background and unfolding of the design experiment

This design experiment was designed in collaboration between Emma and I. Emma was teaching in the module of 'The Child's Learning Development and Formation' in social education. The theme of the day's lessons of six hours were to evolve around emotions and feelings through a pedagogical theoretical perspective.

Emma and I designed for the 25 students in groups to watch different online videos as play media where the students were only provided with a link for the video through a QR code, but no information on what the video was about. For the design experiment, Emma chose videos with different themes meant to be for instance either fun, sad, joyful, surprising, embarrassing, and in more cases a mix of these. The students were in the groups to 'guess' what feelings these videos were meant to evoke and reflect together in the different groups about how they were affected by them individually and on different other subject questions provided by Emma.

After watching the videos and reflecting in groups the students were to reflect in plenum together with Emma on the different videos through questions asked by Emma and on how the assignment was experienced more generally. In the design experiment Emma and I wanted to experiment with students' participation and playful engagement in group work of not participating in creating - but instead through being presented with - different playful and non-playful 'moods' through the videos as play media. The above vignette describes the beginning of the design experiment where Emma just explained the assignment for the students, and students get the paper with the QR codes, start watching the videos and silently taking notes.

Design experiment VIII: Playing with spin the bottle

We all walk into the classroom with floorspace in the middle. Emma asks the students to stand in a circle together with her. She explains how they are now to play spin the bottle. Eyes widen, nervous laughing, glances at each other. They all form a circle, some seem excited, but some are clearly uncomfortable, stepping so far back that what is supposed to be a circle becomes a deformed shape. Emma smiles at them and invite them a little closer with the wave of her arm. While showing with her body, Emma explains ‘Okay, what happens is, that you take the bottle. And then you spin it...’

Background and unfolding of the design experiment

This design experiment in social education in the module ‘The Child’s Learning Development and Formation’ Emma and I designed in collaboration. The theme of the day’s lessons of six hours centered around the psychological concept of mentalization. Emma had through previous teachings about mentalization experience with how students found the concept of the day’s lessons complex and difficult to grasp. Emma and I designed the experiment to evolve around inviting the 25 students into a commonly known play situation of ‘spin the bottle’. Students were to write the different feelings they could come up with down on small green cardboard cards, one on each and put them in a little plastic box. Then everyone was to go into another classroom with more floorspace and stand in a circle. The students were to; spin the bottle; the one pointed at by the bottle were to draw a card with a feeling; display the feeling through silent bodily gestures to a partner opposite in the circle; the partner having to guess the feeling displayed while the others were also allowed to help guess what feeling it might be. After playing for a while, the students were afterwards in groups to work with their partner around different questions on feelings and how it was to be in the play situation both as the one displaying and the one guessing the feelings. The play situation was chosen as a way to support students to experience their own feelings and emotions in a situation of playful performance, for in a different way come to know about the theoretical theme of the day and potentially reflect in relation to their own future professional practice. The above vignette is from the situation in the beginning of the experiment where Emma tries to establish a playful protective frame by inviting students into the play situation and explain how to play spin the bottle.

Design experiment IX: Playing with outdoor school and materials

‘Those of you having Danish as subject are to sow crops’. Standing together outside in the school garden, Louise further explains how the procedure of sowing crops is to be done and how the students can find tools for this in the shed in the school garden. The two students Noah and Storm forming the group to sow crops, carefully pick out three seed bags from the table with different materials. ‘This one is carrot’, Noah shows Storm, ‘But there are also these ones’ Storm says. The choice lands on curly kale, beetroot, and parsley. Storm and Noah take the small seed bags from the table and decide to get the tools in the shed together. While they follow the instructions on the piece of paper handed out to them with the description of how to prepare the soil for sowing through raking, Storm tells me that he has never tried to sow anything before.

Background and unfolding of the design experiment

In the planning of the semester of ‘Innovation and entrepreneurship in school’ Louise, Benjamin and I agreed on having outdoor school as part of the lecture plan to unfold this subject for students’ future professional practice within the theme of innovation. Louise, Benjamin and I collaborated on designing the general lines, where Louise did the detailed planning of the experiment and carried it out. These lessons were the last on the semester plan in ‘Innovation and entrepreneurship in school’. The fourth-year students, where only five showed up to the lessons, were to try out different outdoor school activities designed in detail by Louise, dependent on their major subject in Danish or mathematics. With inspiration in this experience of trying out an outdoor activity themselves, the student groups were then to design an outdoor school lesson themselves through innovative theoretical aspects and theory on outdoor school for Folkeskolen.

The vignette above is from a situation in the design experiment where the students, Louise, and I have just moved outside to the school garden at the institution. Louise provides instructions and the student group with Noah and Storm are to sow crops to try out part of a Danish outdoor school course for schoolchildren in Folkeskolen. Noah and Storm carefully pick seeds to sow, find tools in the shed and while preparing the soil to sow, Storm tells me how the practice of sowing is something he has never tried before.

Design experiment X: Playing with biology and visual arts practices

The groups consisting of a mix of biology students and visual arts students are now asked to spread out in the clearing by the lake and start their inquiries. Each group of students find somewhere to place themselves. Some sit by the few tables and benches placed in the clearing, others sit on the ground or on tree stumps. The groups are placed around the whole area... The students go around and pick the leaves they need for doing the frottage... The group I sit closest to, work concentrated, talk about their drawings and the color palette determination of the leaves and the students continue with this for a while after Anna and Charlotte have asked them to finish up. They seem to have a hard time letting go of what they are doing.

Background and unfolding of the design experiment

The biology educator Anna and the visual arts educator Charlotte had collaborated around designing a playful experiment in their teaching practice where they wanted to go out in the field with biology and visual arts students and doing practices with inspiration through a mix of both subject courses. Due to the already established collaboration with Anna, I was invited to join the experiment, and we collaborated on including the design from the previous experiment from 'VI: Playing with space and materials in nature'. The 40 biology and visual arts students attending the days lessons of four hours in the field was to do four types of explorations where different assignments were part of these explorations. The assignments were for an example making frottage of leaves, characterization of different leaves, the sensory exercise of waking around in nature individually, group reflections on natural succession in the landscape, and practices with the cyanotopy-technique etc. These explorations were to be unfolded through a playful protective frame of not being coupled towards assignments in the future but meant as playing with ways of doing in the field between the two subjects and finding similarities in practice techniques and media between the two subjects. The vignette in the above describe a situation from the first assignment of the day. Here the students in their groups are engaged in finding leaves from different tree species and examine them, color determine, and draw them through the frottage technique to get the contours from the leaf on paper with a soft pencil. The students were so absorbed, it seemed difficult for them to round off the assignment.

Design experiment XI: Playing with field work practices

Nora jumps onto the spade to make it go deeper into the stubborn soil full of roots and grass... Nora tries to get her weight centered so the spade can go deeper. The first attempt is unsuccessful. She steps down from the spade, moves the angle of the blade a little and jumps back up. This time the blade goes in a bit, not much, but it seems to gain ground in the overgrown soil. Nora tilts the spade back and forth and jumps backwards and down from the spade just before she loses her balance. She grabs the handle of the spade again, feels the grip a few times before she is ready to jump back up, to use the sharp blade of the spade to gain more ground down in the hard rooted soil.

Background and unfolding of the design experiment

The relevance of this design experiment emerged in the process of the research on the background of how biology students and Anna on several occasions talked about field work as something the students really enjoyed being part of, and sometimes described as being playful. In the previous design experiments with Anna in biology we designed for the students to do something different in the field work practices. This design experiment evolved around exploring into whether field work practices could be regarded as playful without setting a playful framing of practices. In this way the design experiment was having the character of a contextual exploration for comparing and expanding the design experiment of 'X: Playing with biology and visual arts practices' and 'VI: Playing with space and materials in nature' with this one.

Anna designed a day of field work practices of taking soil samples and other different field work practices for instance around plant determination in the field. It was a tightly packed schedule in the four hours with the 21 students in the field, where students in groups were to follow a tight plan for taking different samples, the field work practices described on paper handed out to the students by Anna. After the day of field work practices, the students were to bring soil samples back to the laboratory at the institution for further work a few days later with these samples in different ways. The above vignette is a description from a situation in the middle of the day with field work practices where the student Nora is fully absorbed in digging into the hard rooted soil with a spade to get a soil sample.

Design experiment XII, XIII & XIV: Playing with peer teaching

‘Columbus’ sits up front in the class. He takes his tricorne hat and vest on...All the other students come in, loud talking, not sure where to place themselves in the rearranged room; the ‘judge’ assigns the students to their seat’s according to their role in the trial against Columbus. Everyone is now seated, talk, outbursts of laughing, some sit and read their role cards again. The ‘judge’ hammers his wooden gavel, and the surprisingly loud bang makes everyone jump in their seats; a gasp runs through the class, making everyone laugh. The ‘judge’ roars loudly ‘order, order’.

Background and unfolding of the design experiment

Christian and I designed on the background of an idea from a conversation for students to engage experientially with theoretical concepts in the subject of 'General teaching competence' through peer teachings unfolded within a playful protective frame. These design experiments unfolded over three days of four lessons each. The 25 students were in groups before each day of experiments given time in separate lessons to design a teaching situation of 30 minutes for teaching the rest of the class, based on a learning course media about history on Christopher Columbus aimed at fifth graders (year 7) in Folkeskolen, and each time through a new theoretical perspective part of the curriculum in the subject in the three different design experiment rounds. The theoretical concepts central were respectively; how one can teach and work with the didactic category of ‘goals’ in teaching in Folkeskolen, aesthetic openings in teaching practices, and lastly the didactic four field model about schoolchildren activities through the categories of aesthetics, analysis, communication, and craftsmanship. Further the students were given the constraints of including space in some way as well as including different media. After the three peer teachings on the separate days, students in their groups were to work with reflection questions formulated by Christian in dialogue with me, and at the end of the lessons of each peer teaching day, a reflection in plenum was planned for each design experiment with everyone through these questions but also more openly on what came forth experientially for the students. The above vignette describes a situation in the middle of one of the peer teachings where a student group had planned a role play scenario of a ‘Trial against Columbus’, and two of the ‘teachers’ acted as Columbus and judge.

Part V

In the following part the analysis through the key themes of the thesis is unfolded. Each chapter in this part concentrates on one of the key themes aiding an exploration of the overall focus of the thesis. However, while these are analytically demarcated, the different opportunities and challenges unfolded within these themes are intricately connected, both in the design process and in the unfolding of the teaching practices designed through play.

Chapter 9: Playing with learning media

In this chapter the key theme of learning media is analyzed. Conceptualizing learning media and theoretical perspectives as play media is proposed as an opportunity which designing through play provide for attuning students towards playing with ways of knowing. I argue how play media can help expand the notion of what can be played with in teaching practices, and how learning media can be regarded as playful instruments of inquiry. Additionally, through the analysis in the following pages, some challenges, which defining learning media as play media might present when designing through play, are discussed.

Double play with media

In the process of designing for the experiments in collaboration with the educators I held the theoretical perspective explained in chapter 2 of how play always involve playing with something. However, learning materials or learning media (Hansen, 2006, pp. 7–11) has always had a central place in teaching as mediating tools of knowledge. Books and reading material, theories, computers and other *things* can all be regarded as learning media in the practice of teaching (Hansen, 2006, p. 14). The work of didactically designing for and unfolding teaching practices then always implies the implicit or explicit inclusion of learning media (Hiim & Hippe, 2007; Qvortrup & Keiding, 2016). In the process of designing together with Christian, the focus of our collaboration around ‘XII, XIII & XIV: Playing with peer teaching’ was as mentioned in Chapter 8, how students could get experiences with theoretical concepts evolving around didactics, learning theory, and pedagogical theory through teaching each other within a playful protective frame. At the same time a focus in the collaboration evolved around how students in this process could get to play with learning media meant for teaching in

Folkeskolen. This way of designing for playing with both learning media for Folkeskolen and theoretical perspectives was thought to equally support the second order pedagogical aim of reflecting on theoretical aspects as well as on learning media for students' future professional practice of teaching (Iskov, 2020). This dual focus caused as Christian reflected in a mail afterwards, how in these designs 'the play was double'.

Learning media as play media

During the introduction to 'XII, XIII & XIV: Playing with peer teaching', Christian explained for the students about the learning media "The idea is that all our teaching of each other over the next four weeks is based on the material here with Columbus. So, there will be a lot of Columbus to work with, you could say" (Excerpt, transcript, 'XII, XIII & XIV: Playing with peer teaching'). As the students had history as a subject, Christian found learning media for the students to work with in the peer teaching experiments typical of what can be used to teach schoolchildren in the subject of history in Folkeskolen.

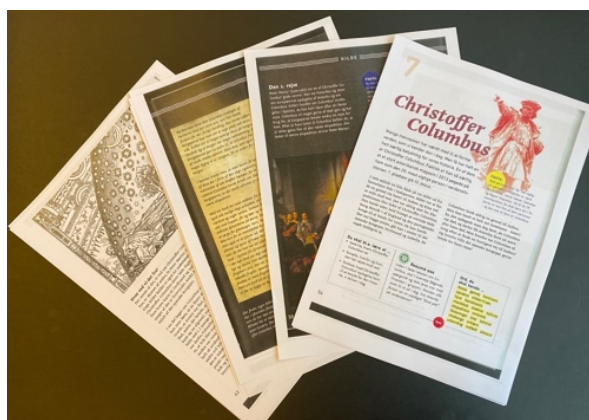


Figure 4 Columbus learning media for students to play with throughout 'XII, XIII & XIV: Playing with peer teaching'

Christian further explained to the students when introducing the design experiments and the learning media evolving around Columbus:

The Columbus course material is for a fifth grade [year 7]... Our setup I think is... We play, try, experiment with different approaches in teaching to find out what works. So therefore, my encouragement to you is, that you go crazy. We know from inquiries in the subject of history that something schoolchildren hate the very very very most is if... the teacher pulls out some worksheets and says 'now we do page 29 and 30 of the assignments and then we take a look at them

together at the end of the lesson'... Schoolchildren don't like that. Therefore, please go crazy, transcend the material ... That way we don't just copy paste... It has been called in a somewhat derogatory way, if you just do, that is, implement the material as it is intended, then you can say that you have become passive teaching material managers. We would like to go beyond that. So go crazy, think creatively, come up with exciting, relevant things based on the material. (Excerpt, transcript, 'XII, XIII & XIV: Playing with peer teaching')

When presenting the framework of the design experiments, Christian encouraged the students to come up with their own takes on the learning media inside the provided frame of the design experiments. Christian invited the students to 'play', 'experiment', 'go crazy' and 'think creatively' on how to use the learning media, though still coming up with 'relevant things', while referring to the teacher becoming a passive teaching material manager if following the use of the learning media as it is proposed in a copy paste manner. In order to contextualize how students in their future professional practice can come to be what Christian refer to as 'passive teaching material managers' and aid the analysis of learning media as play media here, an understanding of learning media for teachers in Folkeskolen as the one about Columbus for students to work with, can guide such a contextualization forward. Gissel and Buch (2020) through a review on the use of learning media in Folkeskolen explain about learning media, calling it didactic materials:

Usually, didactic materials have a built-in didactic approach, that is, the producer interprets the curriculum or subject and the learning material embodies this interpretation. Typically, the material has explicit aims, student tasks, and measures for evaluation. Examples include a textbook for a specific subject and grade level or a course for a specific topic within a school subject. Furthermore, didactic materials often have explicit guides to teachers (and often students) as to how they are to be used, that is, a description of the intended learning design. (p. 91)

In this way didactic learning media in Folkeskolen provides teachers with specific frameworks on how to teach in that topic, while the producer of the learning media has built this into the learning media. In this way learning media as for instance the Columbus learning media which the students were to work and experiment with, provide a frame where the specific subject content is helped being communicated. This

way the didactic learning media can aid teachers planning and structuring the learning process as well as guiding teachers towards reflecting on their didactic choices (Hansen, 2006, p. 17).

But as Gissel and Buch state in the quotation above, learning media for Folkeskolen often carries with them certain didactic intentions and approaches inherent in the learning media. Hansen (2006) explains how didactic learning media through holding implicit or more explicit configurations of how teaching, learning, knowledge, and communication is understood, can help reproduce these tendencies when the didactic learning media are used in teaching practices (p. 16). Following the learning media strictly as a teacher when unfolding teaching practices in Folkeskolen is what Christian referred to as being a 'passive teaching material manager'. Hansen (2006) argues that didactic learning media should not be viewed as merely a means of transmission of knowledge (p. 16). Rather, as Schnack (1995) propose, didactic learning media such as a text book are not to be viewed as valuable in-itself but defined as "equipment" (p. 216) echoing the definition of play media used in this thesis. Schnack (1995) argues how the value of the text book or theory can only be judged by the possibilities for meaning that it provides in the situation and in relation to the didactic intentions which it is part (Hansen, 2006, p. 4; Schnack, 1995, p. 216). On the background of these reflections on learning media, it can be argued important for teacher students to be able to explicitly reflect on these matters for their future professional practice.

Inviting students to partake in experimenting with going beyond becoming 'passive teaching material managers', was as mentioned earlier to design for the possibility for students through the experiments to play with the learning media transcending knowledge about it as something given 'in-itself' as a problematic perception in the pedagogical context if this leaves a view on learning media as merely a means for transmission of knowledge. As Skovbjerg (2021a) suggests, an understanding of play media through Heidegger's notion of *zeug* or equipment can help understand how play media are not things in themselves which afterwards provide opportunities to be manipulated with. By offering the students possibilities for viewing the learning course media of Columbus as something to transcend, manipulate and go beyond, the purpose was for the students to be able to view the media as equipment, as play media and not as mere givens.

Providing students with the opportunity of not having to teach schoolchildren in the Columbus learning media ‘for real’ and communicating the ‘rules’ of the teaching through the invitation to ‘go crazy’, ‘try something out’, a playful protective frame was sought provided for the students, in the definition by Apter (1990) presented in Chapter 2, to potentially play with, and transcend the use of the Columbus learning media for Folkeskolen.

Different ways of transcending the learning media seemed to spring from this invitation in ‘XII, XIII & XIV: Playing with peer teaching’ of playing with the learning media during the three consecutive Fridays in the fall of 2021 where the whole afternoon was set aside for students to teach each other through the learning course media about Columbus for Folkeskolen.

The students’ different peer teachings evolved for instance around the themes of: ‘Treasure hunt teaching’, ‘Imagined figure head making from Columbus’ ships’, ‘Writing a diary under the table as if being a crewmember’, ‘Teaching with sand, seaweed, and spray of water’, ‘Star race’, ‘Rewriting the story of Columbus and working with source criticism’ and a ‘Trial against Columbus’. In the description of these design experiments of ‘XII, XIII & XIV: Playing with peer teaching’ in Chapter 8, the vignette is an excerpt from part of the peer teaching situation of the ‘Trial against Columbus’. Even though some of the students’ teaching designs shared similarities in the practices, they all had different angles, media, and characteristics in the unfolding of them.

Working with the same learning media for trying different things

One of the reflections Christian and I shared in the process of designing for ‘XII, XIII & XIV: Playing with peer teaching’ was a concern of how to strike the right balance between making students play with different possible possibilities or affordances (Skovbjerg, 2021a, p. 40) of the learning media, while still keeping an engagement in the process of participating in the peer teachings when having to work with the same media repeatedly.

In the focus group interview around ‘XII, XIII & XIV: Playing with peer teaching’, I asked the students how it had felt working with the same learning media throughout all the peer teachings. One of the students, Naya reflects:

Well, Columbus [learning media] has resulted in that I have seen it from different angles...I think also just at the end, that we had worked it through a lot... But it has actually resulted

in that I have tried some different things a little bit and tried it on my own body and that has resulted in that I might have seen it from different angles than I normally would. (Excerpt, transcript, focus group interview 'XII, XIII & XIV: Playing with peer teaching')

Naya refers to how at the end the learning media of Columbus was very 'worked through' seemingly referring to that it was almost too much with the same learning media or that now they had at least gone through it thoroughly. Keeping with the same learning media of Columbus all the way through seemed for Naya being a prerequisite for her to try 'different things a little bit', trying it on 'my own body', experiencing it from 'different angles' than would normally be the case, indicating a possible possibility for playing with ways of knowing through playing with the learning media. Touching on both the benefits and the challenges of playing with the same learning media across the peer teachings, Nikolas reflected in continuation of Naya's comment above:

I think it is good and bad. I like this thing about how you get an opportunity to see how many ways you can actually work with a theme. But on the other side then in the end, some of the assignments becomes a little, well you have just been through it so much, then you might become less interested in participating because, that well then, we have been dealing with Columbus so many times in a row... (Excerpt, transcript, focus group interview 'XII, XIII, XIV: Playing with peer teaching')

The manipulability of the media as something to be worked with in different ways becomes accessible as Nikolas reflected when the peer teachings all evolve around the same learning media continuously. At the same time the interest in participating continuously through taking the perspective as a schoolchild in the unfolding of the design experiments can be more difficult to obtain throughout. Nikolas' reflection on how providing the same learning media repeatedly is 'both good and bad', point to the complexity of these design decisions when designing through play. To support students' view on learning media through the conceptualization of play media as tools or equipment we designed for the students to unfold the peer teachings through the learning media more than once. As Naya reflected on in the above this enabled a sense of the various possibilities of learning media. Being part of the design experiments as participant observer, I felt as Nikolas pointed to, how keeping students' engagement and participation throughout all the peer teachings while staying with the same learning

media, was a challenge in the atmosphere of the classroom. The students were participating in all the design experiments but the atmospheres of active and engaged participation was different throughout, echoing Apter's definition elaborated in Chapter 2 of how there is space for 'reversing backwards and forwards' between contrasting ways of being during everyday situations.

In the focus group interview, Anders, added to Nikolas' comment on how it felt to teach through the same learning media:

Well, I also think that continuity is good, it does something for the learning, but simultaneously then this second and third time there had been so many suggestions, so you felt you had to reinvent the wheel every time and that could be hard... and thinking this [suggestion] is obvious, but we have just seen that before, so we have to come up with something else even though it was what made the most sense to do... So, it can be a bit hard really... (Excerpt, transcript, focus group interview, 'XII, XIII & XIV: Playing with peer teaching')

Transcending the learning media towards new practices became harder and harder Anders explained when having already experienced a lot of different suggestions. Anders explained how he felt it was like reinventing the wheel every time and how this was difficult, in this way struggling with the affordances of the learning media, coming up with something new even though maybe a different suggestion for the teaching design felt as being more 'obvious'. Through Anders' analogy of how it felt like reinventing the wheel to stay with the same learning media throughout the second and third day of the peer teaching lessons, James reflected:

I think this thing about having to reinvent the wheel, that is, it also maybe gets one out and think out where no one thought they would do. But then I also think that we are back at the issue of preparation time, but then I think you also need more of that because it is also hard to come up with new ideas on the same material all the time, but it can be done and yes it just takes more time because you will have to do something you are not comfortable with or it will not be your go-to, you will not come up with the idea just like that [snaps his fingers]. There will be more preparation in being comfortable in doing it like that. (Excerpt, transcript, focus group interview 'XII, XIII, XIV: Playing with peer teaching')

The appeal in the experiment to come up with new ways or ‘think creatively’ in teaching through the learning media which the student Anders felt as having to reinvent the wheel, James picked up on in his reflections. Constantly having to come up with new ideas through the same media can, as James added, in addition to the difficulties with this assignment, simultaneously be viewed as a productive way to think in ways the students otherwise would not have done. In play, play media and play practices are abandoned if they do not provide opportunities to stay in play moods (Skovbjerg, 2021a). In ‘XII, XIII & XIV: Playing with peer teaching’ the students were to play with the same learning media to grasp the opportunities of viewing these through the conceptualization of play media, as ‘something-in-order-to’. The students were to experiment with it and ‘go crazy’ recalling Christian’s invitation. The students pointed to the complexity of this demand as both rewarding for new ways of thinking and doing, but at the same time difficult in terms of coming up with ideas and keeping an active engagement in the participation.

The demand for thinking about new ways of teaching through the repetitions of playing with the same learning media according to James made the students be inventive ‘out where no one thought they would do’. An opportunity of conceptualizing learning media as play media through being asked to play with these continually, seemed to provide a route for enabling the students to potentially not regard learning media as naturalized as there have been pointed to a problematic tendency towards in the pedagogical practice as mentioned in Chapter 2. In this way there can be found an opportunity for potentially countering to a certain extent the mentioned built-in aid for decisions of how to teach in the subject existing in the learning media of Columbus for Folkeskolen.

Challenges of contingency of learning media and uncertainty of knowing

However, Hansen (2006) explains how this built-in aid existing in learning media for Folkeskolen can work as “contingency-control-instruments” (p. 16). Through aiding the pedagogical decisions in various ways, didactic learning media can help with the contingency associated with the pedagogical situation both in terms of what subjects to teach in, how to teach, and how schoolchildren are to understand the subject (Hansen, 2006, p. 16). Being instruments for pedagogical decision making, didactic learning media can aid the teacher through absorbing uncertainty produced by the contingency of

teaching practices (Hansen, 2006, p. 16). Having to transcend these learning media through playing with them, where the meaning of these is not something statically provided beforehand or how to teach through these given, but as with play media found in the situations of use, can arguably make the contingencies which are always already present in teaching practices potentially more present.

Returning to the comment above by the student James. In commenting that to ‘reinvent the wheel’ with reference to Anders’ comment is positive since it ‘gets one out where no one thought they would do’, James further extended the reflections on the challenges this way of working with learning media still bring. James explained how practices of playing with the learning media of ‘coming up with ideas’ is not ‘just like that’ but takes preparation time. While James pointed to preparation time as a prerequisite and hence also a challenge in the practices of teaching for deliberately ‘reinventing the wheel’ repeatedly, the need for preparation time is seemingly intermingled in James’ comment with the need of feeling comfortable or safe in the *doing* of these new ideas.

James pointed to how coming up with new ideas and breaking the immediate affordances of the learning media through new teaching practices ‘can be done’, but it takes time to feel safe in transcending known or ‘go-to’ teaching strategies. The need for the feeling of having enough time to prepare is in this way arguably bound up with the feeling of being safe to explore and play around with learning media. James’ comment on ‘being comfortable in doing it like that’ can be viewed as an issue of performing the teaching practices through new ways of doing, where performance is taken up further in Chapter 11.

But part of James’ argument about the need for preparation time to feel safe in doing something different and not least coming up with new ideas through the learning media arguably also reflects the uncertainty followed by this way of opening the contingencies of the media and with that, the contingency of teaching situations. Playing with the media opens for new possible ways of interpreting and knowing learning media, possibilities for knowing differently about the subject and potentially opening for different ways of doing. Introducing this way of working with learning media as play media can be viewed as an opportunity of supporting students’ knowing of how atmospheres in teaching practices are contingent, dynamic, and uncertain in the configurations of subjects and media. This can potentially create space for students to play with different ways of being-in-the-world of uncertainty, according to Barnett

(2004) being an important part of education for the future as mentioned in Chapter 3. On the other hand, offering this way of viewing learning media can cause a creation of more complexity already inherent in the learning processes of novice teacher students, because of not providing a certain stability in the ways it becomes possible to make sense of the use of learning media.

As discussed in relation to active visions of teaching and learning in Chapter 3, Dewey (2015) argue how traditional educational practices has relied on an understanding of learning and knowing which is based on ‘acquisition of’ static knowledge as ‘finished products’ in books and through the ‘heads of’ educators. A challenge arises when going against this way of viewing learning media as finished knowledge products and knowledge as something static towards instead framing the teaching practices through play and play media while uncertainty and complexity can give rise to a sense of a further destabilization of knowing about the world (Barnett, 2004). In such an interpretation of learning media as if they are play media when designing through play, can cause students to become uncomfortable with potentially experiencing an even further rise in the complexity of teaching practices.

This point can be elaborated through a student comment in the experiment of ‘IV: Playing with peer teaching online’ in the course subject of ‘Innovation and entrepreneurship in school’. During one of the peer teaching situations, the students reflected together on the peer teaching they had just carried out and experienced through holding the perspectives of ‘teachers’ and ‘schoolchildren’. The students in the separate online group room had a conversation about possibilities and limitations of using an online program to unfold their peer teaching in contrast to doing it through physical craft materials in the classroom.

One of the students Freya, argued for using the time and the resources on the creative unfolding of this teaching design with schoolchildren in the classroom through the use of physical materials. At the same time Freya acknowledged some of the counterarguments against this way of unfolding the teaching practice the students just experienced together. In the discussion, Freya added “It really depends a lot on how you look at learning. I can easily follow what you are saying, especially also with such a subject as history... and it is just sometimes easiest to learn history through a book...” (Excerpt, transcript, ‘IV: Playing with peer teaching online’). Returning to a more detailed description and contextualization of this conversation and situation in Chapter

12, for now staying with Freya's comment on how 'it is just sometimes easiest to learn history through a book' in relation to the analysis here of learning media. Tending to Hansen's (2006) point about how learning media for Folkeskolen function as contingency-control-instruments, I argue make a reflection on what Freya point to through her comment open towards an interpretation of how it can possibly not only be easier to learn history through a book. An interpretation can suggestively be how it perhaps also might feel easier to *teach* through a book while learning media as mentioned can aid the pedagogical decision-making process and in this way, help absorb uncertainty.

Attuning students towards playing with ways of knowing experientially by designing through defining learning media and theoretical aspects as play media and not as givens in themselves seems to open contingency and uncertainty. Arguably, opening the equipmentality in a playful frame makes the 'in-order-to' more open, contingent, and laced with a higher degree of uncertainty.

Merleau-Ponty (2014) explains how learning is based on a sedimentation of incorporating new instruments in the body (pp. 144-145). Furthermore, Merleau-Ponty (2014) describe how learning is "... a new use of one's own body; it is to enrich and reorganize the body schema" (p. 102). This is to underline how it is the body which "...catches..." (Merleau-Ponty, 2014, p. 144) what is to be understood. Instruments or media are incorporated in the body, creating a reorganization and expansion of what one can *do* in the world. The opportunity of defining learning media as play media when designing through play is for 'catching' the learning media as not a static finished product as given in-itself, can in this way at the same time as providing an opportunity of going against a naturalized transmissive interpretation of learning media cause challenges for students 'being comfortable in doing it like that' recalling the student James' comment in the above. In the process of students learning about media for teaching, incorporating learning media as play media affording more 'possible possibilities' for knowing and teaching than one, might make it difficult to 'catch' the use of these in a stabilized fashion, potentially making it feel 'not comfortable' or arguably perhaps even risky playing with ways of knowing learning media.

In the following pages, the focus is on furthering the understanding of the opportunities conceptualizing learning media as play media provide when designing through play. In the last part of the chapter, I will return to a discussion of some of the additional

challenges which designing through play in relation to defining learning media as play media potentially present.

Playing with theoretical perspectives as play media

The experiments of ‘XII, XIII & XIV: Playing with peer teaching’ not only involved playing with the learning media meant for schoolchildren in Folkeskolen about Columbus through the constraints the students were given of designing for playing with the learning media, teaching peers, and playing with space and media. Simultaneously, a constraint in the peer teachings involved the theoretical concepts part of the curriculum of the subject of ‘General teaching competence’ during the teaching lessons where the design experiments unfolded in. In the three rounds of ‘XII, XIII & XIV: Playing with peer teaching’ the theoretical concepts central were respectively; how one can teach and work with the didactic category of ‘goals’ in teaching in Folkeskolen, aesthetic openings in teaching practices, and lastly the didactic four field model about schoolchildren’s activities through categories of aesthetics, analysis, communication, and craftsmanship³. In each round of the peer teachings, the students were in their groups to design anew through the subject matter framework of the appointed theoretical aspect for these specific lessons. The day of introducing the design experiments for the students, they were to design for the coming peer teaching through the theory of teaching goals. Introducing the theoretical constraint for the students’ work with the peer teachings, Christian explained for the students:

Well, that was the most important part. Because I think, we have different types of goals in play... I imagine that every group could perhaps sign up for a goal type which you would like to organize the teaching from. So that we could see if we have some different goals, it’s just so that not all of you choose a knowledge goal. It could be exiting having different goals. (Excerpt, transcript, ‘XII, XIII & XIV: Playing with peer teaching’)

³ As mentioned earlier in the thesis, the specific theoretical aspects of the different subject matters fall outside of the interest of this thesis, hence I do not go into further detail with these different theoretical perspectives mentioned here.

Putting different ‘types of goals in play’ meant for the students to get to try what it means to unfold teaching practices with a focus on different specific goals as theoretical aspect in the teaching with schoolchildren. Attuning students towards taking into account these different theoretical perspectives when designing their peer teaching for each other, provided both orientation through the subject-matter and constraints in their teaching designs.

In the beginning of each peer teaching the students had to shortly present their chosen theoretical framing for the teaching, so everybody participating was familiar with the theoretical perspective involved in the design they were to experience being in. With the demand of using a specific theoretical lens in their peer teaching designs, the design intention with the experiments was for students to play with theory, using theory as play media understood as equipment in their peer teachings. Playing with theory as equipment was to expand the opportunity of not only playing with getting to know differently about learning media for students’ future professional practice in Folkeskolen, but also coming to know in different ways about theoretical concepts and perspectives.

During the rounds of ‘XII, XIII & XIV: Playing with peer teaching’, the students and Christian reflected and discussed together in plenum at the end of the day how the peer teachings worked or did not work, why and how it could have been different. During one of these reflections in relation to the second round with aesthetics as theoretical perspective, Frederick, explained:

I also, like this thing about having something subsidiary at play, the aesthetic, that it does something, it does much more than I had thought it would do, at least I didn’t think it would be something that could be used in such a way, that it would have such a big impact on how it actually feels to be in a situation. (Excerpt transcript, ‘XIII: Playing with peer teaching’)

After experiencing the three student groups’ very different peer teachings through the Columbus learning media and the theoretical perspective of aesthetics as didactic element in teaching practice, Frederick reflected on how using aesthetic aspects in the teaching practice has a big impact on how it feels to be in the teaching situation. Through the assignment of not only playing with ways of teaching through the learning media, but by additionally playing with theoretical perspectives as if these are play media,

Frederick seemed through his own experience with being in the situation able to come to know in a different way about this theoretical perspective both in terms of how ‘much more’ it does in the teaching practices, but also in what ‘way’ it could be used and the ‘impact’ of the theoretical aspect when this theoretical didactic perspective are utilized in practice. Experiencing playing with the theoretical perspectives provided the students with opportunities of being in the atmosphere of the unfolding of these theories as if being in practice. In a sense, making these experiences of the peer teachings into an opportunity of reflection-in-action in combination with reflection-on-action in the experiments (Schön, 2013, pp. 22–31). Frederick’s comment also highlights how learning media and theory are equipment, which *does* something, attunes in different ways the situations where the theories are employed in and through the use create different affordances for knowing differently.

In all design experiments learning media such as for instance flamingo boxes, post-it notes, glass bottles, you-tube videos and digital programs were used as play media for playing with knowing differently about aspects of theory, as also pointed to earlier. In ‘XIII: Playing with peer teaching’, the notion of formulating theoretical perspectives as something for the students to play *with* made it closer to a more explicit way of appropriating theory as play media.

One way of playing with the theory as if being play media a group of students demonstrated through their designed peer teaching. The group had in their planning of the peer teaching through the theoretical perspective of aesthetics as didactic element in teaching practices, played with doing the opposite of what the theory suggested. Naya, being one of the ‘teachers’ explained in front of the class to the other students after their peer teaching through aesthetics:

Well, the meaning with this teaching was that originally, we should do something with aesthetics, but we drove straight in the other direction to try and take it away from you by you having to be completely silent, not talk at all, you had to look down at the table, kind of kill the engagement and the creativity... to see how it influences you... we wanted to imagine how this would be with a fifth-grade class...
(Excerpt, transcript, ‘XIII: Playing with peer teaching’)

By taking ‘it away’ and going ‘straight in the other direction’ Naya explained how her student group wanted to explore how it would influence their peers and imagine how

such a teaching could be with a fifth-grade class. The group played with the theoretical perspective of aesthetics by transcending the pedagogical intention of the theory of providing engagement and creativity. In this way the students did not treat the theory as a given in the situation, but instead played with it arguably in a similar way as play media utilizing it as equipment for exploring and being able to imagine in new ways. The peer teachings provided a field of freedom for this exploration, as mentioned through Merleau-Ponty (2014) in Chapter 2, which is further to be unfolded in the analysis in Chapter 11. Instead of playing with coming to know differently *about* theory experientially, the layer of playing with theory as play media seemed furthermore to provide opportunities for coming to know differently *through* theory experientially as the example with the intentions of the group for their peer teaching of doing the opposite of the theoretical point.

Expanding what can be played with

When following educators in teacher education in the field work outside of teaching practices designed through play, various media were included as mediators of knowledge in different ways. Most often projectors and PowerPoint slides or the black board were used, assignments on paper passed around and theoretical text, either as pdfs on the computer or in printed editions were employed as media in class. While including media in the practices of teaching is not specifically characteristic in relation to designing through play as also mentioned in the beginning of the chapter, students still pointed to media as part of what makes teaching practices playful.

To my question of what had been especially playful in this semester asked in the focus group interview with students from the subject of ‘Innovation and entrepreneurship in school’, Scott, said “And then I think that it has also been very playful in terms of the tools we have had to use and so on. For instance, we have had to visualize things by drawing something” (Excerpt, transcript, focus group interview, ‘Innovation and entrepreneurship in school’).

Materials were additionally pointed to explicitly as playful during one of the designs in the subject of ‘Innovation and entrepreneurship in school’. All the students were in the reflection round in relation to ‘TV: Playing with peer teaching online’ at the end of the day asked by Louise what they found new and playful about the peer teachings they had been part of during the day of the experiment. Sarah commented on Louise’s question

“For me it was that I was challenging myself, and then I think that the materials are new” (Excerpt, transcript, ‘IV: Playing with peer teaching online’). Sarah explained that what was new about the design experiment were both how she was challenging herself to come up with ideas for the peer teaching and unfold it, but also how the materials they have used were new and different than what would normally be used in other teaching situations.

When designing the various experiments through play in this study, all kinds of media or materials were present as an integral feature in the unfolding of these different teaching practices, exemplified through the following situations, described in the field notes:

Just before we leave the screen for a five-minute break in the online lessons, Louise asks the students to bring paper, markers, a clipboard, and their problem formulation for their bachelor thesis... Louise announces that we need a break before we return to the screen to ‘play with post-its and bachelor structure’ ... (Excerpt, field notes, ‘I: Playing with bachelor project exercises’)

In this experiment with Louise, different media were used, such as markers, clipboard, and post-it notes to unfold the practices of the teaching evolving around the students’ structure for their bachelor project assignment. In the same way different media were used in the experiment with Emma in social education:

Emma explains to the students in the classroom with excited tone and body language, that now we are all going to try something ‘I have some cards here’ she says. Emma describes for the students how they are to write different feelings they know on small green cardboard cards she holds in her hand, as part of the exercise. The students are to put the small cards in the box which Emma also shows them. Emma takes two glass bottles up from the box and place them on the table beside the box. (Excerpt, field notes, ‘VIII: Playing with spin the bottle’)

In this design experiment with Emma in social education, the green cardboard cards, the box, and glass bottles were used. While these media mentioned in the above excerpts were designed to be used as play media in the design experiments, when students were asked to play with designing peer teaching situations through a playful frame in some of the design experiments, they also employed all sorts of different media as Sarah’s

comment evolving around the peer teachings in the above also point to. The variety of media can be exemplified from a situation in one of these peer teachings:

Aviana in the ‘teacher group’ presents the planned teaching for the other two student groups online. She says ‘Today we are going to wash a dough-bun. It is an experiment we will take you through...The first thing you must do is find your wheat flour’. Kirsten another ‘teacher’ takes over and instructs the students in what to do individually in their own kitchen with their camera on so the ‘teacher’ group can follow the process online ‘You have to use 1 deciliter wheat flour and 25 milliliters of water’. The students use a spoon and a bowl to mix the flour with water. (Excerpt, field notes and transcript, ‘TV: Playing with peer teaching online’)

Common for these situations above described from a selection of experiments in the study is how media is integrated in the doings of the teaching practices, and furthermore how a great variety of learning media is used in these teaching practices. In relation to the above examples of different media, they do not as such bear a didactic intention in themselves. Instead through the notion of how play media in the conceptualization of play as a mood practice are providing possible possibilities in the play situation, it can be argued how these media used in the above examples on teaching situations not only function as supporting a mediation of a specific content or theory.

Media are instead at the same time developing possible possibilities of understanding the theoretical intentions of the teaching practices by making available different ways of playing with these. Everything which is played with is defined as play media in the perspective on play as a mood practice as mentioned, and following this definition when designing through play can support an expansion of what in turn can be regarded as possible to play with in teaching practices to unfold the pedagogical intentions. As Sicart (2014) points to, then “Playfulness makes the world a toy” (p. 40). As argued throughout this chapter, what becomes possible to play with by utilizing the definition of play media when designing through play includes both learning media, materials, and theoretical perspectives.

In the focus group interview with the students after being in the field in the first design experiment in biology of ‘VI: Playing with space and materials in nature’, I asked what they find playful in teaching practices generally. One of the students, Leah, in her comment seems to echo Scott and Sarah’s comments, mentioned earlier in the chapter,

and elaborating on these. While agreeing with Anna to not record during this specific focus group interview, as mentioned earlier, I wrote Leah's comment in my fieldnotes on what she generally finds playful in teaching practices:

The next student, Leah explains how she really likes it when she 'kind of like has to do something with the theory on my own'. As an example, she explains how she likes it when she must exert herself in drawing it in a different way, drawing a model which can be used as different explanation of a theory. For an example by drawing a nerve cell or drawing something through a completely different metaphor. She explains how once they were given the assignment of explaining the protein synthesis through a narrative of a baker. (Excerpt, field notes, focus group interview, 'VI: Playing with space and materials in nature')

As Scott referred to visualizing by drawing in his comment above on what he finds playful, Leah explained how 'doing something with the theory on my own' or drawing is playful for her in the way it challenges her to work with theoretical accounts in a different way. Leah exemplifies this by giving an example of for instance drawing a model or drawing through a metaphor as she described with the protein synthesis. The commonality between the students' comments above can be interpreted as how playfulness for them involves media in some way. What especially Leah seemed to elaborate upon in her comment is how media becomes a playful way of coming to understand differently by going through the difficulty of explicating theory through doing something with it.

Different media affords different ways of participating which in turn sustain the possibility of changing the atmospheric configurations of the classroom, potentially attuning students in different ways (Skovbjerg, 2021a, p. 12). In the design experiments the atmospheres of the classroom felt significantly different when students were sitting under the tables writing in their fictive diaries as if being crewmembers on one of Columbus' ships, as opposed to when they were watching a video or standing around a glass bottle anticipating and fearing who it would point to next. In this way through an expansion of *what* can be played with in teaching practices arguably an opportunity follows of attuning students towards playing with *ways* of knowing.

Learning media as instruments for playful inquiry in teaching

Even though learning media in the educational context broadly can be conceptualized as mediators of knowledge, the way the students in the excerpts above point towards media as playful is through a more active engagement with these learning media. Not only as mediators in a passive stance or even as Whitton (2018) in relation to play in higher education argues how media “...signify a playful environment” (p. 5). Instead as a matter of pushing knowledge of theory by engaging in interpreting theory differently through the media involved in the situation. As for an example Leah provided an example of in the above, or as with the example from ‘XIII: Playing with peer teaching’ by playing with theory, coming to know differently *through* theory.

Dalsgaard (2017) refers to how tools in the design process with inspiration in Deweyan pragmatism can be conceptualized as “instruments of inquiry” (p. 23). Dalsgaard (2017) use this conception of media in order to understand “designerly inquiry” in design practice, but point to how it can also be applied to media or instruments in different contexts of inquiry (p. 30). I argue how Dalsgaard’s point underlines an understanding of the relevance of conceptualizing learning media as play media when designing through play as well as aid in linking it further with the aim of attuning students towards playing with ways of knowing. Dalsgaard (2017) explains this conceptualization further:

Although instruments of inquiry in some instances function as tools that help us reach a specific outcome, they are not limited to being a means to an end, something that we employ to facilitate our actions in the world once we have a pre-formulated plan for how to transform the situation. They also affect our perception and understanding of the world, and help us explore and make sense of it. (p. 24)

Dalsgaard argue how instruments of inquiry not only contain an understanding of these being used as a means of facilitating a predefined transformation of a situation at hand. Instruments of inquiry instead echo Skovbjerg’s conception of play media through Gibson’s concept of affordance and Heidegger’s notion of *zeug*, as instruments which also affect what can be given meaning in the situation and aid understanding of the situation as such. Interpreted for instance in relation to the biology student Leah’s comment above. The equipmentality of the theory of the protein synthesis becomes an instrument of inquiry for knowing and understanding in a new and playful way in biology through playing with it by drawing, doing ‘something with the theory on my

own', and does not represent a mere mediation of one by Leah preconceived knowledge about it.

Following Heidegger's phenomenological point how the individuals' relationship with things is through an essentially pre-reflective and pragmatic being-in-the-world means that media is always already considered through a notion of 'in-order-to' regardless of playing or finding oneself in a pedagogical context outside the framing of play. But the difference lies in how these learning media (and what is possible to consider as appropriate media) are conceptualized and appropriated through the practices involved in dealing with the media. As already mentioned, the equipmentality is opened through how one is attuned in the situation. How media is to be understood and found meaning through is not in play different than in the practical context of teacher education.

But the flip side of the primordial relationship with media as equipment in-order-to is how this practical relationship exactly can be viewed as the reason for the potential naturalization of learning media in the pedagogical context, both inside and outside of the framing of play as pointed to by Hansen (2006) and Jørgensen et al. (2022).

The equipmentality as the proper use of media is revealed in the practical relationship with these through the intentionality of the situation, just as Heidegger's exemplifies with the hammer explained in Chapter 2. Therefore, it is rather when the equipmentality break or in different ways do not function that the equipment as ready-to-hand can be questioned. In this way if learning media are conceptualized as knowledge mediators, the equipmentality will arguably suggest being a mediation of knowledge potentially as given 'in-itself'. Instead conceptualizing the equipmentality of learning media as play media by designing through play whether it being learning media or theoretical perspectives, provides opportunities for both attuning students towards playing with ways of knowing *about* theory as well as *through* theory.

Designing through the conceptualization of play media in teaching practices in teacher education, aid opportunities for understanding learning media including theories not as naturalized elements of teaching interpreted as given 'in-itself', mediating a static understanding of knowledge. Instead it suggests the opportunity of attuning students towards interpreting learning media defined as play media where the equipmentality is to be understood as being instruments for playful inquiry, or essentially equipment for playing with ways of knowing.

Challenges when learning media is to be defined as play media

The final section in this chapter extends the analysis of some of the challenges which designing through play through a conceptualization of learning media as play media might bring for students in teaching practices. While already touched upon how playing with learning media can make contingencies and uncertainty towards knowing and teaching to a greater extent stand forth in the pedagogical situation for teacher students, also other challenges possibly emerge when playing with media in teaching.

Being too optimistic - Playing with media takes time

Beside the important challenge highlighted by the visual arts educator Charlotte, mentioned in a conversation during ‘X: Playing with biology and visual arts practices’, of how media takes time when designing through play in relation to the practical aspects of sorting media, packing, and bringing everything which is needed in order to use and play with it in teaching practices; another challenging temporal dimension when designing through play in relation to learning media became present in the collaboration with Christian.

The initial plan made by Christian and I in relation to the experiments in ‘XII, XIII & XIV: Playing with peer teaching’ was for carrying out the design experiments four times. This plan was changed by Christian during the unfolding of the experiments because as reflected in a mail to me about his decision on the changes, Christian wrote “I think I was a bit too optimistic timewise in planning the course”. He added how his worries were that the experiments had too much weight in terms of time in relation to other elements of the curriculum plan for the contents of the semester.

These changes work as a reminder of the emergent and contingent structure of teaching practices and how a curriculum plan is almost always made to be changed. But the changes from the original intentions made by Christian can also function as a reminder of the element of time (pressure) and how in relation to designing through play and not least providing space in the curriculum for playing with ways of knowing, the issue of time pose a challenge. This is an underlying issue which Jensen et al. (2021) in their review on playful approaches in higher education point towards, describing how a felt lack of time can be coupled with the performative cultural traits of risk-minimization and predictability impacting both students and educators experiences towards “...lacking time and having little room for playing around with the subject matter and

appropriating it in your ‘own’ way” (p. 11). A felt sense of time seem to exert an influence on creating opportunities to view learning media through a conceptualization as play media for opportunities of playing with it.

Arguably through the example with Christian’s change of plans with time being the main issue, the challenge of naturalization of learning media in the educational context resulting in an interpretation of knowledge as something given suggestively can also be interpreted as stemming from feeling there being not enough time for opening different affordances of these media and consequently not enough time towards making space for students appropriating it in their ‘own way’.

‘It doesn’t exactly ooze of learning environment’ – a challenge of participation and play media

As mentioned earlier, the student Scott commented on media being one of the parts making teaching practices especially playful for him. Later in the same focus group interview conversation, another student Henry returned to a reflection around the issue with media as playful element of teaching practices. Henry reflected:

I also think it was much more playful than I experienced it before, although I think the playfulness and creativity have been very limited by the fact that we have been sitting at home because, I could well imagine if we had been here, I think that both Benjamin and Louise would have brought out the very large artefact and toolbox... So, I’m sitting at home, and you can say, well, I have some paper and I probably have a flag and [laugh] some scarves, that’s pretty much what I have that I can come up with something creative with... my room, it doesn’t exactly ooze of learning environment... You could sense from some of those who, for example, have had craft and design... there they have really had some advantages, because their way of furnishing their apartment or home or whatever it is, it is very different from what mine is. (Excerpt, transcript, focus group interview, ‘Innovation and entrepreneurship in school’)

Missing the ‘very large artefact and toolbox’ as essential part of making the teaching practices playful, Henry touched on how even though ‘Innovation and entrepreneurship in school’ had felt more playful than other teaching practices at teacher education he still experienced some disadvantages regarding not having as creative media at home as

those attending classes in craft and design. Henry felt these other students ‘really had some advantages’, while claiming his room does not ‘exactly ooze of learning environment’. Henry listed some of the things he could think of having in his room being worth using for something playful and creative and seem to argue how these are not sufficient in enabling him to ‘come up with something creative with’. What Henry’s comment might suggest is how the things he has available in his room does not provide him a playful environment, limiting his opportunities of being attuned towards playing and being creative.

Making media an essential part of the possibility of experiencing teaching practices as playful and for possibilities of being creative, can in situations of online teaching create a sense of other students having advantages because of their interests or subjects which might provide some students with more creative materials at home than for instance Henry experienced having. Louise had already foreseen the issue of students not having creative and playful or diverse media at their disposal at home during the period of extended online teaching due to COVID-19 lockdown. In ‘II: Playing with being learning space designers’ for instance, Louise provided the students with a picture of all sorts of toys and figures she had collected in her own home to choose from, for the students to use for inspiration as part of the assignment in that teaching design.



Figure 5 Picture of toy figures from Louise’s Power Point slide in order for students to use in ‘II: Playing with being learning space designers’

Henry’s comment highlights how even though taking different measures trying to compensate for this issue, there can still be students finding these measures insufficient in being able to participate in playing with ways of knowing through the work with media when being in online teaching situations. Providing students with ‘the big artefact and toolbox’ can possibly be one way of remedying this challenge for students. While

looking more closely at Henry's comment, suggestively it could simultaneously be a question about the 'cultural capital' (Bourdieu, 1986, pp. 241–248) at stake in relation to media as part of the teaching practices designed for attuning towards playing. As Whitton (2018) argues, there might be necessary social and cultural and even gaming capital needed to participate in teaching practices designed through play (p. 10).

Where Henry points to how some students attending craft and design classes potentially have differently furnished homes and so have advantages in making participation in online teaching practices more playful, it can be argued that this advantage might follow these students into the teaching practices at the institution. Where the advantages of already attending craft and design classes, or through various different routes being sensitized and embodied habituated (Bourdieu, 1986) towards ways of dealing with and being aware of differentiated affordances of media could provide a challenge for some students by not being sensitized in the same way. This challenge is argued to consist of how this way of working and playing with media can leave some students not able to participate in fruitful ways by not possessing what can be termed *media capital* with inspiration in Bourdieu's (1986) forms of capital. When knowing comes from the act of participation, these possibly differentiated ways of participating through playing with media can come to privilege some students becoming easier attuned towards playing with ways of knowing.

While as Lave and Wenger (2008) explain, the notion of peripherality in relation to participation makes it possible to view different degrees of peripheral participation as desirable and empowering (p. 36). There is as such no right way of participating or no center of participation in the concept of legitimate peripheral participation. However, there are empowering ways and disempowering ways of participation, the difference being if ways of participating "moves towards more-intensive ways of participation" (Lave & Wenger, 2008, p. 36). Lave and Wenger's point demonstrate the importance of considering Henry's comment as part of the challenges which designing through play in relation to the theme of learning media might provide, by perhaps leaving some students not having the media capital to sustain more-intensive ways of participation towards playing with materials in the same way as other students.

I will return to a further discussion on some of the broader aspects in relation to challenges towards participation when designing through play in Chapter 13.

Chapter 10: Playing with space

In this chapter it is argued that space becomes an important element in designing through play. As argued in Chapter 3, how one is attuned atmospherically through the surroundings co-constitutes what one can come to know. This makes it relevant to take up the theme of space in relation to how designing through play can provide potential opportunities of attuning students towards playing with ways of knowing.

Drawing again on inspiration from the conceptualization of play media in the perspective on play as a mood practice followed in the thesis, I argue in this chapter how such a conceptualization can also be useful in relation to space, while still making space a separate element when designing through play.

Space as a focus in the design experiments

In several of the design experiments space was, as touched upon in Chapter 8, something which at the outset of the design process was not only an intended focus through the atmospheric outlook of the research, but also in the beginning of the research process were a somewhat unwelcome design constraint for carrying out the teaching practices at all. While at the outset being an unwelcomed focus in these cases and even, in several instances, a hindrance for designed experiments in the study to be carried out, the conversion to the online space in periods of the research process because of the COVID-19 related lockdown at the time also serendipitously made space a theme noticeable in a different way by forcing me to move between different spaces in the empirical field work. Simultaneously, space was treated and differently focused on in the various designs.

Doing something different in space is playful

In the interview with Karl Johan, he reflected on the question of what is playful generally in teacher education and said “Ooh, it’s probably when it becomes this more physical element of it, when you are no longer sitting down, that you get up a bit and stand, and you get to move around” (Excerpt, transcript, student interview, Karl Johan, ‘XII, XIII & XIV: Playing with peer teaching’). Karl Johan was referring to the ‘physical element’ of the felt sense of being playfully attuned, not sitting down, but moving around as what is playful for him. In the focus group interview in relation to ‘VI: Playing with space and

materials in nature' another student Julia reflected on the question of what makes her feel playfully attuned:

The first student to say something, Julia, reflects how she thinks it becomes playful as soon as she is not sitting at her seat. As soon as something different than her being a 'traditional listener', that different movements enter the teaching, that she doesn't just sit down. (Excerpt, field notes, focus group interview, 'VI: Playing with space and materials in nature')

Julia in the same way as Karl Johan sense the playful attunement in relation to movement of the body. The interview with the student Niels, attending the course of 'Innovation and entrepreneurship in school', pointed to the same experience of how doing something different in space is felt as playful, while at the same time extending the point made by Karl Johan and Julia mentioned above:

Well, yes but the playful approach at the [University College] where I attend, I think it [playfulness] often occurs when the teachers [i.e. educators] first of all do not need to get us out of the classroom we are sitting in, but in one way or another play with it, modulating it a bit, so that now we do something else, 'please seat yourself differently' possibly, and the thing about groups in the hallway is not really what I am talking about, but this thing where we suddenly, we are changing a little in the way we sit in school, instead of everyone just sitting at their computer, sitting and staring into the screen, then there is being modulated there... (Excerpt, transcript, interview Niels, 'Innovation and entrepreneurship in school')

The first thing Niels referred to as playful is a question of how to 'sit in school', how being playfully attuned for him can occur when doing something different in the space, when playing 'with it'. For Niels it is not experienced as playful moving from one place in space to another. Groupwork done in the hall is an example of a practice moving from one space to another, providing space for group work to function without disturbance from other groups, not a practice in space playful in itself as Niels reflected. They do not have to leave the space of the classroom. Referring to how they as students should not just sit and stare into the screen but modulate differently how they 'sit in school' is important to feel teaching as playful Niels explained.

Through the concept of the body schema Merleau-Ponty (2014) argues how the intentions of individuals is felt on the background of how one's own body is sensed

through the situations and the posture towards the tasks when being-in-the-world. Merleau-Ponty (2014) explains how the body schema “Reduced to a precise sense, this term means that my body appears to me as a posture toward a certain task, actual or possible” (p. 102). Instead of placing intentionality in an act of consciousness Merleau-Ponty (2014) states how intentionality is to be rooted in the body “Consciousness is being toward a thing through the intermediary of the body” (p. 140). Intentionality is not to be confused with the perception of the situation through a conscious “*I think that*”, but instead on the background of a pre-reflective sensing based in an action oriented relation with the world through an “*I can*” (Merleau-Ponty, 2014, p. 139).

Sitting down is one way of participating in the situation, primarily through the intentionality of being a listener, essentially not experienced as being playfully attuned as both Julia and Niels explain. Movement of the body in space, actively playing *with* the space, by modulating the way of being a body in the particularities of the space of the classroom and in this way appropriating space differently than through the intentionality of how a ‘traditional listener’ would be doing, not just sitting down, is essentially what makes an attunement towards a felt playfulness in teaching practices for both Julia, Karl Johan, and Niels.

Playlab as a space to play

Playlab at the educational institution can be viewed as a space for play (Lyager et al., 2020). Playlab is a space designed specifically at the educational institution to provide a space which are not scripted or tuned atmospherically (Pallasmaa, 2014, p. 82) to typical forms of educational practices such as for an example sitting at tables turning towards the front of the class (Lyager et al., 2020, pp. 8–36). Rather materials on shelves and large floor spaces are predominant in the Playlab at this specific educational institution, providing a space to possibly play with ways of teaching and ways of doing and participating for students and educators.



Figure 6 Different areas in the Playlab space at the educational institution with tools, shelves, and movable furniture

On a round tour at the educational institution in the beginning of the research period, an educator Benjamin, showing me and colleagues the Playlab talked about his own initial experiment with using this specific space. Benjamin explained that in his initial experiments with the use of the Playlab with students, he provided an intro of the assignment for the students while all were standing in Playlab together, after which all the students on their own initiative went out in ordinary classrooms when they were to do the assignment afterwards. Not a single group stayed in Playlab when doing the assignment. In the field notes from the conversation during the round tour in Playlab, I noted:

Benjamin reflects while we are standing in the Playlab together how it may be about the design of the task that made the table space in conventional classrooms a more convenient place for the execution of the task. It was a question and note task, he added. (Excerpt, field notes, round tour, educational institution)

Benjamin's experience with trying out Playlab as a different space for doing a question and note task, resulted in students going back into ordinary classrooms, as Benjamin supposed was because the students needed table space to note their answers down on

paper which was not in the same way present in the Playlab space. The students did not stay in Playlab and make the assignment because the space did not afford the right environing conditions (Dewey, 2015, p. 40) for the assignment given.

The space in-itself was not drawing students to stay in the space, but instead the experience and experiment shared by Benjamin provides an example of how space attunes affective structures of 'in-order-to' through students' posture or attunement towards the specific engagements in the situation. As the student Niels in the quotation above mentioned in the interview, moving from one space to another is not what is playful, but instead being playfully attuned towards the assignments can arise if something different is 'suddenly' done in the space, if instead playing *with* space or as Sicart (2014) formulates, when spaces are appropriated as "...spaces for play" (p. 50), leading back to the notion of the importance of how one is bodily attuned in particular spaces through the practices made possible.

During the experiment with 'XIII: Playing with peer teaching' the students played with how to take the perspectives of crew members at one of Columbus' ships. The 'teachers' invited their peers to write a letter under the tables in the classroom as if they were below deck, sailing across the Atlantic Ocean. In the field notes from the situation, I wrote "The students now placed under the tables, relocating and shifting their bodies around in order to position themselves for writing on their piece of paper, without the comforts of a chair and a table to sit at" (Excerpt, field notes, 'XIII: Playing with peer teaching').

Through Merleau-Ponty's point on how the intentionality is experienced through the body mentioned above, I argue that to play with position in space in the physical sense in that way also provides a way of playing with position in the metaphorical sense of taking another perspective, not least because it can be argued that not often teacher students are placed under the tables in the classroom.

Attuning towards space differently

In biology the spatial element was at the forefront of the design experiments. Anna was initially interested in how the field by designing through play, could in biology be experienced for students as more than a place for sample collections from the stream or from soil as field work often in biology in teacher education is associated with. In the design conversation about the first experiment in biology 'VI: Playing with space and

materials in nature', I noted Anna's explanation of her intentions for the experiment in my log notes:

...Anna explains how she wants the design experiment to include the professional didactic point of supporting students in being able to describe and use their own sensory experiences in different ways in the interaction with schoolchildren, in their own future professional practice. (Excerpt, log notes, design collaboration process, 'VI: Playing with space and materials in nature')

Anna wanted for the students to experience a way of connecting more explicitly with their senses in relation to space, for students to be able to utilize these explicated sensory experiences in their future teaching practices with schoolchildren. In biology in higher education, typically field work is associated with the valuable work of collecting samples for laboratory work, while at the same time getting to know the practices and materials associated with taking samples in a more embodied and experiential way (Scott et al., 2012).

Still, this way of engaging with and in nature through the field work practices, materials and intentions of biology seem to afford a specific way of encountering nature, potentially closing other ways of sensory attuning towards the space of nature. Designing for playing with countering this 'scientific' way of appropriating space then became center of the design experiments in biology. From 'VI: Playing with space and materials in nature' in the field on a cold and windy day in March, I wrote in the field notes:

Ten minutes later Anna instructs the students to spread out in the field and make the design experiment assignment. They head up in the hills with their clipboards and pencils, each finding a place where they can sit alone and do the assignment. The students are scattered all around the landscape...The first group comes back from doing the assignment. We stand closely together, students with their clipboards in hand, while reflecting on their immediate experiences of doing the assignment. Malik tells how he has been very aware of the uniqueness of nature out here and talks about pioneer trees and uncultivated land, dead trees, and moss and that he heard six different birds... Tor says the glug of the water has a calming effect, while Kathrine adds how she thinks the sound is the opposite of calming. Isa reflects how she thinks it was really interesting; she sat by the

stream and found that the longer she looked into the water, the more she saw, which she then drew into her drawing on the clipboard...Regitze felt the paper was a distraction from experiencing nature, because she became occupied with getting something drawn onto it.... Elizabeth as the last student to comment reflects that she thinks it could be a good exercise for schoolchildren, to teach them to be aware of new things in nature. After the reflection Nivi asks, 'What if you lose a child when you are out on field work and send them away for this exercise?' (Excerpt, field notes, 'VI: Playing with space and materials in nature')



Figure 7 Landscape where students are spread out during 'VI: Playing with space and materials in nature'

The way space was played with in this design experiment was by being in and doing something completely different in the space of the field, than what the students had been doing throughout the day, and at other times during field work in biology lessons with Anna. The design experiment was designed for the students to experience the field through sitting alone and drawing or simply observing, practices contrary to the rest of the day where the students were occupied with being actively engaged in taking samples from the stream. When gathered for the reflection on the assignment, the students share very different observations, both towards the space of the field but also on how they individually were affected by the sensory experiences during the assignment. Returning to Nivi's comment in Chapter 12.

In the reflection noted in the excerpt above, the last student who commented on the assignment Kathrine, reflected how using this sensory experience with schoolchildren can be a way of possibly teaching schoolchildren 'to be aware of new things in nature'. Opening the space for other ways of using and connecting sensory with space seemed to aid Kathrine, through her own sensory experience of being emplaced in space differently, to imagine new forms of practices with schoolchildren in her coming future practice of teaching in biology. This was the design intention and hope; for students to utilize their sensory experiences gained in biology class in teacher education to engage in different ways with schoolchildren in their future professional practice.

While it might be hard to catch sight of how this particular design experiment in biology can be said to attune students towards playing with ways of knowing if leaving out to what extent the students attunement towards the space, practices, and media in the field work is framed through the subject specific framing of biology. Recalling the notion from Heidegger of how one is attuned towards things and work is through the intentionality of being-in-the-world. While students naturally can have plenty of experiences attuning to nature in a more sensory open way in other arenas of their life, the specific atmospheric framing of going into the field as biology teacher students can arguably make it harder to view field work as something else than getting to know scientifically about this space.

Lennon (2015) explains, if "...restricting the features of Nature to those that can be accommodated within a scientific description, then we lose sight of the very characteristics of our environment which can make sense of our engagements with it" (p. 9). As already mentioned, Anna was interested in supporting the students being able to use their own sensory experiences in different ways with schoolchildren, here interpreted as exactly that of reengaging students' sense of engagement with nature, also within the subject of biology and attuning students towards how this engagement is not one distinct from their scientific interest.

By playing with the 'in-order-to' or affordances of the space is a way of essentially conceptualizing space in the design process as equipment in the same way as play media as dealt with throughout the previous chapter. Space was used as equipment in combination with 'other' play media as exemplified in the above; clipboards; pen and paper for writing and drawing through different play practices, while at the same time as described about 'VI: Playing with space and materials in nature' in Chapter 8, the

assignment was designed to be framed within a playful protective frame of purposefully not explicating a link towards future oriented practices making an open meaning production possible (Apter, 1990; Skovbjerg, 2021a).

These configurations and conceptualizations of the design elements seem to enable designing for playing with space in biology as a way of attuning towards other features of the space of the field for the biology students. By doing different practices, engaging atmospherically differently with space, ‘being aware of new things in nature’, enabled by designing through play, can ultimately lead to an understanding of particular spatial framings in more open ways, attuning towards knowing about and knowing in space differently.

Playing with space through different attunements

Viewing space differently also became a consequence of the design experiment where the biology educator Anna and visual arts educator Charlotte with my inputs, had collaborated around designing ‘X: Playing with biology and visual arts practices’.

From the focus group interview in class with all the biology students after both ‘X: Playing with biology and visual arts practices’ and ‘XI: Playing with field work practices’, I asked the biology students more generally at first, what their immediate thoughts on the experience of being together with the visual arts students in the field were:

Elizabeth: Yes, we talked, especially after we had been walking around in the landscape and looked, that the things we had looked at and noticed was very different. Where I had looked at the landscape and the plants and how it varied, she [visual arts student] had looked more at colors and such things.

Lotte Agnes: Yes

Elizabeth: So, there you could see that it was very different ways, there were different ways we took it in...

Lotte Agnes: Okay

Elizabeth: And we hadn’t been given any task, there wasn’t anything we had to keep an eye on, so it was just natural that we looked at it differently.

Lotte Agnes: Yes, so it was simply because of your ways of looking through your subject orientations maybe, that you had two different views on the landscape?

Elizabeth: Yes exactly

Lotte Agnes: Without you being asked anything?

Elizabeth: Yes, mm-hmm. (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices')

Here Elizabeth reflected how, while walking together with the visual arts student in the field in nature, they 'took it in' in different ways. Elizabeth as a biology student looked at the landscape and the plants and variation, where the visual arts student was more attentive towards colors, a reflection Elizabeth recalls they had shared while walking together. In relation to Elizabeth's comment, another student Sophie added, followed by Ellen in the focus group interview:

Lotte Agnes: There were so many wonderful hands, you also had one, yes?

Sophie: Well yeah, besides it was very cozy socially...

Lotte Agnes: Mm-hmm

Sophie: ..to meet a lot of new people, well yeah then it, like it has already been said, then it was very interesting with that shift in perspective where we probably are a little more pragmatically oriented with minerals and species of animals and so on, then it was fun also to have this more aesthetic perspective.

Lotte Agnes: Yes, it's very exciting. Yes, you also had [a hand]?

Ellen: We noticed, me and my buddy anyway, especially when we drew those flowers, we had chosen heather which had a lot of flowers on top of each other and I was very attentive to how I wanted to include all the petals, and the sepals and all the anthers and everything I wanted to have on my drawing, so there weren't that many flowers on my plant because

I wanted it all and how they were on top of each other.

Lotte Agnes: Mm-hmm

Ellen: And she [visual arts student] had almost this kind of purple mass of all these purple flowers on the plant, because we saw it completely different. (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices')



Figure Left: visual arts student and biology student making frottage of leaves in the field during design experiment; right: visual arts students and biology student drawing purple flowers from the Raunkjær-circle lying on the ground beside them

Experiencing walking around in the field and doing different practices, with the media involved, together with students who had visual arts as a different subject discipline than the biology students made Sophie reflect on 'the shift in perspective' which the view on the field provides when looking at it through these different disciplines. The practice of walking together with students from another subject discipline made the students reflect on how they had different perspectives on how they 'took in' the landscape, aesthetically or more pragmatic. At the same time, the practice of drawing made Ellen reflect on how she, down to the smallest details in the flora, looked differently at the flower and felt a different aim with the practice of drawing.

The design experiment of 'X: Playing with biology and visual arts practices' seemed to expose ways in which the biology students find themselves differently engaged with the characteristics of the environment than visual arts students. These different ways of being engaged and attuned towards the field made the students in these above reflections think about how knowing the landscape of the field can be diverse dependent on the perspective from which one is attuned. In this example, playing with ways of

knowing was a question of playing with perspectives on how the space of the field is known, how the students are differently emplaced and attuned in the landscape through their foreknowledge provided by their previous experiences (Sumartojo & Pink, 2019, p. 5) through their subject orientations. This way of attuning students towards ways of knowing was not easily predictable through the design process of the experiment but emerged through the students' social practices in the field, in interaction with the landscape and the different practices and media involved.

Being together with students with a different attunement towards space meant for the students to encounter space differently through the social practices and media and this aided students' atmospheric attunement in different ways potentially providing different ways of coming to know through space. Through playing with space in 'X: Playing with biology and visual arts practices', also different thoughts about students' own future professional practice were made possible, as another biology student Helena reflected on in the same focus group interview:

Helena: Well, I think it was cool, this thing about you got a different view on how you could do some introduction work especially in relation to biology class which is not particularly based in the scientific knowledge in biology, but this thing about noticing some characteristics by drawing them and all these things.

Lotte Agnes: Mm-hmm, yes.

Helena: It's something everyone can take part in as a start. (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices')

Helena explained how through the design experiment, she felt inspired towards how to approach the space of nature in future practices in Folkeskolen without the prerequisite of schoolchildren needing subject-related foreknowledge as a way of making field work become inclusive as 'something everyone can take part in as a start'.

A reflection resonating how, as mentioned earlier Lennon (2015) points to, that the meaningfulness of specific characteristics of nature might be easier to engage with if not dealing only with abstractions of nature through scientific renderings (p. 9). Helena's comment above seems to show how experiential and atmospheric attunements towards

different ways of being in space can provide students with different reflections for their future profession as coming teachers and how playing with space becomes meaningful for students as being coupled with these future-oriented reflections.

Being-in space differently together with visual arts students made for ways of playing with space and attuning, not only towards different ways of engaging in the particular space of the field, but also coming to know differently about the subject, space and future professional practices and an opportunity of sharing these reflections with each other.

Untangling space from finished structures of coming to know

While the above are closely linked to the subject of biology, this above analysis can be broadened out by interpreting it as dealing with how the co-production of the atmospheric configurations of spaces through different practices and different media can attune students towards different opportunities of engaging with and through these spaces. This provides an opportunity of relating the analysis as not only relevant specifically to biology teaching practices and demarcated only to opportunities of moving outside of the classroom or institution.

Capturing the atmospheres of mobilities of airplane transportation, Jensen and Vannini (2016) argue how there is no such thing as a typical atmosphere; at the same time, acknowledging that some characteristics can bring an experienced stabilization of the felt atmospheres over time (p. 30). The same can be argued in relation to the atmospheric experiences of the classroom. Even though there is no such thing as a typical atmosphere of a classroom, sedimentations of typical bodily practices in this space can provide a sense of dominance of certain characteristics which brings a felt stabilization over time. As focused on in Chapter 3, Edensor (2015a) explains through the conception of thick and thin atmospheres how these can be felt to be thick through the sense of belonging which comes from embodied practices continuously repeated over time. As Thibaud (2011) writes, ambiances, broadly determined as atmospheres “...gives rhythm to our movement and modulates the manner in which we move” (p. 209) emphasizing how atmospheres scaffold and shape being-in-the-world without being a controlling force. Although the sense of place is not being made up from one single and particular controlling atmosphere, but instead through an embodied and sedimented “...expertise developed over time...” (Sumartojo & Pink, 2019, p. 61),

repetitions of teaching in the familiarized space of the classroom or indeed in the field between students and educators, can make it feel as if these spaces in certain ways possess exactly that of a *typical* atmosphere.

In an interview with physical education educator Michael from teacher education, while talking about moving between the space of the classroom and the gym hall Michael casually mentioned “So then when we go into theory again...” (Excerpt, transcript, interview Michael, teacher educator). Naming the classroom ‘theory’ seems to point at how certain spaces in some situations privilege typical ways of being a body which in turn make for privileging certain forms of knowing, in this example knowing theoretically about physical education, suggestively marking a difference to what can become known in the gym hall. The reflections echo how, as also touched upon in Chapter 3, Montgomery (2008) argues through research on experiences of managing learning spaces in higher education:

Spatial management and movement can impact upon the construction of meaning within education and impact directly upon the dynamic of learning... We are urged to break out... Yet this is not so easy... learning environments (and, by implication, learning itself) remain ‘static’ and ‘bolted’. (pp. 122-123)

The examples from biology in the above pages makes it possible to point towards how playing with space can provide routes for playing with ways of new meaning creation through untangling spaces from their seemingly finished, ‘static’ and ‘bolted’ structures of coming to know by doing things through different bodily choreographies in space, with different media and potentially with different people.

Untangling the finished structures of coming to know seem possible through opening the felt sedimented practices by playing with the atmospheric conditions. In this way making it possible relating designing through play to playing with how students find themselves in the surroundings and coproduce the atmospheres in these spaces, whether being in the field or in the classroom.

Playing in space or playing with space

Space as a significant element in designing through play though seem activated when there were not only played *in* space, but instead played *with* space in the design experiments. Meant by this is space taken actively into account through thinking about

different ways of being emplaced in space in the design of the teaching practices as a way of 'breaking out' as Montgomery states in the quote above.

While setting a sharp distinction between playing with space and playing in space even as analytical distinctions is not easily distinguished while as mentioned through Dewey and Merleau-Ponty in Chapter 4 being-in-the-world is not the same as being a penny *in* a pocket. When play is conceptualized as a mood practice, the way players are emplaced are an ingrained part of play if the phenomenological perspective of moods is taken seriously.

However, a more elaborate focus on playing with space as equipment for coming to know when designing through play brings with it opportunities for other experiential aspects of the designs than when not playing with space intentionally.

This point especially stood out through the experiment of 'II: Playing with being learning space designers'. Because the subject of the importance of the physical space for schoolchildren's creative and innovative learning processes in students future teaching practice were on the agenda of the days' lessons, the plan for the design was for getting students to play with this theme.

The students were in the teaching online asked in groups to choose a toy figure, either one found at home and brought to the screen or choose one from Louise's picture on the PowerPoint slide (see figure 5, Chapter 9). All students had to individually come up with a persona for their toy figure. The vignette in Chapter 8 on the description of 'II: Playing with being learning space designers' is a glimpse into this part of the design experiment. After creating their toy figure personas, individual students were in separate online group rooms to share the characteristics of their toy figure with another student and design in an online program a friend furniture and a classroom which fitted both students' toy figure personas.

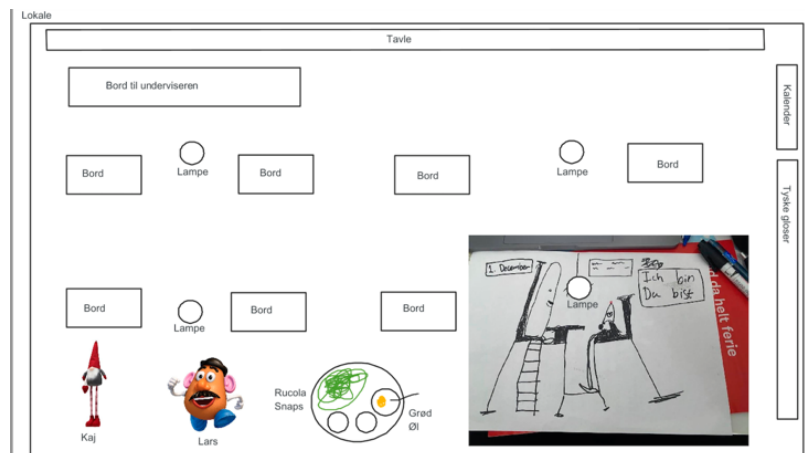


Figure 8 Student group product of classroom learning space design for the two fictive toy figure friends Kaj and Lars.

In the reflection round during the design experiment, Louise asked the students online what they can use this assignment of being a learning space designer for. One of the students Aske answered, “Well I think it is great to reflect on how there can be different needs for different schoolchildren and how some might need group work, and some might need individual work” (excerpt, transcript, ‘II: Playing with being learning space designers’). Aske’s reflection was related to the assignment as part of it was for the students to get an idea of how, in a learning space there are different needs for the individuals involved, and how these needs are not always easily juggled in a common classroom. Aske’s reflection was however not centered particularly around the spatial conditions for these needs which was the center of attention of the day, but more on the needs evolving around the practice of groupwork. No further reflections on Louise’s question were shared by the students, so they went on to talk about the opportunities and affordances of working with the specific online program towards ideas for the students’ future professional practice.

The students might have plenty of reflections on the spatial dimensions through being in the experiment as one is always already in atmospheres, and in this way provide opportunities for students in coming to know differently about space in this design experiment. However, contrasting this above reflection situation from ‘II: Playing with being learning space designers’ with a shared student reflection during ‘XIV: Playing with peer teaching’ I argue can support pointing towards a difference between the opportunities of playing *with* space through embodied and emplaced practices, with the above experiment where the students were not to *do* anything different with or through space, in this sense playing *about* space.

In 'XIV: Playing with peer teaching', the students who designed a peer teaching evolving around the 'Trial against Columbus' had made a role play scenario where the students were to play different roles in the trial, explained in further detail in Chapter 11. In the reflection round after the experience of being in the peer teaching of the role play scenario the students reflected together on how the organization of the interior of the classroom can possibly aid schoolchildren in finding safety in being asked to take on a role. The students reflected together on how the framing of the classroom provided through the reorganized furniture helped in underlining and making it visible through the interior space which section of the class represented a specific opiated perspective in the 'trial', not making it an issue of own opinions of Columbus' actions. The idea of using the interiors of the classroom as a tool for making schoolchildren comfortable taking on different roles and perspectives came from what the students already did in the classroom with the furniture in the experience with the peer teaching in the 'Trial against Columbus'. The students who acted as teachers in the situation of the trial, had rearranged the whole classroom while the other students were out discussing and distributing the roles between them in their groups.

In the reflection afterwards, one of the students August mentioned how he thinks what he calls the rhythm of the teaching was aesthetic and in this explained the feel of the rearrangement of the classroom:

... because we were supposed to have a tie on to be lawyers
and then Columbus sat up in the front and was in the hot
chair. And it was, the tables were pushed away so a stage was
made in some way, it was awesome (Excerpt, transcript,
'XIV: Playing with peer teaching')

Being in the experience of playing with space through rearranging the structure of tables by pushing them away and making 'a stage in some way' created an opportunity for the students to feel the effect of the importance of the spatial conditions of the classroom for schoolchildren to be comfortable and safe in the situation of a role play scenario, which they, as mentioned earlier, discussed in their reflections afterwards.

Attending to the difference in the atmospheric affordances of a learning space, whether in the field or in the classroom seem to yield new ways of perceiving and playing with practices and media providing opportunities of playing with different ways of knowing. Teaching *about* space as 'II: Playing with being learning space designers' to a certain degree can mark an example of a way of being attuned towards playing with ways of

knowing about space important and relevant for teacher students and add knowing *about* to the possible variety of playing with *ways* of knowing. Contrasting this with the unfolding of the specific peer teaching situation in 'XIV: Playing with peer teaching' further suggests how there is an opportunity of playing *with* space or appropriating space as equipment to play with through embodied practices differently than in the case where there is played *about* the theme of space.

Including space as an experiential part of the equipment for coming to know, instead of dealing with it as a theme on an emotional distance, seems to bring other reflections forth for the students through their experiential experiences with being in the atmospheres of playing with space.

These experiential ways of teaching can make subject-matters more visible, coming to matter differently to students or as Frølund (2016) formulate 'getting under their skin' (p. 17). An explication of the spatial aspect of knowing is not least an important element to make visible and for teacher students to get 'under their skin' in relation to students' reflections on their future professional practice of teaching in Folkeskolen (Wolf, 2019b).

Playing in different spaces makes for different affordances of media

While space as reflected above is bound up with ways of being a body and experiential aspects of teaching, space also conversely in specific ways affects the affordances of how media are interpreted and played with. In this way, it is argued how different spaces aid coming to know in different ways about learning media and practices. This became especially noticeable by moving through different teaching spaces during the study.

During the course of 'Innovation and entrepreneurship in school', the students struggled with the conversion from physically present teaching to online teaching. While this struggle was shared by most in the times of forced conversion to an online setting for teaching during the COVID-19 related lockdown, the shift in teaching space on the other hand also seemed to present a way for the spatial configurations of teaching practices to become especially prominent.

In 'TV: Playing with peer teaching online' students were to design an innovative and playful teaching for their peers. One student group of 'teachers' had designed for two student groups to listen to a tale and afterwards make a person characteristic through drawing or through materials as part of an imagined lesson in Danish in Folkeskolen. A

peer teaching situation which I also in Chapter 11 will take up further in relation to discussing the vulnerable part of giving feedback to peers and schoolchildren on their material productions. In the following however, the reflecting is on this peer teaching situation in relation to the theme of spatial configurations.

When the students talked about the peer teaching in their separate online group room after having experienced it together, Louise provided her comments as well. In the end of the reflection with the students, she asked them “So I would like you to say two words about what you think are distinctly innovative and creative in relation to what is normally done in this subject? What is the new part in your own opinion?” (Excerpt, transcript, ‘IV: Playing with peer teaching online’). To Louise’s question, one of the students Rebecca provided her thoughts on how the new part evolved around how the design of the peer teaching could ensure getting more interpretations from the schoolchildren through being able to visually see the different interpretations in the drawing or in the materials. Rebecca also reflected how this would have been emphasized if being together in a classroom instead of online, while here schoolchildren can be provided with different and more varied materials. Another student, Ingrid experiencing the student group peer teaching through the perspective of a schoolchild, added in relation to Rebecca’s comment:

Well can I add something? We were of course a little quick to go over this with the materials, and now as also Rebecca just said, had we been in a classroom together then it might have been easier to use more materials, but this thing about using materials to describe personal characteristics... it was also innovative... but it is of course difficult when you sit at home and it had to go a little quick. (Excerpt, transcript, ‘IV: Playing with peer teaching online’)

To Louise’s question on what is new and innovative in the students’ opinion about the peer teaching, Ingrid emphasized on the backdrop of Rebecca’s comment how the material part is what represented the especially new and innovative part. But at the same time reflected how being online is different than being in the classroom when the teaching evolves around materials. To Ingrid’s comment, Louise said:

I think that was a really good comment you had there Ingrid... it is perhaps newer to begin to build something and think choice of materials in, so your theoretical presentation on choice of materials... there I think you are really lifting

the academic content. So, the question is if you should leave out the part about the posters, and I know this is hard because we are online, but had you been physically present, should you then perhaps make the didactic choice and say that it is about the materials to get that dimension forth? (Excerpt, transcript, 'TV: Playing with peer teaching online')

In the reflection on the peer teaching, because of being unfolded in the online space, the subject specific discussion on what could be thought as the innovative dimensions in the peer teaching about making person characteristics from a tale is interwoven with dimensions of how this can be more or less emphasized dependent on the spaces that this teaching practice is unfolded through. Moving into the online space – and away from the familiarity of the classroom - arguably created a potential for the students and Louise together to reflect on the importance of the affordance of materials in this peer teaching and how these affordances can possibly stand forth differently in different spaces.

How the affordance of materials and practices changed through being in different spaces were also something which furthermore came up in the students' reflections in one of the other peer teachings in 'TV: Playing with peer teaching online'. One student group of 'teachers' had designed for two other student groups through the perspective of 'schoolchildren' to decorate a typical Danish period home living room from the Second World War era. The student group of 'teachers' instructed the other student groups how to unfold the assignment by designing and decorating the living room in an online program.

During the students' own reflections together on the peer teaching assignment, one of the 'teachers' Freya explained to the other students "Yes, but I have tried to do a similar course in an eight grade in an internship..." (Excerpt, transcript, 'TV: Playing with peer teaching online'). While this design experiment of 'TV: Playing with peer teaching online' as mentioned in the descriptions in Chapter 8, was an examination assignment for the students to design a playful, new, and innovative teaching to try out, Freya explained how she had tried unfolding this particular teaching practice in an internship in Folkeskolen. Even though in this way the student group leveraged on practices tried out before, they still had to rethink ways of doing it and with what media it could be carried out when being presented with a different spatial frame to teach through.

Moving between different spaces in this way made the students not only replicate practices but, in a sense, provided an opportunity for them to reflect and perform differently the teaching they had designed. The students in this peer teaching reflected together on the challenges and benefits which the online setting provided as media in contrast to the physical space of the classroom, where the assignment was to be made with cardboard boxes and pictures from magazines.

The students shared a reflection together on the benefits of using an online program as media for the unfolding of the assignment of decorating a typical Danish period home or the classroom setting with the cardboard boxes. Not only did the online setting as a different space than the classroom, provide a different way of thinking and performing, but the reflection on the assignment was also angled by the way the students had experienced it in a different space than online. This made the reflections on the benefits and challenges of using an online space and the media afforded in this space become informed by these prior spatial experiences. In this way through moving between spaces potentially making new and different ways of knowing about affordances of media and practices available.

Perhaps the most striking example of how affordances and the perception of learning media changed through bringing these into different spaces became noticeable during the day of experimenting with 'VI: Playing with space and materials in nature'. As a necessity of going out in the field and being able to do biology field work samples of the stream in the day's lessons where 'VI: Playing with space and materials in nature' were part, Anna brought various tools, having her car full of materials and learning media. During the introduction of the various assignments of the day in the field including the experiment assignment, Anna had spread out the materials and learning media on the gravel at the parking lot, where we were all gathered for the introduction, before walking out into the field. From the situation of introducing the assignments for the day in the field on a cold and windy day in March, I wrote in the field notes:

We line up in the parking lot in a group. Everyone is standing shaking a little with their hands in their pockets and their arms close to their bodies. The cold creeps in even though everyone is dressed for the conditions. Anna has already laid out all the materials and books from her car on the gravel of the parking lot. (Excerpt, field notes, 'IV: Playing with space and materials in nature')

The atmosphere of the place seemed to affect the way we all stood when given the introductory message for the plans of the day by Anna, the way everyone looked at the materials and how the materials and books were laid out. The experience seemed noticeably different from how it would feel to sit on chairs in the classroom and be introduced to the day's teaching program. What was most striking in the situation was for me how the books were placed. Placed on the gravel at the parking lot next to spades, nets, and waders.



Figure 9 Left: Anna's car packed with materials and books for the field work. Right: Books placed on gravel between nets, waders and other materials

The way the space afforded opportunities for presenting the materials without the convenience of table space in a classroom, was by placing them out on the gravel so everyone could get an overview of instruments, materials, and books. The books were placed as only one of many instruments used in the field to get a hold of the day's inquiries and subject theme. The theoretical knowledge which the books might provide seems to get another character through the different possibilities of presenting this in the parking lot than in the classroom at a table. The 'possible possibilities' of the books as learning media seem in this way to become different in different spaces through how spatial configurations affords different practices around these learning media to unfold. In this way, the abstract knowledge which the books can be argued to represent seems in a figurative way to become levelled with spades, nets, and waders. The atmosphere of the parking lot or the field thus arguably contribute to the feeling that it is possible

to get hold of or ‘catch’, echoing Merleau-Ponty’s point as mentioned earlier, the theoretical knowledge in the same way as it is possible to get hold of the net.

Having a focus on space in designing through play can in this sense be argued as an extension of the point around learning media made in the previous chapter through Merleau-Ponty, on how understanding comes through incorporating new instruments in the body. Here the point is additionally extended with how space makes available different ways of ‘catching’ or understanding the learning media, reorganizing the body schema and in this way different spaces potentially attune towards knowing differently.

Treating space as separate element of equipment when designing

As Jørgensen et al. (2022) argue in their review about space and materiality in playful learning in higher education, space do not necessarily become an explicit theoretical theme in relation to researching in the unfolding of playful approaches.

As it has been shown throughout this chapter, these above examples make it possible to reflect how a conceptualizing of space as equipment ‘in-order-to’ in the same way as play media, and not as a finished structure ‘in-itself’, can become part of the elements forming opportunities for attuning students towards playing with ways of knowing when designing through play. Even though space through this definition can be viewed as an extension of the element of play media in the perspective of play as a mood practice, if treated as a separate element when designing through play space at the same time arguably present the opportunity of framing differently the perception of learning media.

When moving between spaces the ‘in-order-to’ of media and materials can be reconfigured through the practices afforded through new spatial configurations. If taking the concepts of moods and atmospheres as foundational for how the individual comes to know, it is necessary to think of the body as spatial recalling Böhme’s (1993) argument presented in Chapter 3. How one is emplaced in this way matter for how one can come to know. Interpreting space as a separate element of play media equipment is arguably an opportunity in the design process when designing through play of taking into account how being-in-the-world is embodied and how one finds oneself attuned as a prerequisite for how one can come to know is essentially spatial (Böhme, 1993, p. 120; Merleau-Ponty, 2014, p. 149).

Space presents an opportunity when designing through play of attuning students towards playing with ways of knowing when being conceptualized as a distinct category of play media and when (social) practices in space are framed through a protective frame towards an open meaning production. Playing with space show not only as an opportunity when attuning students towards doing differently in and with space outside of the educational institution, but also in the classrooms when doing practices differently with space as a separate and important element of designing for coming to play with ways of knowing in teaching practices.

Including space as equipment as taxing in the design process

While playing with space is an opportunity when designing through play which can emerge from conceptualizing space as a specific and separate category of play media for coming to know differently, a challenge is how there can be a significant amount of work attached to attending to space as a specific and individual element in the design process.

As Dewey (2015) argues through the quote mentioned in Chapter 3, a part of the responsibility of educators is to take surroundings into account in relation to designing teaching practices. As Dewey (2015) describes, this demand is both a matter of the educator being aware of the general principle of how surroundings shape experience and in the more concrete unfolding of teaching the educator must be aware of how to utilize both physical and social surroundings for making experiences worthwhile. While stressing the ‘environing conditions’ as important, Dewey (2015) acknowledges how “This tax upon the educator is another reason why progressive education is more difficult to carry on than was ever the traditional system” (p. 40).

In the design process of designing teaching practices through play, to take into account designing for conceptualizing space as play media for coming to know differently and treating this as a separate element might in the design process become taxing for the educator. Indeed, as argued earlier, space in the educational context can afford seemingly typical atmospheres for both educators and students, privileging perhaps certain ‘static’ or ‘bolted’ structures of coming to know.

Edensor (2015a) writes in relation to atmospheres and the theme of light festivals, how “These festivals break up the routine enactments and normative rhythms of everyday urban life, disrupting the usually unreflexive apprehension of familiar spaces. Habitual,

quotidian performances by inhabitants... undergird the common sense meanings feelings and functions of familiar places” (p. 340). As Edensor argues, special occasions such as light festivals can aid a disruption of how familiar places are felt and prescribed meaning and function in contrast to habitual performances in these places. To provide the same disruption of how places feel and come to make meaning in everyday teaching practices, can become related to rare occasions in the same way as festivals because of the tax this might put on educators while place is potentially often familiarized in the educational context. In Casey’s (1996) terms, going from pre-reflectively familiarized place to reflection on or through space might not be possible ‘in a fairly short stretch of time’.

In this way, a challenge which space as an element of designing through play potentially presents can be how to make designing for playing with space into more than an occasional event of ‘enchanted’ (Lennon, 2015, p. 11) these familiarized places, and activate space continually as equipment for attuning students towards playing with ways of knowing in teacher education.

Chapter 11: Playing with performance

As mentioned in the Introduction, educational research suggests playful approaches to learning as a way of countering a performative culture in higher education in general, while also pointing to how performance can make it difficult for students to participate in these teaching practices in the first place. This makes performance stand forth as a theme which also in the context of this study in teacher education can potentially bring challenges towards playing with ways of knowing.

In this chapter, performance is to be analyzed and nuanced as a theme when designing through play. Both presenting opportunities of showing what students are capable of doing, knowing and being at the same time as presenting a hindrance towards these same opportunities.

Viewing performance from a meta-communicated framing of ‘this is play’ by designing through play is suggested to possibly provide atmospheric conditions where students can feel there is freedom to play in the performance of assignments in teaching practices. Through productive constraints and by taking performance lightly, it is argued how designing through play in relation to performance provide an opportunity for attuning students towards exploring theories and practices together with educators in performative ways.

Getting it exactly right makes a playful approach disappear

In the interview with the student Niels, who had attended in the unfolding of the various design experiments during the semester of ‘Innovation and entrepreneurship in school’, I asked him both what felt playful for him to participate in and what made him feel less playfully attuned in teacher education in general. On the latter question, Niels reflected:

Well, often it is, it actually starts already when you are given the task and the way the educator speaks about it, because sometimes you can hear it in the way it is said that there is a very clear structure, there is a very clear goal where the educator wants to go. To say; it is precisely this you are expected to do. For example, now I am working on my bachelor project, there are clear guidelines on exactly what I must fulfill for the assignment to be approved. There I can feel that my playful approach disappears completely because I know, first of all, there is a huge consequence if I don’t meet the formal requirements, so I focus on those.

(Excerpt, transcript, student interview, Niels, 'Innovation and entrepreneurship in school')

Niels explains how experiencing opportunities for being playful are already made possible or impossible through the educator's explanation of a task. The educator's way of presenting the task from the outset determines whether Niels feels he can approach the task playfully or not. Niels explains how it is not simply the instructions of the task but seems to point toward the importance of as mentioned through Bateson (2000) in Chapter 2, the metacommunicative message following this instruction.

Niels point towards how both a determined process of the assignment and a determined goal of what is expected to finish the assignment, underlined by the feeling that there is something specific the educator wants for him as a student where 'there is a very clear goal where the educator wants to go' hinders him being playfully attuned.

Arguably, the way the educator presents the assignment seem to conjure up a specific atmospheric feel for Niels in these situations attuning towards the understanding of how some assignments are not to be played with. At the same time the notion of the task being important in order to carry on with the studies makes Niels feel his 'playful approach disappears completely', making consequences pervade the situation. The bachelor's project as Niels refers to, often representing one of the last exams in teacher education, has formal requirements which the student is required to obtain to pass the examination (Ministry of Higher Education and Science, 2015, p. § 14). As Niels refers to, if he does not pass the examination there is as a huge consequence for him personally, the most prevalent being the risk of not becoming a teacher.

According to Apter's (1990) theory of adult play, as explained in Chapter 2, a key to experiencing practices as play, necessitates that no consequences of the practices involved in the play situation outside of the frame of play are experienced for those playing. Playing in situations where there is a clear structure of how to perform and to get things 'exactly' right feels personally and professionally too risky for Niels, challenging him in being playfully attuned, a point mentioned in the Introduction, as Jensen et al. (2021) also emphasize.

Performance in day-to-day assignments

However, framing the assignments as playful in teaching practices seem not only challenged in teacher education in relation to externally evaluated tasks such as

examination tasks, but additionally by smaller day to day practices of coming to know in teaching situations.

In a focus group interview in biology one of the students, Ava, reflected on the felt difference between 'X: Playing with biology and visual arts practices' where practices with visual arts students were in center of the field work and 'XI: Playing with field work practices' with only biology field work practices:

The second time there were like some demands on us, there was a little more at stake because it was something we had to take home and something we had to use for something... So I think there was a big difference between them... it was in a completely different way that 'okay we'll just have to get these taken here because we have to use it for something at home'... there wasn't that time to just say 'Oh, try to look here' and sort of take a side track, go on a discovery of something, I don't think there was that much time for that because we had a lot of things on the agenda, which like were important, something we needed to use for something. (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices')

The difference for Ava between being in 'X: Playing with biology and visual arts practices' and 'XI: Playing with field work practices' was the felt temporal aspects of whether there was time for just being there, following an explorative mode of being in nature discovering something on her own, taking 'a side track' or reversely only time for 'important' things to do in order to take measurements home for further use in following lessons.

Asking the biology students in the focus group interview if they could imagine ways of doing these forms of field work practices of measurement assignments playfully, one of the students, Nanna reflected "But I am sitting here thinking that bringing home exact measurements is difficult to do playfully, because it [exact measurements] should ideally be there for it to make sense to use them" (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices'). The notion of bringing exact measurements from the samples home from the field to further work with these in the biology laboratory counts for Nanna as a consequence which can hinder turning this form of field work into a practice which can be played with. Taking important measurements or samples in the field are thus not

only something which does not feel playful but is also something which is hard to imagine could become playful in any way. The need to get measurements right can to a large extent hinder being attuned towards playing according to Nanna, because these measurements should ideally 'be there' to use them in the ongoing work.

In measurement practices of this kind in biology field work, because of the need to get it precisely right there is 'a little more at stake' in such practices for the students, they feel. These sample measurements which the students refer to in the reflections above were meant exclusively for their own further work in the laboratory in the next teaching lessons. Even though not something forced upon them for external evaluations of their performance as students, the sample measurements in biology are for the biology students still not something to play around with. They are important to the students and an important part for their further explorations in the next lessons. Consequences, outside of the situation in these teaching practices, are related to doing the practices right, enabling to get something out of the next lessons or laboratory sessions in biology. Consequences are therefore not only about performative risky consequences through an assessment done by the educator or at an examination situation.

Being attuned towards playing seem to be challenged by and challenges this form of representational knowledge, where for instance sample measurements are to be representative of objective conditions of soil. Both in terms of how students are to take the sample measurements correctly, but also challenging opportunities of exploring, taking a sidetrack, doing something different when being in the field.

Cailliois (2001) describes how there needs to be some form of uncertainty left for play to occur and further argue how activities in play are essentially "*Uncertain*: the course of which cannot be determined, nor the result attained beforehand, and some latitude for innovations being left to the player's initiative" (p. 9). The practice of taking the measurements is done through a specific practice already explained in sheets handed out to the students beforehand, where measurements additionally are to be noted into schemas. The assignment of noting measurements into a schema through some specified practices of doing so, leaves the space for innovative practices 'left to the player's initiative' and hence the uncertainty needed in play diminished.

When the feeling that choices are being limited, students seem to feel that there is no space to play with how the assignment can make sense in different ways and here doing it right can become a hindrance towards playing with how it is being carried out. The

consequences of students' performance in the situation are not one of an examination assessment, but instead about getting it right in order to come to know something specific through these measurements in the following lessons. As such there is one specific way of doing and arguably one way of creating meaning in the situation and students point to this as being important, but not playful or to be played with.

Whether the assignments in teaching practices are formal assessment assignments or assignments given in relation to daily teaching practices at teacher education, being attuned towards playing with ways of knowing is challenged when it feels too risky in some situations to play around with ways of doing for students and when there seems to be only limited options for participating and coming to know.

Performance in front of each other

While these mentioned forms of performance can present challenges when designing through play another interpretation of performance as performing in front of others "...the expression that he *gives off*..." (Goffman, 1972, p. 14) showed to present a concern for both students in the doings of the teaching practices and for educators in the design process. Performance as performing towards meeting external metrics to be approved and performance in the sense of performing in front of each other is differentiated notions of performance. Still, they are in a certain sense interweaved as I will return to further below, while here staying with the latter in the following pages.

In the design collaboration with Christian towards the design experiments 'XII, XIII & XIV: Playing with peer teaching', performance towards external metrics were not in focus. Instead, a focus on students' level of comfort and willingness to perform in front of each other became a central focus point in the design process. When designing for students to teach each other through an imagined course through the characteristics of as-if or pretense (Caillois, 2001, p. 21), of teaching fifth grade schoolchildren, the question arose on how to frame it playfully, avoiding turning this design experiment into a performance ridden situation in front of each other.

Christian especially expressed a sensitivity towards not wanting students to take on a character, but rather unfolding it as the students found most comfortable. Equally he expressed the concern that the students would object to it as well, resulting in risking students not turning up in the lessons of peer teaching. Not exactly unfamiliar with the experience of suddenly being placed in a situation of having to perform improvised

roleplay for one's peers in Folkeskolen, I was quick to agree on this point as a design focus.

In the first introduction to 'XII, XIII & XIV: Playing with peer teaching' Christian explicated for the students how these design experiments were not intended as a situation of role play. Christian explained to the students:

We are going to imagine that we are teaching fifth graders. When we teach each other, that means we don't have to sit and play roles and play that my name is Emil and I'm in the fifth grade and I sit and pass paper balls. In other words, we don't have to go into roles, but we have to imagine that the teaching we do is for a fifth-grade class, so we have a perspective or an age group to analyze and reflect from. (Excerpt, transcript, 'XII, XIII & XIV: Playing with peer teaching')

Imagining teaching a fifth-grade class, without making students act as if it was a real fifth grade class of schoolchildren was a way of underlining how these peer teachings was not intended as a role play, but a means of having 'a perspective and an age group to analyze and reflect from' together in class. Not only being a matter of the students not performing as schoolchildren, but also a matter of how these roles might push the 'teachers' into a performance not intended in these peer teachings.

In addition to this issue of roles, Christian and I designed for other elements in the peer teachings for trying to insulate the experiments against a strong atmosphere of the feel of performing in front of each other as a non-playful assignment. Beside the framing of the situation through Christian's introduction as an explicitly communicated message of how this was meant as an assignment of playing and experimenting inside a protective frame, the students were also to teach in groups as a matter of not teaching individually in front of the whole class. Further, Christian and I decided in the design process upon reflecting together in plenum at the end of the day after finishing all the groups' peer teachings, to not make it an evaluation on each specific peer teaching performance, but more generally as an open reflection on the experience of all the peer teachings of the day.

The students did turn up to the peer teachings and did not express any explicit reluctance with neither being part of the overall design of the peer teachings as 'schoolchildren' or teaching their peer students as 'teachers'. Albeit a more explicit reflection on the form of performance of being comfortable or uncomfortable with

how one is presenting oneself in front of others came up through one of the peer teachings.

Performance as transgressive or playful?

One of the student groups had designed for a role play scenario to be unfolded in class during the lessons of 'XIV: Playing with peer teaching'. As a result of the peer teaching evolving around the learning media on Columbus for fifth-grade schoolchildren, and through the invitation to exceed the learning media, the 'teacher' group had arranged for a role play of an imaginative trial where it was to be decided whether Columbus was guilty of crimes against Indigenous peoples of the Americas or innocent of these charges.

The students being 'teachers' sent the other students out of the classroom in groups to agree upon who was going to take the different peripheral and main roles in the role play scenario to be carried out later when they were all to meet again in class. I walked around and listened to the different group conversations about who should take on the different roles and their preparation for these roles. Some of the groups were laughing and joking around with how they were to decide who should take the main role as prosecutor and defense lawyer, while everyone seemed to prefer taking on a more peripheral role as part of the jury committee, not being in the center of the situation in the following role play scenario. The groups were all provided with role cards, where the roles were stated as well as their appointed opinions in the trial was explained.

When the students and I came back to the classroom, the group of 'teachers' had rearranged all the tables into a courtroom setting and displayed a picture of a stereotypical wooden wall of a courtroom on the projector in the classroom. The main character roles – prosecutor and defense lawyer – was to sit in the center of the classroom and the peripheral characters – jury – were placed in the back of the class.

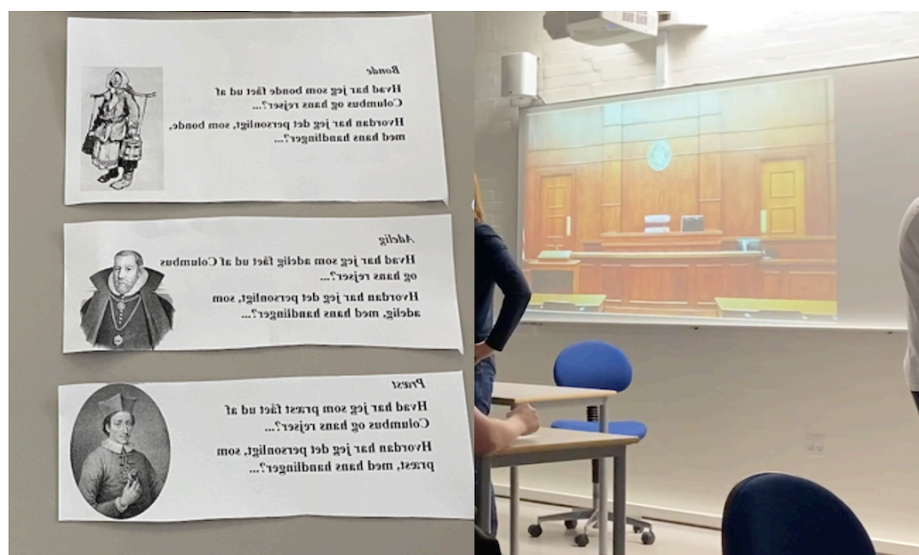


Figure 10 Left: Example of role cards for a farmer, noble, and priest as part of the jury in the 'Trial against Columbus'; right: The wooden courtroom wall projected in the classroom during the peer teaching of the 'Trial against Columbus'

In the reflections in class after the different peer teachings of the day, a discussion about being comfortable with performing the different roles in class in front of each other in the trial against Columbus peer teaching was taken up. Jens which had been in the group of 'teachers' designing and unfolding the role play scenario and acted as a judge in the scenario, asked the other students attending through the perspective of schoolchildren "Was it transgressive being a lawyer?" (Excerpt, transcript, 'XIV: Playing with peer teaching'). The question whether the lawyer role was transgressive to play, in the acknowledgement of these roles were the ones being in the center of attention in the unfolded role play scenario, led to a reflection in class about prerequisites for enabling schoolchildren in Folkeskolen find comfort and safety in such situations of being asked to take on a role.

Experiencing how the playful atmosphere of the classroom was intermingled with some students perhaps feeling vulnerable in having to perform in front of each other, allowed students to imagine different ways of making a role play scenario comfortable, safe, and potentially enjoyable and playful for schoolchildren in practice. The students imagined in their group reflection how they can support schoolchildren being comfortable in the experience in their future practices by providing schoolchildren more time for preparation of the role, and more concretely rearranging the furniture in the classroom as already touched upon in Chapter 10. Wolf (2019) points towards how children need to feel an atmosphere of safety in the learning situations in school as a prerequisite to be able to learn something (p. 137). A reflection about how to provide experiences of

safe learning environments for schoolchildren, here in relation to being ‘put on the spot’ in a role, becomes relevant for teacher students considering Wolf’s point in relation to students’ future professional practice.

On the question if it was transgressive being a lawyer, one of the students Henrik pointed to how he could have used a little more time in the preparation of being appointed as a prosecutor by his group. Later in the reflection, in relation to the issue of laying the ground for schoolchildren to feel comfortable in playing along during such role play scenarios, Henrik further reflected:

Maybe a bit more emphasis on comfort and feeling safe for the schoolchildren, because the more one is prepared, the more comfort they can bring with them from the start, the safer they might feel in taking the role on. (Excerpt, transcript, ‘XIV: Playing with peer teaching’)

Guided by the experience of being in the role as prosecutor and feeling the need for more time, seemed to enable Henrik to reflect on how preparation can lead to schoolchildren not feeling an assignment of taking on a role as transgressive, but instead feeling comfortable and safe in these kinds of situations.

Because the ‘teacher’ group wanted to try out the role play scenario of a trial against Columbus in their peer teaching, the concerns shared by Christian and I in the design process of these design experiments about the element of performance as playing roles in front of each other were explicitly taken up in the reflections of that peer teaching day. The students pointed to some of the ways in which such situations can hinder atmospheres of being playful, making this form of performance in front of each other equally as challenging as the issue of performing towards external metrics when designing through play.

Some of the students seemed to be able to find the situation very playful. An example was the student Mathias, which during the peer teaching situation of the ‘Trial against Columbus’, remarked loudly and with great enthusiasm on his way into the classroom after the group work on the assigned roles “This is totally awesome this teaching” (Excerpt, transcript, ‘XIV: Playing with peer teaching’). The overall feel in the classroom in the unfolding of the particular peer teaching with the trial was one of excitement, engagement, and fun. In the interview with Christian after the unfolding of the design experiments, in a reflection on this specific peer teaching Christian also reflected how

“Well, it was really great. It was very situated” (Excerpt, transcript, educator interview, Christian ‘XII, XIII & XIV: Playing with peer teaching’).

Still, some students were more hesitant in the unfolding even though everyone participated. This only underline how atmospheres and moods emerge and recede and is essentially uncontrollable, as Sumartojo and Pink (2019) as mentioned argues and as also discussed in Chapter 9, in relation to keeping a continuous engagement with the same learning media throughout.

At the same time, what seemed to happen when designing through play in these peer teaching situations, as exemplified above with the student Henrik’s comment, was how there were provided a space for reflecting together around these differently felt atmospheres of the situation. The experience of playing with peer teaching in the classroom, when playfully framed throughout, even though it was a performative situation seemed to provide a space for reflecting on difficult situations and feelings through own experience. This helps to underline how the opportunity of designing through play is not necessarily one of always creating play moods or attuning towards playfulness, but one of making space for expressing different ways of feeling in teaching situations.

In this way, designing through play through a playful protective frame as well as providing space for an open meaning production seems to aid in making performance in front of each other not only into a challenge but can also lead to different ways of knowing for teacher students. This point as an element of designing through play is to be elaborated upon in the following, while the issue of performing in front of each other seems not only entrenched in the characteristics of pretense in role play situations.

In play performance is part

In ‘VIII: Playing with spin the bottle’, as mentioned in the description of the experiment in Chapter 8, Emma and I worked on designing through play for finding ways of teaching in the theoretical theme of the day’s lessons through being in the atmosphere of a play situation. In the design process, Emma and I talked about the experiences which the students might have by participating in the play situation we designed for of spin the bottle. When playing spin the bottle - students choosing a card from the box where a feeling is described with one word, displaying this feeling silently with the body

towards a partner in the circle who is to guess what kind of feeling this might be, while others are watching - is essentially a performance.



Figure 11 Blurred image of a student choosing a card with a feeling from the box in the middle of the circle of students during 'VIII: Playing with spin the bottle'

Emma and I were aware that not all students might find the practice of performing to be playful and might even find it uncomfortable in the framing of teaching. The uncomfortable part of being in the play situation was a point in itself. Emma explained to me during the design process, how she wanted in some way to design for students to reflect on how their own capacities towards being aware of others while being aware of themselves were affected in a situation, where performance was part. Still, the design experiment was not a matter of providing students with an unpleasant experience, as the intention still were to frame the situation as a playful one. Instead, we experimented with how designing through play could provide the students with embodied experiences with the theoretical concept in center, through a performative play situation within the 'protection' of a playful framing (Apter, 1990).

Performance practices provide an important role in the creation of play moods according to Skovbjerg (2021a, p. 124). The tense play mood follows performance practices of showing off and playing with one's own style:

This mood is related to the common practice of DISPLAYING... it is a matter of taking the stage and letting others judge the play activities. The characteristics are bling, swagger and performance; the mood is extrovert and noisy, and the whole point is to show off for an audience. (Skovbjerg, 2021a, pp. 124–125)

Spin the bottle as a play situation seems to be exemplary for the play practice of displaying. When the bottle points at a person, one must take 'the stage' and 'letting

others judge the play activities'. In the case of this design experiment, taking the stage and letting others judge the activities was about making bodily expressions so that one's partner or the other peer students could guess the feeling displayed. Emma facilitated a play protection frame in the play situation by being very clear on the rules, as Apter (1990) emphasise as one of the routes for facilitating a protective frame; how no one was to laugh at each other while performing the feelings, and how everybody could jump in as lifelines to help guess the feeling, so that it was not a question of the partner having to get it right, but a common project of helping each other out. Additionally, Emma framed it at the outset as just something they were to try out and play with, and not something serious. From the situation of playing spin the bottle, I wrote in the field notes:

The students laugh a lot during the play situation... One of the students, Luna makes a little funny situation when her partner and the others after a few tries do not guess her feeling... This seems to loosen up the situation for those being visually uncomfortable in the situation. Their bodies relax a little more. All the students are very focused on the practices now. (Excerpt, field notes, 'VIII: Playing with spin the bottle')

Luna making the funny situation is displaying her performance, which essentially 'failed' because her partner did not guess the feeling she was trying to show. Making failure a part of the possible repertoire of the play situation, seemed to make the judgement of the performance becoming playfully framed. In the situation it seemed to loosen the atmosphere so the other students could relax and feel the situation more playfully as well. While Emma was aware of doing everything to frame the situation as playful as possible and the students laughing together all the way through indicated how the atmosphere in general was playful, the playful framing was not unimportantly helped along by Luna taking up the play practice of displaying through her 'failure'.

Gathered in the classroom after the play situation of spin the bottle, the students were to reflect together with their partner on the overall experience of the play situation. After the initial reflection, I wrote in my field notes:

Emma now asks the students to discuss how they experienced each other during the exercise, not when they were the ones 'doing the feelings' but between performing the feelings for each other. A lot of the students immediately

start laughing, looking at their partner, some with a surprise in their looks. Then they start talking together. The sound volume is now ear deafening in the classroom. Emma looks at me with what seems an equal surprise in her look as the students just had. The sound volume is very different from the first part of the lessons before the play situation, going from silence to loud... Emma asks the students to reflect together in class about what they just talked about... Some of the students raise their hand and radically question their own practices experienced in their internships. (Excerpt, field notes, 'VIII: Playing with spin the bottle')

The situation unfolded through 'VIII: Playing with spin the bottle' provided students with relevant reflections on the theoretical concept through the experience of being in the atmosphere of a play situation with play practices of displaying. Students showed through their reflections in plenum how the play situation provided them with an experiential knowing of the concept. Simultaneously through the atmosphere of the play situation coming to question differently their own practices were part of some of the students' reflections shared in class. The example highlights a combination of aspects around the issue of performance when designing through play in the educational context. One dimension is how atmospheric configurations of play practices of displaying, essentially performing, have the potential for play moods to emerge and attuning students towards playing with ways of knowing countering the view on performance solely as a challenge when designing through play as also a point made earlier. Another dimension is how the complexity of designing through play in an educational context consists of not only being aware of the influence from practices of performing towards external metrics or in day-to-day mundane teaching activities. Instead, it is further influenced by how performing in front of each other feels potentially uncomfortable and risky for students to participate in and in turn hinder students' active and situated participation in the processes of knowing. Not only in relation to role play scenarios as touched upon in the example with the 'Trial against Columbus', but also in relation to other forms of practices designed through play where performance is part, potentially leading to an issue of impression management (Goffman, 1972, p. 231). This issue when designing through play in relation to performance I will elaborate in the following through Karl Johan's reflection in the interview with him.

Impression management and taking a 'bit of a role' on

In the interview with Karl Johan, a student who had taken part in the play experiments of 'XII, XIII & XIV: Playing with peer teaching', I was curious how he experienced presenting the teaching he and his study group had designed for the other students. Karl Johan reflected:

Karl Johan: I don't have a problem with it. But I also feel like that, I would rather know those I do it for. If you asked me to do it for 200 strangers, I'd probably be a little, uh, not anxious about it, but not too much into it either. In other words, I will also be a bit cautious about being a bit silly, something that might well be a thing for me that inhibits me in such a situation.

Lotte Agnes: Yes, so it would not become very playful for you, if you were asked to do it in front of 200 students which were strangers...

Karl Johan: No, no, no, no, no, no, no.

Lotte Agnes: No, so it has something to do with if the class knows each other well, then it might be easier for you to present in front of others?

Karl Johan: Yes, yes, just that there is some kind of relationship where you also know a little; Okay, maybe it's a bit of a role I'm taking on. That's not necessarily how I am.

Lotte Agnes: It's something we play.

Karl Johan: Yes, exactly, that this is what takes place in a context where we all know the principles involved.
(Excerpt, transcript, student interview, Karl Johan, 'XII, XIII & XIV: Playing with peer teaching')

Karl Johan pointed to how teaching strangers is not something he would as such be anxious about, but he would prefer not to, if he was supposed to present under the same principles of playing as was part of the teaching practices of 'XII, XIII & XIV: Playing with peer teaching'. Being mutually aware of the metacommunicative principles as contextual conditions of the teaching is prerequisite for Karl Johan to act silly and

take a bit of a role on to play with the teaching practices. What Karl Johan was pointing towards can echo Goffman's (1972) notion of impression management understood as the work the individual continuously do in order to manage what impression others have of the individual (pp. 231-236). Through Goffman (1972), I argue how this continuous impression management done in everyday life, can make it difficult to enter the playful protective frame and take on a role as often an essential part of play as Fink et al. (1968) describe (p. 23). Karl Johan reflects how it is necessary to at least maintain some level of relationship with the other students for them to know that this is only him playing but 'that's not necessarily how' he is or wants to be seen by the others. Karl Johan indicated that the teaching he was carrying out together with his group might not be the kind of teaching he would do in a setting where those being taught was not attuned to the same principles. This would become a performance not framed through a playful atmosphere, but performance in a non-playful frame, and he feels this would make him teach in a different way, even inhibiting his ways of doing in the situation. The metacommunication provided by the relationship the peer students have with each other around the playful needs to be affirmed for enabling him playing. Karl Johan is not pointing to the need for the relationship to be an especially established one, but more how he needs to be sure 'there is some kind of relationship' where everyone is familiar with the contextual conditions for how he acts and why in the situation and at least knows him a little.

Understood through Bateson's (2000) explanation of the meta-communicated framing needed to communicate how 'this is play' mentioned in Chapter 3, Karl Johan explained if being able to incorporate the play principles asked of him in the peer teaching he needs to be sure that his actions denotes the role of a teacher, but it should not denote what would normally be denoted by this role. These practices denote a teacher role and doings of teaching but should not be understood to denote what in normal circumstances would be denoted by his actions in this frame of reference in the classroom.

How the performance practices of playing with teaching in front of the other students and educator are evaluated becomes important interweaved with the impression management work where the framing determines if students are able to play with their own style of teaching, with what impression they present or *gives off*, perhaps 'being a bit silly'. As Jensen et al. (2021) in their review of playfulness in higher education in research

find how students can feel it to be challenging participating in play situations involving the potential of failure (p. 9). Through Karl Johan's comments and through how some of the students in the play situation mentioned above with spin the bottle initially were uncomfortable in the performative play situation, arguably failure is to be defined broadly as not only potential failure of not meeting external metrics, but furthermore failure in not providing the right impression. This fear of failure in not providing the right impression might become especially present if the students are unsure what the meta-communicated framing of these actions are as Karl Johan reflects, arguably making it difficult for students to feel there being no consequences outside of the practices they are involved in.

But, if practices in teaching is evaluated through the lens of play, by providing a meta-communicated protective framing, the potential seem to be when designing through play for creating a space where performance present an opportunity for attuning students towards not being 'cautious about being a bit silly' and being able to take 'a bit of a role' on, essentially playing with doing in different ways in teaching practices.

Playing or playing it safe

Returning to the interview with the student Niels and the issue of how it becomes difficult to stay within a frame of play when something is at stake, Niels explained how assignments where something is at stake in the assessment of the assignments are experienced by him and his fellow teacher students:

And then I don't take any big chances because it's something like, I mean, I phrase these tasks as something that must be passed and over with. And they are a mean to get on instead of an aim of getting more knowledgeable, and I think that is terrible in professional education, when the tasks we, which are used to evaluate us, to measure ourselves on, becomes tasks that we actually fear and are tired of instead of something that we could, well, have the energy to say 'it will be great to do this task, now you just have to, now I have to show you what I can do, instead of playing it safe', because you know there is something really important at stake, which many of us already are having a little bit difficulty with I can sense. (Excerpt, transcript, student interview, Niels, 'Innovation and entrepreneurship in school')

Niels referred to the tasks where his performance is assessed, such as the bachelor project mentioned in the former related quote, as something to be passed and over with and not as playful. In these incidences, Niels does not take any big changes. Niels seem to confirm an experience of the argument from Nørgård et al. (2017), posing that a growing interest in measuring students' performance through metrics in higher education create learning environments of "...teaching to the test..." (p. 272) where students fear failure and therefore avoid risk-taking.

Shulman (2005) promotes the reflection that a healthy level of anxiety or fear is at stake in any situation where students in professional education have to be actively participating (p. 57). Shulman's point is important to consider, nuancing the discussion on fear and avoidance of risk-taking when as in this research, dealing with designing to facilitate involvement from students and promote configurations for attuning students towards playing with ways of knowing. The fear Niels talked about seem contrary to the kind of fear Shulman refers to, while at the same time Niels expressed a wish to be able to show what he can do. Niels explained how he does not become more knowledgeable, instead working with these kinds of assessment assignments in a mode of being merely a means to go on. Fear influences if he can play with the task and if he can view the task as something to get to know something more from or if it is framed only as a necessary step to be able to proceed with the education or ultimately become a teacher.

While Niels in the interview was very particular about fear of the evaluation of the performance as a hindrance towards both knowing and playing with the task given, the atmosphere which allows playing for him does not include an evaluation of whether the task is given by the educator or not. Niels explained how he wants to be able to say, 'it will be great to do this task' and 'now I have to show you what I can do, instead of playing it safe'. Through being provided with a situation of being able to play with the task, Niels reflected how he wants to show what he can do, echoing characteristics of the play practices of displaying in the play mood perspective as described previously. Niels' wish for not playing it safe can be viewed as an expectation of putting himself on the line in the sense of what he can do with the task given, playing with the unpredictable, showing off and through this get a sense of looking forward to the task instead of fearing it.

Playing with the unpredictable and his own style seems for Niels to be a matter of coming to know something in a different way. Skovbjerg (2021a) explains about the

tense play mood, followed by play practices of displaying “The mood is influenced by openness and an expectation of change in the production of meaning; not just as a production of meaning, but also as an expectation of the unpredictable as it relates to one’s own style” (p. 124). In the interview I asked Niels when he finds that he learns the most in teacher education and he described an experience where he tried playing with the unpredictable and not playing it safe in connection with an examination situation:

So, where I think I learn the most is precisely when I am allowed to actually hack the problem formulations I am asked, and say, ‘can I solve this in a different, a better, a more interesting way?’ Instead of just writing a damn report about this or that, well, that angling it... I got punished for that in my exam, because that was not the point of this exam, but I just got so much wiser from it ... And there in situations like this, I think I learn the most when I take my own little playful approach to it and say, well, it’s fine you’ve given me a task, I just angle it so that it makes sense to me as a human being and as a person, not so much as a schoolteacher, but more generally. (Excerpt, transcript, student interview, Niels, ‘Innovation and entrepreneurship in school’)

Niels finds these situations where he can take his ‘own little playful approach’ towards the assignments to be most rewarding in terms of getting to know something. Niels’ experience is that although he feels that he is getting wiser from the opportunity of playing with the assignment formulations, it is not rewarded in the examination. Niels played with ways of doing the assignment, but this was not honored because, as he explained, the educators at the examination told him how this was not what was meant by the assignment. Pointing instead to how assignments where he gets to play with the formulation of the assignments provide opportunities to ‘angle it’ so it makes sense for him as a ‘human being and as a person’ and not only represent situations for teaching to the test. Niels’ comment here seem to echo how research finds that playful approaches in higher education can bring human growth and flourishing as mentioned in the Introduction (J. B. Jensen et al., 2021, p. 2).

Showing off as a practice of play moods, framing performance in front of each other as playful, finding his own style and angling of the problem formulation becomes possible for Niels in the opportunity to exceed the framework of the task. Adversely ‘playing it safe’, by following certain steps and a specified approach to completing the task only to

fulfill expectations and perform to obtain a satisfactory assessment of the task, is keeping Niels from playing or taking his 'own playful approach' while doing the task. The difference between these two forms of performance actions inside and outside the framing of taking a 'playful approach' for Niels lies in whether the actions enable coming to know something and 'learn the most' through playing with the meaning production in the assignment or simply being a means to get on.

A safe space for playing or an evaluation on the performance

In 'IV: Playing with peer teaching online' the obvious performative element of students performing their designed peer teaching in front of each other was highlighted by the design experiment being part of the five course examination assignments. Being part of the examination assignments, the design experiment was in fact representing a measure of the students' overall performance in the course, interweaving the performance in the understanding of performing oneself in front of others with performance towards extrinsic metrics.

Still Louise, Benjamin and I designed the experiment in the hope of not framing the task as an extrinsic performance, but rather as a meaningful and engaging assignment where the students could employ theory from the subject in their own ways in coexistence with their subject courses such as for instance mathematics. This hope and design intention was justified by the fact that to pass this assignment part of the overall examination, the only external requirement was to participate actively in the designing and unfolding of the peer teaching day online. The students were to get feedback on their peer teachings from the other student groups at first, while also Louise and Benjamin would provide feedback through an appreciative lens of what seemed to work and what could be even further improved in their peer teaching. With this being communicated to the students, the groundwork was set on terms for the peer teaching assignment online for the students.

At the day of the peer teachings, the students were two or more study groups paired in designated separate online group rooms. Here Louise and Benjamin could visit and leave the online rooms as the peer teachings went along.

A group had designed for an innovative and playful teaching practice where the other two study groups were to imagine the teaching practices being part of a course about

Danish history during the Second World War in a fifth grade. This peer teaching, I have already mentioned in Chapter 10 in relation to the theme of space.

The student group had designed their peer teaching pretending for it to be a creative and playful evaluation at the end of the course for the schoolchildren in fifth grade in history. After showing a short video clip about everyday life in Denmark during the Second World War and the students had decorated a living room from the period as explained earlier, the students reflected together on this teaching design. In the reflection together the students were engaged in nuancing the reflections on what the students had just experienced together through the teaching design. The atmosphere in the online group room was affirmative and light; students heads nodding in appreciation of the other students' comments; heads close to the screens; smiles on their faces. At the end of the students' reflections together, Benjamin turned on his microphone and said:

Yes, but I would like to make a comment as well. When I look at it, that is, when I just see it ... I don't see the same strengths in it that some others have expressed. Because I see more that it just becomes an activity of sticking something on a room. So, it is this balance between... could you say something about this dialogue between academic contents and the activity the groups have exercised? (Excerpt, transcript, 'TV: Playing with peer teaching online')

Educator feedback was communicated as part of the assignment given to the students, and Benjamin's comment being framed as an evaluation on the students' peer teaching can immediately seem both expected and common, not least in a situation where students are taking part in an examination assignment. Benjamin's comment can be interpreted as a way to ensure students reflecting on the relevance of their designed teaching in relation to academic contents. But, alongside this view Benjamin's comment and evaluation of the students' peer teaching also highlights an example of how designing through play can be challenged by evaluations on student performances.

When Benjamin provided his comment, the atmospheres in the online room changed from being appreciative and jovial to becoming tense and defensive; students sitting back in their chairs, crossing their arms; frowning and facial expressions of confused wondering.

Benjamin's reflection of 'not seeing the same strengths in it' and evaluating the students design as 'an activity of sticking something on a room' shifted the evaluation. From being about how the students had innovatively and creatively designed for new ways of doing in history lessons for fifth grade schoolchildren and what this might provide of reflections for those students participating in the experience of it, to becoming an external evaluation on the performance of the peer teaching.

This way of providing evaluations on student performances can according to Jensen et al. (2021) stem from culturally embedded educational practices and additionally "...cause students to develop a negative view of making errors or mistakes, making playful approaches to teaching appear risky and potentially exposing" (p. 8). A point the student Niels also stressed in the excerpt from the interview in the above.

While teaching practices designed through play intentionally provide students opportunities for playing with "...creativity and innovation..." (Whitton, 2018, p. 1) these playful practices can arguably appear too risky to participate in, if the evaluation does not follow the same premises. Teaching practices designed through play is then inseparable from the evaluative practices attached to these and evaluations pose a challenge when they are formed through evaluations *on* the performance.

While performative evaluations pose an inherent challenge towards designing through play, I argue how framing student performances as sights of meaning production, can make it possible to frame teaching practices where student performances are part not interpreted as something to be evaluated against a standard of 'strengths' towards their future practice. Sutton-Smith (1997) explains how "Playfighting as an analogy of fighting seems more like displaying the meaning of fighting than rehearsing for real combat. It is more about meaning than about mauling" (p. 23). Translated to teaching practices with student performances as in the case with peer teaching evaluated by Benjamin in the above, the framing which emerges by designing through play is one of playing with the production of what kinds of meanings can be found in playing with the teaching practices. In this way leaving the evaluation being not about the 'real combat' of rehearsing for future professional teaching practice for students but playing with ways of 'displaying the meaning' through the experiential situations of the here and now. Acknowledging how playing is about displaying meaning and not 'mauling', present an opportunity of honoring multiple interpretations of the teaching practices, if meaning is regarded as subjective intentionality (Merleau-Ponty, 2014, pp. 463–466). Playing with

imagined future professional teaching practices then presents a possibility for opening futures towards a view of heterogeneity and multiplicity as mentioned through Kjærsgaard et al. (2020), because displaying of meaning in this sense can become plural. Displaying meaning in the here and now as an aim in these teaching practices designed through play helps question what preparation for the future(s) of teacher students entails and hence implicitly also what kinds of evaluations are suitable for the task of preparation. As Dewey (2015) reflects on the concept of preparation in education:

When preparation is made the controlling end, then the potentialities of the present are sacrificed to a suppositious future...The ideal of using the present simply to get ready for the future contradicts itself. It omits, and even shuts out, the very conditions by which a person can be prepared for his future. We always live at the time we live and not some other time, and only by extracting at each present time the full meaning of each present experience are we prepared for doing the same thing in the future. This is the only preparation which in the long run amounts to anything. (p. 49)

Making teacher students properly prepared for their future professional practice, is then according to Dewey not a question of letting this preparation be the evaluative norm for the present experiences. The potentials of present experiences are ‘sacrificed to a suppositious future’, acknowledging the uncertainty and unpredictability of the future(s). Instead extracting the ‘full meaning’ of experiences had in the educational context at present, according to Dewey, is the only proper way of preparing students, making them more capable of doing this on their own in the future as well. Playing with the meaning in the experiential situations of teaching practices, seems then to be able to aid the criterium for leveraging on experience in the way Dewey calls for.

The challenge of designing through play emerging in this situation despite whatever merit there is for evaluating the performance in relation to a future practice relevance of the designs, is how there is a difference in the communicated premise for the performative assignment and the ensuing evaluation of this performance.

Framing the assignment through a playful framing where the premise being for students to try out designing and unfolding playful, creative, and innovative peer teachings as if being in Folkeskolen seemed to provide students with a space for trying out, playing with their own style, and coming to know through different experiences of doing. The

challenge can then be to keep this premise throughout the teaching practices. Although if this frame is kept, then an opportunity of designing through play in situations of student performances seem to consist of creating a space for students playing and showing what they can do instead of ‘playing it safe’, and as Karl Johan points to in the interview mentioned earlier, creating a space where ‘all know the principles involved’. As Whitton (2018) argues “Encouraging a spirit of play among learners allows them to have space to imagine, explore and create in new, exciting and playful ways... without fear of ridicule or failure” (p. 4). To fully leverage on the opportunity of designing through play as opportunities of trying on new ways of doing and being it becomes important in these situations to evaluate student performances as a sight of meaning production for students not to feel potentially vulnerable and exposed.

A frame for risking and surviving the vulnerable

The opportunity of designing through play as preparation for the future is a matter of opening up the space for meaning making and is not to be evaluated as a performance towards preparing for the future. However, this opportunity should not be viewed as a matter of taking the risk out of education as also an aim cautioned against by Biesta (2013), referred to in the Introduction.

Recalling the unfolding of ‘VIII: Playing with spin the bottle’, students were guided to take the risk of performing in front of each other through the playful framing and experiencing another student Luna ‘surviving’ her failure. Through this vulnerable and risky performative situation framed through a protective frame, the students were able to share and learn from each other in the following reflections. The same seemed to be the case with the student Henrik mentioned earlier which through being in ‘XIV: Playing with peer teaching’ with the peer teaching of the ‘Trial against Columbus’ where the experience of partaking seemed to enable him taking the risk of sharing the difficulties of how the role play scenario to some extent felt transgressive.

In ‘IV: Playing with peer teaching online’ one of the groups in the peer teachings had designed their teaching to evolve around pretending a lesson in Danish for schoolchildren in fifth grade having to make a visual representation of characteristics of a person character from a tale, through a drawing or by using materials.

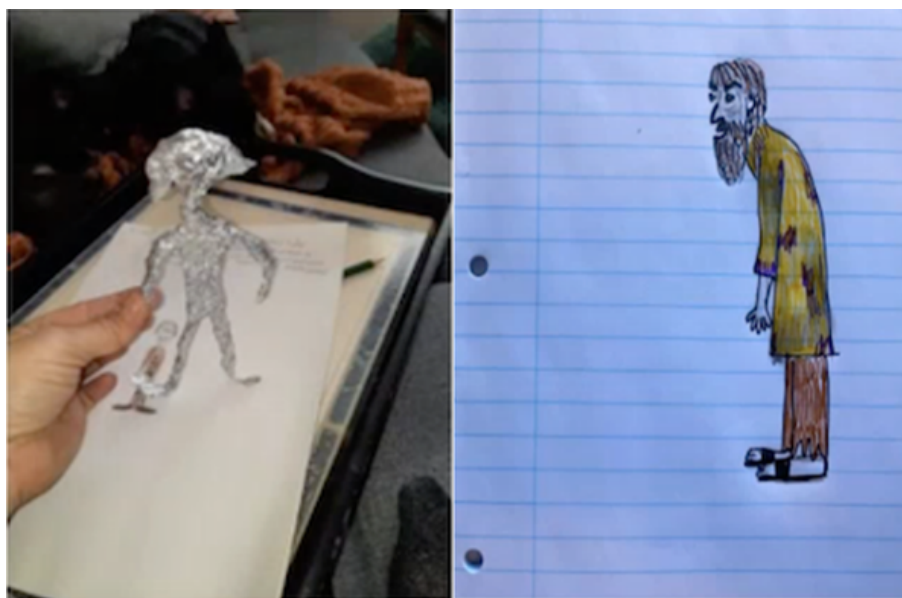


Figure 12 Student products shown in the online space of visualizations of person characteristics from a tale – tin foil and drawing on paper

When Louise provided feedback to the ‘teacher’ student group after the unfolding of the peer teaching design, she explained about the potentials in giving feedback to peer students as ‘schoolchildren’ on their visualizations or material productions to the group:

And what is so difficult is to provide response on these multimodal productions and material productions because it is so vulnerable. And when is something wrong? But you can give guidance as to whether tin foil is the right choice for a man who is ragged and poor and the like. One could also have made it out of paper for instance. (Excerpt, transcript, ‘TV: Playing with peer teaching online’)

Through acknowledging at first how it can in fact be difficult to provide response to schoolchildren’s material productions because of this being a vulnerable situation, Louise suggests a development potential in the groups peer teaching on how to guide the schoolchildren towards choices of material when making their characteristics of a person. Louise seemed interested in a focus on developing the students’ awareness of the academic contents of the students teaching design just as Benjamin’s focus was, dealt with in the above. Pointing at the same time to the vulnerable and risky situation of essentially having to comment on schoolchildren’s material productions in teaching situations, Louise included a second order reflection on the vulnerability present for the students in such a situation coming to be teachers. Louise’s way of providing feedback to the students and her argument of how it *is* vulnerable to provide feedback to

schoolchildren in such situations arguably reflect Brookfield's (1995) consideration in relation to teacher educators on how any risk-taking which the teacher educator intends to request from students should first be modeled by the educator (p. 14). Louise's comment on acknowledging how it is a vulnerable situation opened a reflection space about the vulnerability in this situation, where Ida raised her hand in the online space and initiated a dialogue around this theme with Louise:

- Ida: I can feel that I become, that it means more to me whether, Ina [a peer student] gets upset or feel exposed here.
- Louise: Yes
- Ida: Than if I for instance had been standing in a classroom-situation. And it is nonsense, but it is something which is rooted in me personally, I think.
- Louise: I don't think it is nonsense, I think it is something one should acknowledge. I also think it can be there with schoolchildren. I have had it myself with schoolchildren when having subjects and I thought phew, but here you have to remember to always hold onto the subject oriented criteria. (Excerpt, transcript, 'TV: Playing with peer teaching online')

Through the experience from being in the peer teaching situation as a 'teacher' having to give feedback to peer students, Ida brings reflections on how it was difficult to comment on a peer student's material production, because Ida did not want Ina to be 'upset or feel exposed here'. Ida's reflection adds the aspect of how not only performing in front of each other is potentially vulnerable and risky, but potentially also to give feedback to peer students. Through not evaluating on the students' performance, but arguably in a sense used the performance in *service of* reflecting on the meaning of the performance recalling Apter's (1990) distinction of the paratelic state of play, Louise seemed to provide a space for taking up the discussion of vulnerability of providing feedback to schoolchildren and peers. As mentioned earlier, Shulman (2005) explains how a certain level of anxiety necessarily comes from the emotional investment of participating in teaching situations. But as Shulman (2005) further argues:

However, teachers must manage levels of anxiety so that teaching produces learning rather than paralyzing the

participants with terror. When the emotional content of learning is well sustained, we have the real possibility of pedagogies of formation - experiences of teaching and learning that can influence the values, dispositions, and characters of those who learn. (pp. 57-58)

When the practices are evaluated as not a performance towards the future but provide a route for reflecting through the performance for creating meaning in the present in combination with making space for reflecting on the difficulties present in these, it seems as if performance presents an opportunity for students in taking risks and still sustain the emotional side of learning. Not only in the students' practices but also in their dialogues on class, potentially influencing 'the values, dispositions, and characters' of the students.

Roberts (2012) writing about theoretical aspects of experiential education, quoting Jay (2005)⁴, explains how risk can be firmly associated with experience due to an understanding of experience as coming from "...having survived risks and learned something from it" (p. 13). To learn something from experience is then given Roberts association, not a matter of avoiding risk. Opportunities for learning and coming to know experientially by designing teaching through play can rather be seen as assisting students, through sustaining the emotional content of learning, in *taking* risks in the first place and, metaphorically speaking, surviving it in order to come to know something from this. A space for playing arguably through providing a protective frame throughout in the design can in this way attune students through performance towards taking a risk of sharing vulnerability and in this sense not playing it safe.

A field of freedom for taking own choices

The theme of performance is also related to the feel of having choices. Significantly, freedom of choice was in different ways present as a central characteristic aiding atmospheric configurations to emerge for attuning students towards playing with ways of knowing, echoing Nørgård et al.'s (2017) point on how play in higher education bring with it freedom towards choices (p. 274). A space for own choices and freedom towards

⁴ Jay, M. (2005). *Songs of Experience: Modern American and European Variations on a Universal Theme*. University of Minnesota Press

the doing in the assignments, a freedom from performing specifically towards something came up recurrently as a need from students when talking with them informally about play and playing in teacher education. As already explained by the student Niels in the above, being allowed to change or differently interpret the framing of an assignment helps him feel playfully attuned, representing one way of asserting freedom when designing through play into the performance in teaching practices. In the same way Karl Johan reflected how a playful framing, where everyone knows the ‘principles involved’ can open ways of more freely acting ‘silly’ in peer teaching situations.

Asking students in class in the focus group interview following the course of ‘Innovation and entrepreneurship in school’, on what they felt was playful during the course, Jonathan explained:

I don’t know how to define a playful approach, but I think many of the things we have done this semester have felt more playful when we had to start and when we had to do something. I don’t know if it’s because it’s been less structured or more open or more up to us. (Excerpt, transcript, focus group interview, ‘Innovation and entrepreneurship in school’)

Not sure on how to define a playful approach, Jonathan mentioned how many of the teaching situations had felt playful during the semester with ‘Innovation and entrepreneurship in school’. Describing how it felt, Jonathan suggested possibilities of less structure, more openness, or activities more up to the students themselves. Jonathan mentioned how it felt more playful when they ‘had to start’ and when they had ‘to do something’. In relation to the point made by Jonathan in how during the semester it felt more playful when they had to start can be related to how Louise in ‘Innovation and entrepreneurship in school’, started every lesson when she taught with a form of playful exercise. For an example in one of the online teaching lessons, Louise invited for an exercise of giving a fictive present through the screen to another student. In relation to the remark about how it felt more playful when they had to ‘do something’ and in light of this description through the felt openness, less structure, Jonathan’s emphasis on doing echo Merleau-Ponty’s (2014) argument as discussed in Chapter 2 on freedom as always relational with the experience of the possibility for taking action.

In the focus group interview with the students after the first experiment in biology ‘VI: Playing with space and materials in nature’, a student Adam reflected explicitly on the sense of self-determination as a requisite for him to be playfully attuned in teaching practices. I wrote in the field notes:

The last student Adam answering the question adds that it’s about self-determination. The more self-determination, the more playful it becomes for him. When it goes from something one has to do, to something you decide for yourself. It is not enough to get a choice between two evils, Adam adds. There must be a higher degree of co-determination within the frame of what is being explored. (Excerpt, field notes, focus group interview ‘VI: Playing with space and materials in nature’)

Adam reflected how self-determination is essential for him towards being playfully attuned in teaching practices. ‘The more self-determination’ the better in relation to playing he expressed. Adam, I argue couples the experience of playfulness in teaching practices with an experience of a degree of autonomy. Autonomy as explained through Merleau-Ponty (2014) in Chapter 2 relates to the question of to what degree one is able to take free action within a context. Furthering his reflections, Adam nuances the point on the importance of self-determination in relation to feeling teaching practices as playful by making it a matter of ‘co-determination’ within the frame of exploration.

Choosing with only one alternative does not attune towards playing

Adam pointed to how co-determination is important, while stating how it ‘is not enough to get a choice between two evils’. A few days prior to the focus group interview on ‘VI: Playing with space and materials in nature’, I conducted the design experiment of ‘V: Playing with writing and choice’ in the subject of ‘Innovation and entrepreneurship in school’ where Adam was part as a student having chosen this subject. When Adam in his reflection added how it is not enough to get a choice between two evils, he seemed to reflect through the experience of being part of this design experiment a few days earlier. The experiment ‘V: Playing with writing and choice’ was designed to first and foremost attune towards the moods of the students, where Louise and Benjamin had prior experience with students choosing to not show up to the classes during that particular time of the semester because of their bachelor project writing process. Hence wanting to attune to the students potentially being deeply absorbed in a writing process,

Louise, Benjamin and I agreed to take the students through some playful writing exercises, coupling it with uses in their future professional practice as part of innovative processes in Folkeskolen. In addition to this framework of the writing exercises of the design experiment, part of the experiment I designed for experimenting with pushing the boundaries of how to create a field for free choices for the students in relation to designing through play. At the end of the online lessons of the experiment, I asked the students to anonymously write feedback on an online platform on how being given a choice about the angling of the teaching was experienced as well as general feedback on the teaching if they had anything else they wanted to share. The comments on the part about the two choices was varied “It has been fine with the two choices”, “Always good to have a choice or it can be nice to have influence. And it is also something about transparency, so that you don’t choose blindly. Not because we did, it was more of a general thought.”, “I think it has been fine to get the choice. But the choices were maybe a bit too wide apart”, “It has been great to get the choice, it can increase people’s motivation. Just annoying when you don’t get your way, ha ha, but otherwise super fine” (Excerpt, student feedback in online program, ‘V: Playing with writing and choice’).

Since I asked the students to write what they thought and promised this was kept anonymous, I did not ask the students afterwards for an elaboration of the meaning of these statements, since this could have been felt as a pressure to come forth with what one had written. The students’ comments although seem to echo how Mouffe (1996) reflects “I can never be completely satisfied that I have a good choice since a decision in favor of one alternative is always to the detriment of another one” (p. 9).

Adam’s comment can be interpreted as an extension of these written student comments on how it is experienced to get a choice. Adam specifically pointed to a choice ‘between two evils’ not being related to playfulness. As one of the students wrote, then it is ‘fine to get the choice’, still as Adam pointed to, it is not necessarily what attunes towards playing. If being attuned towards playing in teaching practices as Adam refers as being related to the amount of autonomy felt possible through self-determination or co-determination inside the frame being provided for exploration, a choice between two options is simply ‘not enough’ as Adam explained. If freedom is ‘to have a field to work with’, and essentially about doing within this field as Merleau-Ponty (2014) explains, then to feel co-determination in a situation as Adam refers to as playful there must be a field for autonomy. Taking a choice does then not necessarily provide a field for playing

with ways of doing, and it does not help counter the possible risky situation of having to perform towards something externally decided and measured.

Here being presented with a choice does not provide a field for autonomy or a field for doing as in taking action, beside choosing 'between two evils'. What Adam helps to reflect on is how there must instead be a field for playing with choices created through the possibility of co-determination in the assignment as 'something you decide for yourself'. Not as in an absolute freedom, but within the field of what is being explored.

Constraints as aiding a field for coming to know differently

While providing a field of possibilities is always bounded in order for freedom to show itself as argued through Merleau-Ponty (2014), the question arises of how bounded teaching practices designed through play through externally performative demands can be before the atmospheric configurations of attuning towards playing with ways of knowing is no longer able to emerge. While one choice does not necessarily make it playful in teaching practices as Adam reflects, Gadamer (2013) argues how the necessity of eventually taking a choice is part of the freedom of play:

On the other hand, this freedom is not without danger...
One can play only with serious possibilities...The attraction that the game exercises on the player lies in this risk. One enjoys a freedom of decision which at the same time is endangered and irrevocably limited. (p. 110)

While being able to have freedom of possibilities when playing, leaving these open to play around with, one inevitably must choose for play to go on, as is Gadamer's (2014) example with the game of solitaire (p. 167). Choosing comes with a risk because a choice is irrevocable in play. To enjoy the freedom of decision, a choice must also be made.

This way, when eventually having to make a choice, it is possible 'only to play with serious choices' as Gadamer explains. For freedom in play to show itself, separating freedom from its ends and hence gaining the field of freedom in play, the choices deliberated upon must be serious. Playing with possibilities which is not serious, where the seriousness should be understood through the meaning production of the framing of play, makes the deliberations of a fictitious character. If choices are not serious, they do not enable the sense of play, because as Gadamer states, possibilities in play are to be taken seriously to contain the risk which makes play continuously engaging.

In the design process of ‘XII, XIII & XIV: Playing with peer teaching’ Christian and I designed for providing students with constraints for the performance of their peer teachings. Beside the theoretical aspects from the course subject, the students were provided with the constraints of having to include playing with space and play media in their designs as described in Chapter 8. In the focus group interview with the students attending ‘XII, XIII & XIV: Playing with peer teaching’ I asked the students how it had been to be given constraints to include in the peer teaching designs:

Ivan: Yes, I think it worked well, but I think that one could set the frame even more clearly and say that some different elements should also be included. What I can’t really come up with right now, but as we said in the beginning it has within the frame of the subject almost been free play.

Lotte Agnes: Mm-hmm.

Ivan: So, there I think you could try us out and say that we should incorporate something more into it. (Excerpt, transcript, focus group interview, ‘XII, XIII & XIV: Playing with peer teaching’)

Even though the students were given the constraints of designing their peer teaching through both the learning media with Christopher Columbus, the different theoretical perspectives in each round and the additional constraints on including space and play media, Ivan still reflected how it felt as if almost being free play. Ivan argued how the frame could be set ‘even more clearly’, while adding how ‘you could try us out’, seemingly wanting the challenge of performing through more constraints in the peer teachings. To follow this argument, later in the same focus group interview, I asked how they could imagine making the peer teachings even more playful. One of the students, Mathias commented:

Mathias: I think that you could set a frame for the teaching and say ‘you have to go outside’ or...

Lotte Agnes: Ah, yes.

Mathias: ...you have to go somewhere, or there has to be some movement. It also depends on what fits with the subject, but it will also push those making the teaching to think in that direction.

Lotte Agnes: Okay, yes, so you actually in addition to the theoretical constraints you had, you think there should be more constraints?

Mathias: Yes, I think so, yes.

Lotte Agnes: Mm-hmm.

Mathias: That you at least demand from those who must prepare it, that they must think even more outside the box. I think that might be healthy.
(Excerpt, transcript, focus group interview, 'XII, XIII & XIV: Playing with peer teaching')

Adding more constraints in addition to the ones already given for the peer teachings would make it more playful according to Mathias. Being provided with constraints for the performance is a way to 'push' the ones designing the peer teaching which according to Mathias 'might be healthy'. In this way getting pushed through constraints determined externally is for Mathias not something which hinders him playing with ways of doing and being in the performance of the peer teachings. Constraints seem in this way not as what destroys the field of freedom, but what opens the field of possible possibilities to choose from, and as Mathias argues through the constraints in a sense become more creative (Jørgensen et al., 2022, p. 9), by having to 'think even more outside the box'. Even though the constraints are put upon the students externally, it does not hinder them playing in the situation as performing towards external metrics throughout this chapter have been shown to do. I argue how it is not constraints through the subject matter which bring with is performance towards external metrics. Rather, it is the meaning which frame performance as having to perform towards set external metrics making students feel they are unable to play with the practices, of for instance 'this is exactly what you are supposed to do' as mentioned earlier through the student Niels' comment. The constraints through the subject framework seem to be what can provide students with the necessary serious choices to play with towards producing meaning, while still being able to experience freedom or autonomy in a situation by being provided with a field for taking free action through these constraints. In this way performance present an opportunity in relation to designing through play if performance is used in the service of providing subject frame constraints to aid the field of freedom to show itself in order to attune students towards playing with serious choices.

Taking performance lightly

When meaning is opened up towards a meaning production *in* the situation as characteristic of play (Skovbjerg, 2021a, pp. 65–68) and not one towards extrinsic performance parameters, designing through play can potentially also point to how freedom from performance towards external metrics can be about “taking reality lightly” (James, 2019, p. 9). Gadamer (2013) explains how play is experienced as absent of strain, where the ease of play is a matter of how “The structure of play absorbs the player into itself, and thus frees him from the burden of taking the initiative, which constitutes the actual strain of existence” (p. 109). This ease of play does not as Gadamer states stem from a matter of absence of effort. Recalling the reflections from the students Anders and James in Chapter 9, on having to ‘reinvent the wheel’ through the same learning media about Columbus, both point to how this could feel strenuous, but also providing opportunities to play with the media in new productive ways.

It is not the lack of activities requiring effort which the ease of play refers to, or how choices cannot be serious, but instead, as Gadamer explains, freeing the individual from the ‘burden of taking the initiative’. This aspect was something Amelia seemingly touched upon when the students in the focus group interview in relation to the experiments of ‘XII, XIII & XIV: Playing with peer teaching’, reflected on the question of what they found worked well when being in their peers’ playful teachings:

It is probably also individual, I think, but I like it when there is a bit of a framework for what needs to happen, because then I feel that I have more freedom because I don’t have to sit and overthink what I have to do, so I think it works well when a framework is set. (Excerpt, transcript, focus group interview ‘XII, XIII, XIV: Playing with peer teaching’)

Amelia’s comment can as well as considered a pedagogical reflection in the classroom be interpreted as how playing in teaching practices through a framing of the assignment enable a freeing from ‘the actual strain of existence’, by relieving her from overthinking what she is to do, arguably relieving her from overthinking how to perform. Amelia explained how ‘when a framework is set’ it provides her with a greater sense of freedom towards what is going to happen, instead of ‘overthink’ what to do, letting the structure of the playing ‘absorb the player’ as Gadamer argue. Bringing in a specific set of constraints and a framework towards what she is to do, makes Amelia feel that there is more freedom in the practices, furthering an argument of how performance does not

present an opportunity in designing through play by being absent, but by setting a framework for what is to happen, also echoing Apter's notion of how rules can help foster the feel of a protective frame as mentioned.

In relation to the theme of the performative element in day-to-day assignments, asking the biology students if field work practices of measurement assignments having to be done precisely could be imagined to be played with, the student Nanna as mentioned earlier explained how she thinks it difficult while exact measurements 'should ideally be there to make sense to use them'. Reflecting on the same question, another student Charlotte, following Nannas comment, provided an idea for framing the assignment in order to be able to play with it:

One could say... considering this performance culture [in Folkeskolen], by taking schoolchildren out of school [to the field] it could also be fine to say 'okay, so we might have some heath landscape here and we have measured something completely unrealistic for this heath landscape' for an example, so this thing about taking it home and saying 'well okay, what might have gone wrong?' There could also be some learning in that. So, I think it might not be as catastrophic to fail out there, because there could also be some potential in that when returning home... the discussion could be healthy. (Excerpt, transcript, focus group interview, 'X: Playing with biology and visual arts practices' & 'XI: Playing with field work practices')

Through asking if these performative practices of getting measurements in the field could be imagined to be played with, Charlotte reframed the consequences of failing to get the sample measurements exactly right towards not regarding it as 'catastrophic to fail out there', but rather an opportunity of coming to know in a different way in the work with these failed measurements afterwards.

When play is framed as providing a protective frame from long-term consequences, designing through play can be proposed as a resource for creating a frame where meaning is produced in the situation providing students with a potential through 'taking reality lightly' of also taking performance in teaching practices lightly in different ways. This should not be understood as a method of remedying the effects of a performative culture as Jensen et al. (2021) explain some studies of playful approaches in higher education propose (p. 3). Instead, aiding to ask questions of how practices can be thought differently for students and educators to know differently in the framing of

these potentially present an opportunity of trying on different ways of being-in-the-world as teacher students towards their future professional practice.

As a side note, it is also interesting how Charlotte referred to the performance culture in Folkeskolen, while this was not something otherwise brought up during the focus group interview but in light of Charlotte's comment, might be something sensed by teacher students affecting their future professional practice.

Summing up on the issue of what opportunities and challenges designing through play provide in relation to the theme of performance, it is argued helpful returning to Apter's (1990) argument on how in the paratelic state of the playful protective frame the ends of a situation is turned into the means. Performance present challenges when students' performance is evaluated through external metrics. Additionally performance is challenging in day-to-day assignments where only one way of knowing seem relevant, or when being focused on impression management outside of the frame of play, while the overarching opportunity of designing through play in relation to performance is how performative situations with students are to be evaluated through regarding performance as being in service of the activity of the teaching practices.

Taking the performative aspect completely out of the peer teachings might, as Apter argues with the example of sport mentioned in Chapter 2, render the activity potentially meaningless. Students arguably want to perform for showing what they can do, being tried out, and provided with a field to take free action within the frame of the subject matters. Instead evaluating the performative aspect *in the service of* staying engaged and as a way for students to find meaning in the process of teaching practices can be an opportunity of tempering the evaluation of the performance through a telic frame and present an opportunity of enabling students in taking risks as part of playing with ways of knowing without the need to play it safe.

Chapter 12: Playing with assumptions

Central in the following pages is how students' assumptions about learning, teaching and schoolchildren is at play and seem to emerge in teaching practices designed through play and how in this process also memory and imagination are evoked. In addition to the themes in the previous chapters on play media, space, and performance this theme emerged in the research process. I argue in this chapter how designing through play provides opportunities for students to explicate assumptions when they are engaged in experiential teaching practices. These surfacing assumptions are analyzed and discussed in the following as part of understanding what the experiential ways of knowing brought forth by designing through play offer of challenges and opportunities for attuning students towards playing with ways of knowing in teaching practices.

Assumptions and imagination through embodied experiences

In 'TV: Playing with peer teaching online' two different groups of students were by the 'teacher group' given the assignment of drawing an Egyptian God. Here the students were to imagine what the specific God represents and the special abilities of the God, as also described in the vignette in Chapter 8 on this design experiment.



Figure 13 Student drawings of their Egyptian Gods shown in the online group room from group work

One of the groups unfolding this assignment through the perspective of schoolchildren initiated a talk about what schoolchildren in a third grade (year 5) in relation to this

assignment can manage, where one of the students Mads said “Oh well, third graders can’t be very concrete at this form of task”, where Elliot countered this assumption a little later in the conversation by saying “well actually you also get surprised by what these younger schoolchildren in third and fourth grade can do and say” (Excerpt, transcript, ‘IV: Playing with peer teaching online’). Through their experience with doing the assignment through taking the perspective of third grade schoolchildren, the students in the group shared their assumptions on what schoolchildren are capable of doing and saying at different ages, not entirely agreeing on this matter. In a somewhat similar way, in ‘VI: Playing with space and materials in nature’, a student, Sahar, provided a reflection while having experienced the exercise of drawing in nature. From the reflection round, when the students had just been doing the design experiment and were still standing in the field, I wrote in the field notes:

The other student, Sahar explains how she thinks it was amazing sitting with the clipboard here out in the nature, because suddenly a small insect fell onto her paper and started walking around on it. She tells how she drew where it had walked on the paper... Sahar reflects how it could be fun to get schoolchildren to draw after a small insect walking on their paper, while she believes schoolchildren are better able to keep their concentration on something than if they just have to sit in nature and ‘look out into the air’. (Excerpt, field notes, ‘VI: Playing with space and materials in nature’)

Sahar’s experience of being in the atmosphere of the situation, being in nature in a different way than usually in biology, and the serendipitous situation of the insect landing on the paper seemed to provide an experience which made her able to explicate an assumption on how schoolchildren concentrate best when having something to focus their attention on and not just looking ‘into the air’. Reflecting Lennon’s (2015) argument of an embodied foundation of the imagination, and that of Pallasmaa (2014) arguing how “... we imagine through our entire embodied existence” (p. 82), the students Mads, Elliot and Sahar all seemed through the embodied experience of the experiments able to imagine a child in a similar experience and by this, explicate their assumptions on what schoolchildren can do and say or how they concentrate best. In this way an opportunity seemingly arises through giving space for these embodied experiences towards turning these assumptions from potentially pre-reflective knowing to a knowing possible for students to reflect upon and share.

I will return to the importance of teacher students to explicate assumptions below, while first staying with the issue of the experiential aspect of the above examples. While the students seemed able to explicate assumptions about schoolchildren through their embodied imagination, these situations can arguably point to one of the specific opportunities of designing through play being how these emulate opportunities found within experiential education (Roberts, 2012) and hence point towards notions of the specific experiential dimensions of the design experiments designed through the lens of play. This point can be exemplified by a situation earlier in the day of unfolding ‘VI: Playing with space and materials in nature’, while it also supports an analysis of the atmospheric configurations specifically made possible by designing through play.

Experiential dimensions of teaching practices

Before the unfolding of the actual design experiment of ‘VI: Playing with space and materials in nature’, students were in the same day provided with assignments in the field out in nature regarding sample measurements of a stream. In the field notes I wrote:

The students work with the water in different ways while standing at the brink and in the stream. They taste it, smell it, look at it and take different samples... Dina, approaches another group to ask if they have a measuring device for current velocity. They note that none of them have been given a specific device as part of the materials kit or any further instructions on how to measure the current velocity. Still, their worksheet tells them to plot it in. A third group suggests making the measurement themselves; taking time for a thing to flow ten meters. One group have a measuring tape that came with their materials kit, and they lend it between the groups. Axel standing in the stream throws a leaf and the ones on the bank of the stream take time. Axel standing in the stream with waders, comments loudly to the rest of the group ‘It’s not entirely difficult to understand why schoolchildren think that calculating with time and meters is hard’. (Excerpt, field notes, ‘VI: Playing with space and materials in nature’).



Figure 14 Left: Blurred image of biology student Axel in the stream wearing waders. Right: Biology student Karla measuring current velocity with measuring tape in stream

The students were told what to measure, how to measure and how to explore the water through questions on a sheet of paper handed out by Anna, where the assignments described nudged them to taste the water, smell the water, and measure the temperature. When the students were to come up with a way to measure the current velocity on their own, Axel standing in the stream, imagined in a similar way the situation from a schoolchild's perspective and pointed out how it is not difficult to imagine why schoolchildren find the calculation of this assignment hard. Axel explicated his assumption of how schoolchildren find it difficult to calculate with distance and time through his own experience in the situation of having to do so. Explicating this assumption can be viewed as an effect of the embodied experience of standing in a stream as a chance of unfolding his "... emphatic imagination" (Pallasmaa, 2014, p. 82), imagining schoolchildren having to do the same and in this way the experience allowed for him explicating his assumption on how schoolchildren react and feel in similar situations. Pallasmaa (2014) argues how the emphatic imagination, opposite a formal imagination placed outside of the experiencing self, evokes subjective and embodied integrated experiences of judgements, emotions, and moods (p. 82). The embodied experience of being in the atmosphere of the situation provided Axel with a way of connecting his own experience of finding it difficult with that of schoolchildren and arguably using his emphatic imagination to attune to assumptions of how schoolchildren experience the same situation.

Bringing forth this above example of Axel's explication of an assumption in relation to a field work assignment in biology not designed through play, is an acknowledgement of how an opportunity of designing teaching practices through play for providing a

space for students to explicate their assumptions to a great extent can be a matter of the embodied experiential aspect of these teaching practices, linking the opportunities of designing through play to some extent to the broader field of experiential education practices (Dewey, 2015; Kolb, 2015; Roberts, 2012). At the same time, the above example with calculating current velocity opens for a reflection about why the specific atmospheric configurations aimed for in teaching practices designed through play additionally can provide opportunities for students' reflecting on own assumptions about teaching, learning and schoolchildren through explicating these.

When it came to the specific assignment for the biology students of having to measure the current velocity, no further instructions on how to do it were noted on the assignment worksheet. Even though Anna, in a talk about this assignment afterwards assured me that this is a basic skill biology students need to be able to do without any aid, the students still had to think about it when being out in the field and cooperate on how to solve the assignment. While it was supposed to be a basic assignment, the students' discussion together on how to do the measurement indicated a degree of uncertainty present.

Referring again to Caillouis' (2001) point as mentioned in Chapter 11, on how in play there is a need for some initiative left for the players in order for experiences to potentially attune towards playing, incorporating this form of uncertainty into the situation, seemed to open a space for students' initiative and reflections on the assignment, even though it is not in the above assignment hard to imagine how possibilities of calculating current velocity is not that many, equipped only with a measuring tape. Arguably making those atmospheric configurations potentially present in this assignment in the field resemble those aimed for when designing through play for an open meaning production. Recalling the point from Ingold (2000) explained in Chapter 3 and mentioned in the previous chapter of how even though learning and knowing comes from having things shown, it is a matter of turning this showing into clues for meaning production and not keys holding the information in themselves.

Creating space for teacher students to initiate ideas to solve assignments on their own can provide students with a more open space for meaning production and reflection through own experiences and assumptions. This way designing teaching practices through play share opportunities with teaching practices designed through the lens of experiential education when experiential teaching practices are designed for creating

possibilities for students having a more open *field* for meaning production and for explicating assumptions when instead of being provided with the keys towards knowing, is provided with only clues.

Designing through play for sharing assumptions

With inspiration among others in Gadamer and Bateson, Thorsted (2016) writes about the space of play in organizations, arguing for how play provides "... a transitional space, where we are captured by play itself that allows us to take on new meaning, which can have an important impact on our own existence..." (p. 34). While playing, one is put willingly at risk, or willingly being 'played' (Gadamer, 2013, p. 111) and here beliefs and assumptions from former experiences can be shared and possibly be given new meaning. As already brought forth in the previous chapter in relation to the design of 'VIII: Playing with spin the bottle' in social education, play seemed in this context to help open the space for participation through the students own embodied experience of being in play. Designing through play meant in the situation with spin the bottle, a possibility for playing with the theoretical concept central for the topic of the day through experiencing the theory in an embodied way and get a sense of the dynamics of this theory unfolded in a playful concrete situation. But this practice designed through play also meant for the students through being in the atmosphere of the play situation to afterwards in the discussion in class reflecting more openly about their assumptions and beliefs about own practices in their internships and as mentioned in the previous chapter through some of the students questioning their own practices, willingly take on new meanings of their experiences. When giving in to the play situation as most of the students did after playing for a while, they seemed able through playing to produce a new meaning of their own being-in-the-world.

Dewey (2015) explains how one of the competences of educators is to be aware of what attitudes and 'habitual tendencies' are being formed through the learning situation, and "In this direction he must, if he is an educator, be able to judge what attitudes are actually conducive to continued growth and what are detrimental" (p. 39).

In teaching situations certain forms of attitudes and habituated tendencies are being formed throughout the learning process and one of the educator's roles according to Dewey is to be aware and steer these attitudes in a relevant direction. The attitudes and habitual tendencies can in the case of teacher students be interpreted amongst other

things to evolve around how they think and reflect on their pedagogical approach towards future teaching practices and what views on schoolchildren are formed throughout teacher education. Formulated differently these attitudes regard what assumptions students hold of learning, teaching and children. According to Shulman (2005) teacher students are to be attuned towards views on learning, teaching and knowledge which is aligned with what 'pedagogical habits' are regarded as desirable in their future professional practice (p. 59). Arguably, one way for educators to be aware of teacher students' attitudes or assumptions as well as attune these towards desirable ones, is by students sharing their assumptions in teaching practices.

The euphoric play mood and sharing assumptions

Experiential dimensions of teaching practices provide possibilities for students to imagine and share assumptions shown with the above examples of students sharing assumptions about schoolchildren. Whilst when atmospheres in the design experiments was configured towards the emergence of euphoric play moods (Skovbjerg, 2021a, p. 125), students' assumptions about teaching, learning and schoolchildren seemed to be particularly explicated. Play practices of exceeding, leading to euphoric play moods as shortly touched upon in Chapter 2, are the type of practices which must constantly change, where extrovert and wild things must happen such as exceeding each other's ideas by coming up with even crazier and more silly ones to keep this play mood going (Skovbjerg, 2021a, p. 125).

In 'IX: Playing with outdoor school and materials', three students, Scott, Henry, and Peter were to make mathematical measurements of the corner of a wooden plateau only provided with a polystyrene box as measuring device. They tried exceeding each other's ideas about how to actually measure the plateau corner and the ideas kept being more and more silly and useless in terms of the assignment being solved correctly.

Scott, Henry, and Peter were laughing and joking about the potential of cheating by using a ruler for getting the measurement right, and at last Scott pronounced proudly after having used his index finger and the polystyrene box as measurement device "It's one-seventeenth-part box-length". Everyone in the group and around them laughed loudly at the absurdity of this measure unit.



Figure 15 Blurred image of laughing students (from left) Peter, Scott, and Henry measuring wooden plateau corner with a polystyrene box

Immediately after completing the assignment, the students returned to the gathering point in the outdoor school garden, where Louise and I stood. Peter and Henry continued their conversation directed towards Louise:

Peter: ... It is also just known that when we get to the final years of Folkeskolen [da. udskolingen] they are like ‘oh no, do we have to walk outside?’

Henry: Yeah, it is such a shame, but they do not want to participate in outdoor school in the final years of school. (Excerpt, transcript, ‘IX: Playing with outdoor school and materials’)

In the situation, Peter shared the assumption of schoolchildren in the final years of Folkeskolen being reluctant to go out. Henry provided a furthering of the assumption by stating how this particular group of schoolchildren do not want to participate in outdoor school. Henry and Peter’s assumptions were not taken up for reflection by Louise in this situation. Still, the configurations of the situation seemed to make it possible for Peter and Henry to share their assumptions explicitly, arguably aided by experiencing the assignment of measuring the wooden plateau becoming both playful and silly.

Returning to the situation mentioned in former chapters, where a student group as ‘teachers’ during ‘IV: Playing with peer teaching online’ had designed for two other peer groups with the perspective of ‘schoolchildren’ in an online program to decorate a typical Danish period home living room from the Second World War era. This was as mentioned pretended to be part of a history course for fifth grade schoolchildren.

When all three groups met again after working with the decoration of their living rooms in separate online group rooms, the atmosphere was dense with laughing, talking, and joking. Especially one of the two ‘schoolchildren’ groups of students, ‘group b’, were laughing both with their microphone on and off. Before the groups were to present their product, they continued their euphoric play moods already created through their group work from before. One of the group members Nicolaj, for instance proclaimed, “I will have to delete my Google history shortly”, Alfred commenting “Is it really that bad?” and here most of the students in the online group room broke out in a laugh. When the group were to present their living room product design for the other students, they were all reluctant and laughing, having a dialogue about being the one to share their screen in the online space:

Walter [a]: [Walter from ‘group a’ stopped sharing his screen] Then I let the others share their, their fabulous product.

Freya: Are there anyone from the other group who can share. Elliot?

...

Nicolaj [b]: None of us really feel like it.

[Several laugh] ... [One of the group members from ‘group b’ share their screen]

Elliot [b]: Yes, can you see this?

Rikke [a]: We can definitely see it.

Freya: Yes, it’s a sight for sore eyes.

Elliot [b]: Yes. We started by putting in some related, uh, some Richs coffee and some ration stamps and something into this tiny living room...

Freya: Who is it Elliot, on the walls?

- Elliot [b]: Well, over to the left Tordenskiold is hanging [laughing].
- Freya: And the others?
- [Several of the students laugh with their microphone turned off]
- Elliot [b]: [Elliot laughing, loudly clearing his throat] Maybe someone else in the group wants to..
- Niels [b]: Well, okay so we are in the high society, but this has been achieved during the war because we are in the home of a goulash baron and a German collaborator, and a sympathizer of Der Deutsche Reich. So, they profit handsomely on the war. (Excerpt, transcript, 'TV: Playing with peer teaching online')

What happened was that 'group b' had played with the assignment. Niels provided a story to match their exceeding play practice of decorating the room as if there were living sympathizers of the occupying force in this 'typical' Danish home during the war. Bringing their already euphoric moods into the shared online space, by playfully being reluctant about showing their finished product, the group kept the play moods going and involved the other students in it, where for instance the 'teacher' student Freya affirmatively commented how 'it's a sight for sore eyes' and making the group explicitly state what personas they had decorated their designed living room with.



Figure 16 Product of group work. Students having played with decorating a living room through exceeding play practices. Disclaimer: 'This is play'

As also touched upon in chapter 9, in the following reflection about this teaching, the students reflected upon potentials and limitations of the peer teaching design in different ways. During these reflections, with a point of departure in the exceeding play

practices and the euphoric play moods emerging in the group work, the students shared some of their views on how learning unfolds best through this teaching design:

Elliot [b]: Well, I think this part about doing it in a cardboard box... it's better... because then in some way there will be brought a little more seriousness into it, because with Google it becomes too easy to do something you should not, finding Goebbels for instance and putting him in...

Walter [a]: ... let's assume that we use a cardboard box for it, then I think there are times in Folkeskolen where one uses too much time on these practical and technical things where the learning outcome, let's say the historical learning outcome maybe are not that great, so I think that the historical learning is really concentrated when one uses an online program, because one has everything available and it goes really really fast with finding what one needs...

Freya: It really depends a lot on how you look at learning. I can easily follow what you are saying, especially also with such a subject as history... and it is just sometimes easiest to learn history through a book, but this is intended as an evaluation... so it must be a little more creative free space...

Walter [a]: I also think this worked quite brilliantly. (Excerpt, transcript, 'TV: Playing with peer teaching online')

On the background of a discussion of how to avoid these more exceeding play practices in this assignment, Elliot found the analog way of doing the assignment better, while here there can 'be brought a little more seriousness into it' because as he argued online it becomes easier for schoolchildren to do things, they 'should not', arguably imagined through his own experience being part of the exceeding group. Walter instead shared a temporal consideration, while arguing how too much time is used 'on these practical and technical things' doing the assignment in a cardboard box compared to the

historical learning outcome when being able to find what is needed ‘really really fast’ online.

On one hand Freya initiates a reflection on Walter’s assumption by opening for a consideration on how much historical learning making the assignment in a cardboard box yield is a matter influenced by ‘how you look at learning’. On the other hand, Freya also brought up the assumption on how ‘it is just sometimes easiest to learn history through a book’, as the remark already discussed in relation to learning media in Chapter 9.

The combination with the space for openness in meaning production of the assignment and the construction of a protective frame through the framing of the design experiments through play appear to provide an opportunity for making own assumptions explicit, as seen in the case with both Sahar during the playful experiment in the field in biology, Peter and Henry in the outdoor school situation and with Freya, Walter and Elliot during the peer teaching online.

However, arguably this especially comes forth when the atmospheric configurations are differently felt than those of *typical* atmospheres of the classroom, such as the euphoric play moods. As mentioned in Chapter 3, Sumartojo and Pink (2019) propose how atmospheres are co-constituted and perceived by the individual through anticipation, foreknowledge and pre-existing views (p. 5). This echoes Heidegger’s (1962) notion of how a specific mood always already attunes perception and through this understanding arguably students anticipatory modes of feeling can possibly surface when participating in atmospheric configurations not exactly fitting their pre-existing views on teaching. As Skovbjerg (2021a) explains:

When it comes to openness, the euphoric mood is characterized by being the most open of the moods presented, because the production of meaning is constantly seeking new forms of expression, and the participants also have here the greatest openness towards new ideas for exceeding whatever was meaningful previously in order to bring about the production of new meaning. (p. 125)

When the openness towards new ideas and seeking new forms of expression are constant, the euphoric mood can through being ‘the most open of the moods’ as Skovbjerg explains, enable perhaps in particular the opportunity of playing with and sharing these assumptions. But also providing the opportunity of questioning student

assumptions when situations offer differently felt atmospheric configurations of teaching practices, as exemplified through the following.

Questioning assumptions through taking risks in teaching

During all the rounds of 'XII, XIII & XIV: Playing with peer teaching', Christian reflected together with the students after they had experienced all three peer teachings of the day and had been doing group work reflections. Attention to the students' own experiences were one of the key elements designed for in the experiments in general teaching competence. This was partly based on Christian's recognition of a feeling of not taking these experiences seriously enough in the unfolding of his teaching practices (Lausen et al., 2022, p. 33).

In the reflection after the day of peer teachings, the students reflected on how one of the peer teachings stood out and the atmospheres of the experience were in contrast to the other peer teachings of the day. In the field notes from observing the unfolding of that specific peer teaching situation, I wrote:

Before the other students are allowed to enter the classroom, the first student group is decorating the room with sand, seaweed, and shells they found on the beach yesterday. They place it on all the tables, so everyone has a small pile in front of them. After the 'teacher' group has finished decorating the tables all the other students enter the classroom. The immediate reaction is that they touch the things lying on the tables and talk about them. There are mixed reactions, but most of them try to make fun of it. Someone comments with a laugh that it's disgusting. Arthur comments on whether the idea is for them to throw with seaweed. There is a lot of noise in the classroom, students talking loudly and speaking all at once. Annie says with a smile on the face 'I am completely homesick from this smell'... After Christian has welcomed everyone to today's lessons, the first group that has already put seaweed and shells on the tables begin their peer teaching. They ask the other students to place themselves under the tables to write a diary as if they were one of the crew members on Columbus' ships. After some commotion, laughing and talking about how difficult it is to get the body all the way down under the tables between the chairs and settle on a position making it possible to write something on a piece of paper, the classroom turns quiet. The students now

placed under the tables... The 'teacher' group turns on the sound of plunging waves mixed with the sound of seagulls. They walk around with diffusers with salt water, spraying it over the students on the floor. (Excerpt, field notes, 'XIII: Playing with peer teaching')

The subject matter framework of this round of peer teachings were aesthetic elements in teaching. The first group of the day brought sand, seaweed and shells into the classroom and surprised the other students with having decorated the classroom with these artefacts before letting them enter. There was an immediate reaction from most of the students when they came in and saw the artefacts; talking together; laughing, joking; touching the different things lying on the tables.



Figure 17 Left: Teacher student Sigrid placing sand, seaweed, and shells on the tables in the classroom. Right: piles of sand, seaweed and shells on the tables and diffusers with saltwater ready at the table in the background

In the reflection round after having been in the atmospheres of the three different peer teachings of the day, the students shared some of their thoughts on the designs in class when everyone were together again after their group work. Claire reflected:

And then we also talked a little about, it was the one I was part of making, that we discussed it afterwards, that there were somethings where we got to talking about that it disturbed perhaps more than it helped to put them into the universe. For example, the thing with the water bottle, that we could quickly see that it becomes disturbing. So, you have to be careful not to overdo it too much... it was simpler with that video as they then are to sit and watch quietly and calmly in the last round, where one gets to concentrate on seeing it... (Excerpt, transcript, 'XIII: Playing with peer teaching').

Claire and her group were the ones to experiment with sand, seaweed, shells, and the diffusing of water as aesthetic elements during their peer teaching. In relation to this Claire explained how they in the groupwork afterwards came to talk about some of the aesthetic aspects of their peer teaching and how they, more than helped 'perhaps disturbed more' getting schoolchildren into the universe of the subject. In her reflection Claire noted how they as teachers should be aware to not 'overdo it too much', and it might be 'simpler' for schoolchildren to sit and watch a video clip 'quietly and calmly'. After Claire's comment, another student Ole, reflected through his experience of being in the peer teaching situations from the perspective of a schoolchild during that day's lessons:

Ole: Right when Claire was explaining, some water suddenly came.

[Several in class laugh]

Then I thought, okay, I just missed that, or I didn't hear what was happening, so that's also the thing about maybe you also have to be careful that the senses don't take over the whole thing, the thing about having too many senses at play at the same time. But I think the idea was brilliant, it's not that. It is just this thing about, that it can cause some disturbance. Also, in relation to these things lying here right [seaweed and shells on the table]. I think in fifth grade, they can't help but sit and tinker with the things here because it's something exciting right, it's something new.

Jens: We couldn't even help it either. (Excerpt, transcript, 'XIII: Playing with peer teaching')

Ole added to Claire's reflections on being careful not to 'overdo' the aesthetic elements 'too much', how teachers 'have to be careful that the senses don't take over the whole thing' because this can cause 'disturbance'. Ole reflected how it might be a problem to spray water because it might disturb, but also placing things on the table in a fifth-grade class because schoolchildren cannot help touching and 'tinker' with the sand and seaweed on the table, while it is 'exciting' and 'new'. To this comment Jens added how

they ‘couldn’t even help it either’ in a sense underscoring how it was (even for adults) tempting to ‘tinker’ with and touch the new and ‘exiting’ things on the tables.

When the students had reflected for a while and shared their assumptions of how it is important to be careful not to ‘overdo’ it and not letting the senses ‘take over the whole thing’ while it might cause disturbance in the classroom with schoolchildren, Christian asks all the students “Well, is it really disturbing?” (Excerpt, transcript, ‘XIII: Playing with peer teaching’). David commented on Christian’s question, with the reflection:

I liked the use of props if you can call it that. There were some seaweeds on the table, there were some sand. It probably makes the schoolchildren, as soon as they enter the classroom, start to think ‘Well, what is this? What is going to happen today?’... And perhaps instead of leaving it lying there on the table, the props you have brought, maybe actually use it a bit and ask the schoolchildren, or you could ask them to write down three things they think the lesson will be about based on the things they see in the classroom. I think that you could do that. Then at least you get to use the props you brought to the lesson. (Excerpt, transcript, ‘XIII: Playing with peer teaching’)

On the background of how Christian invited the students to reflect on the assumption these aesthetic elements being disturbing, Christian highlights the possibility for the students of reflecting about their own thoughts and assumptions and the imagined causes these aesthetic elements can have if using them with fifth grade schoolchildren. Christian’s question towards the students’ assumptions in the reflection round caused the conversation to unfold in a direction towards the benefits of bringing in aesthetic elements in teaching to unfold subject matters. David shared his thoughts of not ‘leaving it lying there’ but imagined actually using it to bring schoolchildren’s imagination at play. This above situation shows how some of these assumptions comes forth when being part of different atmospheric configurations than typical calm and concentrated atmospheres of students sitting still, listening in their chairs.

Remembering Gadamer’s (2013) point, the students seemed to be put at play, taking different risks with trying out both water in diffusers, offering samples of seaweed, sand and shells on the tables and as the last group of the day made a radically different peer teaching as already mentioned in Chapter 9, where the student group played with the theoretical perspective of aesthetics as an element in teaching practices, by going

‘straight in the other direction to try and take it away from you’. The students played and arguably took risks playing with different forms of doing in the classroom not particularly common in the class and in this way trying different practices out through the theory of the subject matter.

Playing with norms, values and beliefs

A reason why students assumptions might distinctively come forth when designing teaching practices through play making them available to question and give new meaning interwoven with the open meaning production can be due to how this provides an opportunity for playing with the normative dimensions of practices in everyday life as Hohn⁵ (2011) explains about Schiller’s thoughts on play (p. 181). Schiller, according to Hohn (2011), is of the view that play and aesthetic activity is not subject to rules in the same way as everyday actions, a view many play theorists after him follow. This means that in play freedom from moral and everyday rules is present, but as Hohn (2011) explains, it does not mean an absence from these different rules. Rather rules are present in an intensified way (Hohn, 2011, p. 181).

In play it is possible to experiment with, explore, be critical of and take apart norms, values and beliefs (Hohn, 2011, p. 181). Hohn (2011) derives from Schiller how aesthetic activity is then a medium for ethical reflection and renewal (p. 181). Interweaved with this possibility is found a preservative function in aesthetic activity and hence in play according to Schiller, providing a means of protecting ideals and values (Hohn, 2011, pp. 181–182).

The ambiguity which play calls forth, is not only in the sense of play being an ambiguous concept theoretically to get a hold of, but rather how play as an activity brings with it ambiguousness (Sutton-Smith, pp. 2-3). Through these thoughts on the function of play there seem to be provided a possibility for students when playing to reflect on the normative dimensions of teaching in a different way, at the same time as making it possible to hold a space for the ambivalence and uncertainty towards the renewal and preservation of ways of knowing, doing and being in teaching practices.

⁵ Hohn’s (2011) interpretation of Schiller’s understanding of play is through a pedagogical perspective, making Hohn’s interpretation relevant in context of this study.

In the open meaning production of designing through play, norms and values can be explored and played with. The students can play with different practices, play media and spatial configurations in ways which might not come up as ideas had the teaching situations been framed outside of play. Or students get to play with opposites as in the example as mentioned where the student group played with not including any aesthetic activities in their peer teaching situation to experiment with how it would feel contrasting the other peer teachings of the day with a lack of aesthetic elements present. However, rules seem simultaneously intensified to a certain degree in these practices of playing, where the values and norms the students bring is explicated through their assumptions. Rules and norms are at stake, played with and explicated for scrutiny and at the same time in some sense protected and preserved.

Playing with norms, values, and beliefs as an opportunity of playing with students' assumptions as coming teachers, then also point to a deepening of the understanding of why practices in teaching designed through play does not have to be 'realistic' and be an opportunity of rehearsing for the future as dealt in the previous chapter. When play is about the interplay between renewal and preservation in Schiller's definition of play and aesthetic activity, playing with is more about defining these opportunities of renewal and preservation or playing with meaning in the situation than about getting it right. When the opportunity of designing through play for students is to play with the creation of meaning and simultaneously explore (their own) norms and values in teaching practices and of subject matters, exceeding practices of silliness or overdoing it does not necessarily have to be followed by a negative interpretation.

Rather as already mentioned, it seems to be able to benefit the possibility of explicating and playing with the assumptions holding norms, beliefs, and values through the open meaning production in play. Designing through play can then arguably provide an opportunity for students to share assumptions and providing a space for negotiating possible new meanings through these experiential dimensions of active and open meaning production. This opportunity fits with visions of learning argued for in this thesis where students are to be regarded as active participants in their own understanding and learning process.

New meaning to assumptions

However, complexity arises while as Lunenberg et al. (2007) explain, these more active visions of how teaching practices are to be unfolded might not be enough to change teacher students' assumptions of how teaching should be practiced in their future professions. Lunenberg et al. (2007) explain:

According to Putnam and Borko ... They mention that student teachers may have beliefs that differ significantly from the views of learning and teaching that teacher educators wish to develop. They argue that this may distort the new ideas of learning, because student teachers will try to fit them into their existing views. (p. 587)

As Lunenberg et al. explain by way of Putman and Borko (1997)⁶, teacher students' beliefs of how teaching practices are to be unfolded might be fundamentally different than what will aid pedagogical practices which are valued as relevant in their future professional practices. Students might instead incorporate new ideas and theories about learning into their pre-existing assumptions. The concerns of Lunenberg et al. echo Dewey's (1904) consideration on the importance for teacher students to first and foremost study theoretical knowledge in order for them to 'distrust' own experiences and avoid development of 'other evils' of focusing primarily on own and others practical experiences of teacher practice (p. 19). On the one hand Dewey's argument about how teacher students are to distrust their own experiences of practice seems worth noting in the light of some student assumptions might not in all cases reflect or lead to active visions of learning and teaching. On the other hand, a focus on studying theories as the primary way of learning for students in teacher education as Dewey's (1904) suggestion was in 1904, does not seem either to be the cure all for students to reflect on and 'distrust' own experiences of practice, an argument to be unfolded in the following.

'You can call me a little back to the old school'

During the two separate interviews with the students Karl Johan and Niels about participating in unfolding of design experiments, their assumptions evolving around

⁶ Putnam, R. T., & Borko, H. (1997). Teacher learning: Implications of new views of cognition. In B. J. Biddle, T. L. Good, & I. F. Goodson (Eds.). International handbook of teachers and teaching, Vol. 2. Kluwer Academic Publishers.

learning and teaching came forth. Both Niels and Karl Johan explained in the interviews how they experience learning and teaching as meaningful and engaging when they are active participants in the learning process. As mentioned previously, they both commented on how teaching practices in teacher education shows itself most meaningful and engaging when not just ‘sitting on their chair’ but instead when playing with ‘how to sit in school’. These experiences can be interpreted as essentially evolving around active visions of learning and participation for the students in the practice of teaching, not only understood in the sense of being bodily active but participating actively in the process of coming to know.

In the interviews both students were although attuned differently towards how teaching practices is to unfold for schoolchildren in Folkeskolen. When talking about using play or playful approaches in Folkeskolen with Karl Johan in the interview, he referred to a certain balance which must be preserved:

Lotte Agnes: So, there is a balance which needs to be maintained?

Karl Johan: And also, this thing about using it [playful approaches] as something which is a little like a reward system, as it is called. It can sound a bit like behavior modification, but it is like a way where you can say to the schoolchildren ‘Ok, now you have been good for a while, while I have been standing here talking, or we have been doing more boring things, then you are now getting this treat’ by saying ‘Now we freaking play’. Now we try something new. (Excerpt, transcript, student interview Karl Johan, ‘XII, XIII & XIV: Playing with peer teaching’)

Karl Johan explained how he thinks there must be a balance obtained between playful approaches or ‘trying something new’ and him as a teacher talking or when ‘doing more boring things’. Referring to playful approaches in teaching in Folkeskolen as a form of reward system, or a ‘treat’ Karl Johan further explained:

... there you can call me a little back to the old school (*da. den sorte skole*), where it has to be [gestures of being strict; making a whistle sound and chops the side of his hand into the other palm] noo.. No but, uh, I just think there needs to be a

meaning to it at least. (Excerpt, transcript, student interview
Karl Johan, 'XII, XIII & XIV: Playing with peer teaching')

Karl Johan furthered his explanation of how the balance is to be kept, by referring to himself as 'a little back to the old school' and showing how there must be kept a certain strictness in the classroom through gestures with his hands. However, he explained how it should not be understood quite as strict as his gestures implied, by stating that for him the importance lies in how there needs to be a meaning to the playful approaches at least.

The same sense of an importance in keeping a balance or as Karl Johan here reflected how there at least must be a meaning found between using playful approaches and traditional ways of teaching or 'doing more boring things' in Folkeskolen with schoolchildren, is something Niels also highlighted in the interview:

Yeah but also, I think it is important to put a focus on how it [playful teaching methods] should also be supplemented by teaching schoolchildren all the way down to the youngest classes and saying in some situations it's important to sit on our chair and listen and we have to sit and work concentrated, because they have to be trained in that, because this is also a competence which they have to be able to do when they come out in reality. (Excerpt, student interview, Niels, 'Innovation and entrepreneurship in school')

On the one side both Karl Johan and Niels find meaningfulness in more playful ways of engaging with knowing and doing in their own experiences as students, while on the other hand their statements in the above point to a different and more ambiguous notion of how play and playing but also of more active and participatory ways of teaching are to be unfolded in the pedagogical practice in Folkeskolen. Karl Johan and Niels shared assumptions of how schoolchildren should learn to sit on a chair, listen and work concentrated as well as how playfulness is viewed more as a reward after being good at sitting still or getting through the boring things. The two students seem at least ambiguous about different notions of how they conceive of what teaching is and how learning happens. Karl Johan and Niels seem to move between notions of what Dewey (2015) calls traditional teaching methods of 'sitting in a chair' and 'listening to the boring stuff' and on the other side 'then we can play' as alternative, experiential and different teaching methods than purely instructive.

A discrepancy and ambiguousness between own experiences of how teaching practices makes sense to them as students and how teaching practices might make sense for schoolchildren seem to be at stake in these students' assumptions of pedagogical practices. These assumptions towards how teaching practices are to be unfolded in their future practices so differently from their own experiences of what meaningful teaching practices entail, could be a result of lack in transfer from one context of knowing to another (Brinkmann, 2017, pp. 50–51; Dewey, 1966, p. 67).

Albeit suggestively interlinked with the issue of transferability, the discrepancy between own experiences and thoughts on future professional practice can however also be interpreted through Lunenberg et al.'s (2007) argument mentioned above. Instead of being an issue of missing transferability, it could be interpreted as a matter of how students might try to incorporate new teaching methods into pre-existing views of how they believe teaching ideally should unfold in the future with schoolchildren. This way connecting with the issue of how research has shown that teachers often teach as they are taught in teacher education or even regressing to teaching as they have been taught in primary school (Iskov, 2020, p. 95; Lunenberg et al., 2007, p. 586).

As Karl Johan with dissatisfaction states in the interview when trying to explain how he feels the pedagogical practice at teacher education generally is not very playfully engaging “That is how it is, a lot at our institution, where they stand there proclaiming how one should not use a ‘pedagogics of filling-station attendants’ (da. tankpasser-pædagogik), but it is precisely what many of them do” (Excerpt interview, interview ‘XII, XIII & XIV: Playing with peer teaching’). Karl Johan furthered this point in the interview by stating how many of the educators are only using traditional methods of teaching, the students sitting in their chairs and staring into the PowerPoint screen ‘just writing down’ as he argues. The same narrative of the atmospheric configurations of teaching practices, Niels described, when contrasting his experience of teaching designed through play throughout the course in ‘Innovation and entrepreneurship in school’ with other teaching experiences “Where we are normally just used to sitting in our rows with our computers and well; [a social media feed] in the one side and a note system tool in the other side and listening with half an ear, right” (Excerpt, transcript, student interview, Niels, ‘Innovation and entrepreneurship in school’). Karl Johan and Niels both draw attention to how being a student at teacher education to some extent involves traditional teaching methods of students passively taking information in.

Doubtless, traditional methods of teaching; students sitting on rows; listening to the educator highlighting points through a PowerPoint slide, can unwillingly represent the role of the educator as one transmitting knowledge to students as passive recipients (Laurillard, 2008, p. 527), making it perhaps difficult to provide space for playing with ways of knowing for students underlining the argument throughout Chapter 9. As Adams (2010) reflects, then PowerPoint presentations can be viewed as not innocently providing an aid in teaching as mediation tool but also conform understanding and provide a "... visually monotonous picture of the world" (p. 10). Still, it might be overtly simplified to suggest that teaching practices emulating characteristics of traditional forms of teaching automatically make students into passive recipients of information. But, during the study I was still confronted with how educators at least explicated different concerns towards designing teaching practices through play through different and more participation-oriented teaching practices. Shortly returning to the analysis of students' assumptions below, I want to first highlight some of these educator concerns regarding designing teaching practices through play.

As Benjamin reflected in the interview in relation to designing teaching practices through play, then "... something can go completely over the top so that it becomes something completely silly... so it is again with that balance ... then it becomes too informal... and too far away from the content of the subject" (Excerpt, transcript, educator interview, Benjamin, 'Innovation and entrepreneurship in school'). The ideal of keeping a balance between the playful aspects and keeping the content of the subject in center can be endangered through 'something completely silly' according to Benjamin, and here it is for him a matter of providing a 'balance', echoing the student Karl Johan's reflections in the above. A differently formulated reflection, but one arguably implicating same underlying concerns, Christian expressed. During a conversation I had with Christian when getting the last details in place for the design experiments of 'XII, XIII, XIV: Playing with peer teaching', Christian mentioned "I am only worried that the students don't get enough analytical reflection out of this" (Excerpt, transcript, design process, 'XII, XIII, XIV: Playing with peer teaching'). Even though this form of concern might not specifically stand out as a challenge for educators uniquely when designing through play in relation to professional education, because as Shulman (2004) writes "... the tensions between the theoretical and practical elements of the education are nearly always palpable" (p. 533), these concerns seem not least in

relation to designing through play to present themselves as a challenge. These educator concerns of striking the right balance between subject content and activity or creating space for enough analytical reflection when designing teaching practices can be viewed as a question of the ever-present tensions between practical and theoretical elements of professional education. When designing through play is regarded as an opportunity for playing with ways of knowing, analytical reflection is not to be left out as part of coming to know. While playful atmospheres and instances of euphoric play moods emerging seem as opportunities for students to sense and explicate assumptions about their future professional practice as teachers, this opportunity is followed by the challenge for educators to confidently carve out space for these experiential dimensions as seen with the educator Christian's comment of how he was afraid of not providing enough time for analytical reflection and with Benjamin's comment on how it can become too informal. Trusting experiential teaching practices to be able to make students come to know about theoretical aspects and aiding towards becoming professional teachers can be even more difficult when euphoric play moods arise and through exceeding practices makes everything seem all silly and out of line. In addition to tensions between how much emphasis one as educator should lay on practical and theoretical elements, I argue these educator concerns can also be viewed as an epistemological ambivalence which present an underlying challenge for designing through play, which I will further reflect on in the Discussion.

However, bringing up these educator concerns regarding designing through play is also to point at how students' ambivalent assumptions towards teaching, might not only stem from a difficulty of fully adopting new active visions of learning following Lunenberg et al.'s argument mentioned above. Even though these educator concerns can be thought of as relatively normal and professionally necessary, seen in relation to the students Karl Johan and Niels' comments, the educator concerns can help to reflect on how students' ambivalence towards new and more active visions of teaching and learning can possibly be interpreted to partly stem from also educators' ambivalence towards teaching in new and different ways.

In these challenges a double opportunity of designing through play is argued to be hidden for playing with ways of knowing for students through explicating and providing new meaning to assumptions about teaching and learning. On the one hand experience with designing through play might assist explicating the epistemological ambivalence of

educators if these are shared with students through making their own 'hidden thinking process' available (White, 2011) and aid a focus on the second order pedagogical aim of laying forth own didactic considerations and choices (Iskov, 2020). At the same time, as mentioned earlier, designing through play asserts an opportunity of reflecting with students on their assumptions, because they seem to surface through these differently experienced atmospheric configurations of teaching practices when designing these through play.

A door opener to students as a challenge and an opportunity

Through the question whether students found aesthetic elements in teaching disturbing as mentioned earlier Christian asked, the students were able to share different interpretations of the situation, nuancing the meaning production in the reflections and providing new possible interpretations of the peer teachings and theoretical aspects. But also other reflections on assumptions came up as a result of being in the peer teaching experiences of the day's lessons:

Christian: I think I hear you say that aesthetics holds some possibilities, aesthetics is a positive perspective, but it also must be incorporated mindfully, and it must be provided in correct doses?

Naya: Well, I moved school in eighth grade... where [the first school] was a lot like an old-fashioned pedagogical approach... Then when I moved to the new school, where there was much more aesthetic activity involved; and in the beginning I thought, I'm sorry, I thought it was ridiculous when the teacher came with those props... but now I can see today that there is actually a point to it. (Excerpt, transcript, 'XIII: Playing with peer teaching')

Reflecting on experiences she had as a schoolchild in Folkeskolen, Naya explained how she in the past believed aesthetic activity and aesthetic props to be 'ridiculous' as she apologetically formulated. In Naya's experience with moving schools, coming from an atmosphere of an old-fashioned approach to schooling made Naya's foreknowledge at the time render these new aesthetic activities she was confronted with in the new school less meaningful for her. The experiential aspect of being in the playful atmosphere of

the peer teachings, trying different aesthetic elements – and the peer teaching stripped from aesthetic experiences– helped further her creation of a new signification of what aesthetic activity is about in teaching. In playing with assumptions through these experiential and socially constructed atmospheres of experimenting with, trying out and playing with theoretical subject matters, Naya explained how she had come to know differently about her own past. While this new signification is not necessarily only attached to this specific situation of being in the experience of ‘XIII: Playing with peer teaching’ but is suggestively formed on the background of many different situations as a teacher student, I argue how the situation with being in these peer teachings seemed at least to aid furthering the creation of new significations through also being an opportunity of sharing these thoughts and former assumptions. In relation to reflections on freedom as dealt with earlier, Merleau-Ponty (2014) further argues how the possibility of creating a new signification and insight is negotiated through the atmospheres of the present:

By taking up a present, I again take hold of my past and I transform it, I alter its sense, I free myself and detach myself from it. But I only do so by committing myself elsewhere...
The same is true for all moments of insight: they are actual if they are sustained by a new commitment. (2014, p. 482)

The insight in the moment is dependent on committing towards something else. As with the student Naya, she was previously committed through her being-in-the-world towards feeling aesthetic activity as pointless or even ridiculous, while the experience of being in the atmosphere of trying out and playing with aesthetic activity actualized an insight through sustaining a new commitment for her towards aesthetic activity in teaching practices. As seen through Lunenberg et al. (2007) earlier, research suggests how students not always successfully replace own assumptions with new knowledge gained in teacher education. While when following Merleau-Ponty’s thoughts, then replacing assumptions needs new commitments. However, as Merleau-Ponty (2014) explains, the freedom to commit to new significations and meaning towards the future, is always already bound up with others (p. 481). The freedom to commit to something else, is according to Merleau-Ponty restricted because of how a situation is to be interpreted. Just as already explained through Dewey (2015), mentioned in chapter 4, a situation is an interplay between internal and external conditions always in *interaction*, rendering the freedom to commit towards new significations something students do not

necessarily do on their own. This essentially intersubjective and social aspect of altering assumptions towards new and potentially more productive ones, seem with designing through play to possibly be facilitated by playing with embodied and playful experiential experiences of doing differently. As a consequence of how atmospheres and moods of a situation stem from neither inside or outside the individual (Heidegger, 1962, p. 176; Karoff, 2013b, p. 8), but constitutes a being-in-the-world which can be changed through an engaged interaction with others, a shared reflection through these atmospheres can potentially attune students towards new significations of their assumptions and foreknowledge in relation to teaching, knowing and learning. Different experiential and social teaching practices designed through play is arguably capable of aiding this process as mentioned throughout this chapter, while playing "... is the state of being where you are distinctly open to new meaning production..." (Karoff, 2013b, p. 8), and in this way possibly also attuning students towards new commitments as a prerequisite for creating new significations.

Michael, the physical education educator I interviewed about his way of using and understanding play in teacher education, touched on this distinct openness which can emerge through play, while explaining how he always start by playing with the students as the first activity when meeting a new class of students:

So, in that way [play] takes up space, of course I do that at the beginning because my intention is that I want to make them feel as soon as possible that this room is a good room to be in. It is a room where we are bodily, but we are bodily together and that togetherness which play provides, the closeness play provides, well I show them this... some know each other a little, but otherwise they don't know each other and then we are already in play, without me having heard their names or what they are thinking, but they are moving around and then afterwards, then I can already clearly feel, that is, based on experiences I've had in the past, then I can feel that now they are more relaxed, now they open up and now they say who they are... But I use play as a kind of door opener to them, to make them feel relaxed and, indeed, see each other in a good way. (Excerpt, transcript, interview teacher educator Michael, physical education)

Through the 'closeness' and the 'togetherness' which according to Michael can emerge through play make in his experience the students more 'relaxed' where they then 'see

each other in a good way' echoing the characteristics of the 'pure sociability' and being attuned towards each other as a prerequisite of being in play as mentioned in Chapter 2. Michael explained how the space of physical education, being a distinctly different room than most other teaching practices are unfolded in, are to be interpreted by the students as 'a good room to be in'. Michael does not explain the social benefits of play for the students but instead 'show them this'. Creating an atmosphere of openness and togetherness already from the beginning of the course in physical education through playing, Michael mentions how he uses play as a 'door opener' to the students. Not only making them able to see each other positively, but also making them 'open up' and 'say who they are'. In the interview Michael explained how playing together is detrimental for making students dare to share their thoughts and contribute more freely in class echoing Shulman's (2005) reflections explained earlier of how participation always involves a level of fear and anxiety which needs to be taken into account.

Exposure of assumptions as a challenge

Regarding designing through play as a door opener to students, both as a way of reducing the levels of anxiety of participating, but equally as a way of getting to know the students and their assumptions about learning and teaching, saying 'who they are', I argue is an opportunity which comes with a caveat. As Spariosu (1989) comments, a Freudian notion of play is "... that play reveals something about the unconscious life and motivation of the individual ..." (p. 185). The argument of how play enables a frame for students underlying assumptions about their future professional practice to come forth, showing who they are, should not be understood as a wish for an exposé of students' unconscious or even conscious life. Substantiating the precariousness Thorsted (2016) reflects in relation to adult play in an organizational setting, how:

It is important to underline, that we do not need a person's private life to be exposed in an organization or among colleagues in order to create new understanding, organizational learning or to develop change. But we do need people to get tuned to the world by being open, present, sensing and seeing. (Thorsted, 2016, p. 42)

The opportunities of designing through play in teaching practices is not for students' private or unconscious life to be exposed as such. There is a difference as Thorsted points to between exposing oneself and being open and present in the situation. This

leaves an ambivalence and a challenge towards the opportunity of designing through play as a way for students daring to share their assumptions. While designing through play provide opportunities for shared meaning making, reflections and a potential for creating new significations of these as a needed requirement for teacher students as argued through Lunenberg et al. (2007), on the other hand the aim of designing through play should not be to expose students thoughts, beliefs and assumptions. This precaution seem in some way to echo the point Jensen et al. (2021) also bring forth as mentioned about how students do not want to enter playful spaces because these can feel exposing. Different reasons can come with this notion of sensing playful spaces to be exposing to enter explored in Chapter 11. While through the theme of assumptions adding the sense of being exposed in relation to one's inner thoughts being scrutinized to the potential reasons of students not wanting to participate in these forms of teaching practices. The opportunity and challenge arguably then are how designing through play is not to be viewed as a means to expose students' assumptions about teaching and learning and future practices with schoolchildren. Instead, the underlying premise of the meaning production in the protective frame of 'this is play' are to be set as a continuous premise as also Michael explained when stating that play is to be used to 'see each other in a good way', creating space to share assumptions and participate in the teaching practices without feeling exposed.

Trust and hope towards future atmospheres in the classroom

The above reflections point towards some difficulties in how opportunities and challenges are tightly interwoven and in the practices of the classroom and dependent on the complicated metacommunicative framing of mutually agreeing on through what premises these practices are performed and evaluated through, as the same point made in Chapter 11. However, in relation to the theme of this chapter, through an atmospheric outlook on students' assumptions, different opportunities for interpreting these becomes possible, potentially countering the challenge of the sense of exposing students' assumptions and beliefs in teaching practices designed through play.

How students' express assumptions on for instance; 'not overdo it too much' and 'it might create some disturbance', 'sometimes the easiest is to learn through a book', 'in some situations it's important to sit on a chair', and 'but also using it as something which is a little like a reward system' can arguably through an atmospheric outlook be

accounted for as expressions of intermingled feelings of anxiety and hope for how atmospheres of the classroom come to be in students' own teaching practices as teachers in the future. Pink (2021) argues how "... hope, can be thought of as a *feeling*, or category of feeling, which describes anticipatory sensations" (p. 196). By being in the atmosphere of different forms of teaching situations designed through play students seem to get into contact with these anticipatory sensations, making it possible for them to express their individual anxieties, but also hopes for the atmospheric configurations of the classroom in their future professional practice, when hope is interpreted as "... the aspirational dimensions of how we imagine futures" (Pink et al., 2018, p. 3). Through this notion of hope, students' beliefs and assumptions can arguably seem to be rooted in anticipatory and aspirational notions of what atmospheric configurations are believed to be most valuable for attuning schoolchildren in their future professional practice towards what they are to learn.

Through interpreting students assumptions as intermingled with anticipation, anxieties and hope, the temporality of these assumptions about teaching becomes more apparent and "... suggest how sensory modes of knowing, remembering, and imagining are part of the way that futures inhabit our everyday present" (Pink, 2021, p. 193). When these sensory modes are part of forming the way in which possible futures inhabit the everyday present of students, then playing with different atmospheric configurations in teacher education practices can create possibilities of coming to know differently and hence change how these possible futures come to inhabit the present for students.

By playing with different atmospheric configurations in the classroom for instance the more euphoric play moods as some of the students during the peer teachings pointed to as very realistic to unfold in Folkeskolen, can potentially provide students with a more familiarized sense of trust in giving space for imagining a greater variation of atmospheric configurations in the future other than those of control, quiet, and calmness in the classroom.

Trust according to Pink et al. (2018) is a matter of feeling confident that improvisatory actions are "... cushioned by the familiarity of process or place" (p. 3). Some form of familiarity needs to be in place in order to become confident towards acting in situations of improvisation, where the sense of familiarity is what differentiates trust from the sense of risk according to Pink et al. (2018, p. 3). For novice teacher students feeling the confidence and trust in being able to act and improvise in atmospheric

configurations in their future professional practice which they are not routinely familiarized with, can feel potentially risky. This can for instance be exemplified by the example mentioned in Chapter 10, where the student Nivi through experiencing being in the field in a different way, asks ‘What if you lose a child when you are out on field work and send them away for this exercise?’.

While never being able to become fully familiarized with future atmospheres as these are emerging and uncertain, the argument of the opportunities for designing through play is more that of designing for teaching experiences which continuously enables students to be able to trust going forward in uncertain situations echoing Barnett’s (2004) argument of the ontological task of education as mentioned. Designing through play and in these situations experiencing different atmospheric configurations of knowing is arguably an opportunity of enabling students to be familiarized with new anticipatory sensations, reconfiguring how imagined future atmospheres can come to make sense. This can potentially aid students in trusting and differently hope for differentiated atmospheres in future classrooms. But designing through play also mark an opportunity of sharing these hopes, anxieties, and anticipations towards possible future atmospheres. Furthermore the opportunities of interpreting assumptions as hopes for the future is in how instead of framing assumptions and beliefs as only based on past experiences which new visions of learning are incorporated into recalling Lunenberg et al.’s argument, then tending to the ‘multi-chronology’ (Sumartojo & Graves, 2018, p. 339) of these can temper the question of judging assumptions as appropriate or ‘true’ in the context of teaching practice and in relation to students’ future professional practices.

Designing through play for attuning students towards playing with ways of knowing is then also a potential way of holding a space for playing with assumptions viewed as hopes, anxieties and anticipations for the future and creating possibilities for students through sharing these knowing and trusting differently about future atmospheres and own improvised actions towards their future professional practices as teachers in Folkeskolen.

Part VI

Chapter 13: Discussion

In this chapter, I discuss some underlying issues, which can be pointed to in relation to designing through play for attuning towards playing with ways of knowing in teaching practices in teacher education.

I discuss how there seem to be what I term an epistemological ambivalence towards knowing and teaching and how this influence opportunities and challenges of designing through play. What designing through play can contribute to other more established fields of teaching approaches are discussed and the challenges in educators' everyday teaching design practice and how articulations shape the opportunities and challenges of designing through play in teacher education.

The concepts of atmosphere and moods as productive for educational design research as well as lastly the role of design experiments as knowledge generating approach is furthermore discussed in this chapter.

The (im)possibility of play in context of teacher education

Throughout the thesis I argue how designing through play in teacher education does not only provide opportunities for playing with ways of knowing, but also present challenges for both students and educators in the unfolding of teaching practices.

What makes the process of designing through play in teacher education less straight forward is how the opportunities and challenges does not only exist as differentiated points, making challenges available for elimination through the right set of prescriptive methods. Instead, the opportunities and challenges pointed to in this thesis are less distinctly separate, marking them not only about the specific everyday practices of designing teaching practices through play, but link to more underlying factors in relation to the (im)possibility of play in context of teacher education.

The parenthetical separation marks how I argue for the interwovenness of opportunities and challenges due to their oftentimes simultaneous presence, signaling how designing through play ambiguously is an impossible, and yet at the same time productive and possible field or approach to education.

Epistemological ambivalence towards playing with ways of knowing

Contributing in this thesis with framing the role of designing through play as playing with ways of knowing sets the role of play in teacher education in a close relationship with the academic content of teaching practices. Designing teaching practices through play for this purpose implies a willingness to legitimize different routes to knowing in education than through ‘traditional’ (Dewey, 2015, p. 17) transmitted information provided by the educator. If designing through play as a route for playing with different forms of experiential, active, and embodied ways of knowing through possibilities of both knowing in, about, and through atmospheres of the subjects in a playful protective frame are to be enabled continually in teacher education, I argue in line with Jensen et al. (2021) how designing through play needs to be valued as something different than merely a design technique.

In relation to educational design-based research methodology, Amiel and Reeves (2008) point to how tools or techniques does not have the capacity of changing or encouraging new pedagogies in the educational context (p. 31). If the opportunities of designing through play as pointed towards in this thesis is to be enabled in teacher education as not only a technique or tool amongst other educational design tools, Jensen et al. (2021) argue that as they term it an epistemological shift towards play and playfulness as valued in higher education is necessary (p. 14).

The challenge of designing through play in higher education being interpreted as a mere educational technique is the same as experiential education as a field is facing (Roberts, 2012). In relation to the issue of equating experience in education with merely being a method, for instance as a means for alleviating the monotonous atmospheres of classroom instruction, Roberts (2012) argue:

What all these methods have in common is the manner in which experience is technically defined and applied. That is to say, the experience is tightly bounded (in both time and space) and efficiently controlled. Experience becomes not organic, interactive, and continuous but rather a scripted, timed, and located “activity”. Normal classroom or school processes stop and “experiential” activity then begins for a bounded and specific timeframe. (p. 5)

Interpreting Roberts account in relation to experiential education suggests how forms of teaching and understandings of knowledge set in a focus on experiential ways of

knowing is at the risk of being categorized as methods to break up the rhythms of normal instruction, instead of becoming the underlying approach or support a construction of new pedagogies. The issue of designing teaching practices through play simply becoming a functionalistic support for motivation and an 'activity' towards learning activities, are also what amongst other issues are appealed against in research on play and in the practical introduction of play and playful approaches in the educational context (Karoff, 2010, p. 8; Saugstad, 2017, p. 6).

In this study the experiments are not full 'organic, interactive, and continuous' courses, but rather parts of other teaching understood as framed outside of designing through play. This can be criticized as a way of exactly making designing through play into a method merely, 'technically defined and applied' as highlighted through Roberts in the above quote. While there are here perspectives for further research into the different opportunities and challenges of designing through play in educational design research through design experiments expanding over full courses, some issues in relation to the research also seemed to be highlighted through the experiments being only a part of the lessons in the different subjects.

Through design experiments being only part of other, oftentimes more traditional teaching practices and the designs having had a more sporadic character, I argue also help to highlight the potential ambiguousness towards designing teaching practices through play. An example of this ambiguousness towards designing through play can be made through the collaboration with Christian on 'XII, XIII & XIV: Playing with peer teaching'. As mentioned in relation to challenges of time which play media present when designing through play in Chapter 9, Christian decided to shorten the plan for four full day design experiments to three. Christian as mentioned explained in the mail about his decision how he felt he had been too optimistic timewise in relation to what was on the lesson plan for the subject course. These temporal considerations were widely shared among the educators I collaborated with and seem infused with pressure towards privileging routes for coming to know based on less time-consuming forms of student participation as discussed in relation to the same situation in Chapter 9.

Playing with ways of knowing can be deemed too inefficient in terms of how much time it takes to lay the ground for students to participate in various ways. In the ongoing everyday evaluative decisions of how much student participation or playing is 'worth'

spending time on, it can feel too risky to allocate time towards, in an already crowded lesson plan (J. B. Jensen et al., 2021, pp. 10–11).

When evaluations are defined as ingrained in the doing of teaching practices, these continuously constitute a specific way of being towards teaching practices, shaping both students and educators ongoing evaluations of how to be a student and educator (Schwandt, 2000, pp. 217–218), and can come to carry this sense of felt risk and ambiguousness towards the design decisions of teaching forward for both students and educators. Gallagher (2018) in promoting an enactivist approach to education, highlight this sense of ambiguousness in terms of designing teaching practices and being an educator:

Often, however, in formal educational contexts, we come under the influence of Descartes’s [*sic*] ghost and think that bodily movements and environmental arrangements are not relevant to intellectual development, or are, at best, enabling conditions but not the right stuff that we need to educate. (p. 11)

Terming it Descartes’ ghost arguably makes for a rather incisive metaphor for the ambiguousness inherent in the process of designing teaching practices which includes embodied, experiential, playful and material elements in the learning process in place of a cognitivist focus. Spariosu (1989), tracing the concept of play historically in Western thought, suggests how Western mentality “...has always fluctuated between various rational and prerational sets of values” (p. ix). Accounting for the ambiguities entrenched in what is valued epistemologically I argue is equally as important in accounts of opportunities and challenges of designing through play as pointing to the need for an epistemological shift.

Pointing towards an epistemological ambiguity creates a way of acknowledging how educators and students *do* value different ways of knowing, but how these values are entangled in the always already historical, social, and cultural ambivalence (in Western thought) towards ways of coming to know (Spariosu, 1989). Hence arguably making it less straightforward to move status quo for how practices of teaching are designed.

As I argue in Chapter 12, designing through play is a way of bringing forth the epistemological ambivalence prevalent in these cultural and social patterns of valuing different forms of knowing, where designing through play can be a route for having explicit conversations on these and furthermore, taking the epistemological ambivalence

seriously as part of the continual design challenge of education. Indeed, not least an important aspect for students coming to be teachers in their future professional practice.

The possible possibilities of an open meaning production

Coupling play with the subject at hand, as only found relevant in relationship with the subjects, can leave an interpretation of play as merely a means of activities outside of play. On the other hand, as Sørensen and Spoelstra's (2012) write in an account of play as an usurpation of work in organizations "In this way, play again comes to appear 'functional' to the organization, but now the logic of what happens is play's own; play usurps work at the limit of work's ability to organize the life of the company" (p. 92).

Sørensen and Spoelstra's argument of how play usurp, or appropriate work help to understand how play and education might not only be thought of as opposing concepts. Even though designing through play is subject to the condition of the meaning of play being defined on the background of the intentionality of the educational context, play aid in expanding this intentionality through the appropriating, inserting the 'logic' of play through opening the meaning production towards playing with ways of knowing. While designing through play provide an opportunity of play appropriating the context of education, connected with this opportunity is also throughout the thesis an acknowledgement of how designing through play couples with opportunities found the field of experiential education. Connection to the field of experiential education has been part of the analysis in this thesis, drawing especially on inspiration from Dewey's (2015) thoughts in relation to experience in education. Designing through play can although be argued to also draw on other connoting fields or approaches such as art-based teaching and aesthetic activities in education as Boysen et al. (2022) suggest considering in research on play in higher education (p. 8).

What specifically designing through play can contribute to other more established teaching practice fields such as experiential education or art-based teaching I argue throughout the thesis is the potential of creating a frame for attuning students towards being able to risk the vulnerable position of participation. Further the contribution to other more established teaching practice fields lies in pointing to the opportunities of the open meaning production in teaching designed through play. When designing through play, knowing and meaning is to be understood as constructed through the situated practices in the classroom as a point argued for throughout the thesis. The

theory on play as a mood practice (Skovbjerg, 2021a) can in the design practice of teaching in teacher education guide towards how knowing, doing and being is about creating meaning of the situated practices in teaching and not as much a rehearsing for 'real combat' in the future. This is argued to yield space for trying things out in the here and now, playing with the possible possibilities of practices and media as well as attune towards the ambiguities of designing teaching practices, showing the (im)possibilities of playing with ways of knowing in teacher education and towards students' future professional practice.

The challenges of designing through play in everyday practice

While the opportunities of designing through play in teacher education among other aspects lie in bringing the ambiguities forth, the question is whether the challenges which this ambiguity bring in relation to designing through play might be too big to overcome in the everyday design challenge for educators in attuning students towards playing with ways of knowing.

Part of the interest in the general educational research landscape of play in higher education is researching in the opportunities of designing through play as ways of countering the performative and goal-oriented behaviors argued to be dominant in higher education. In this study I argue how performance permeates teaching practices through diverse notions of performance, not only through a notion of a (neoliberal) tendency of performative atmospheres. However, this might be increasingly a future reality in teacher education if following what is proposed as tendencies in other higher educational realms in the Western world (Goodwin et al., 2014; Jones & Patton, 2020; Lee & Day, 2016; Ramsden, 2003; Whitton & Langan, 2019).

Jensen et al. (2021) point to how the responsibility is partly one of policy developers in making space for play and playfulness as a legitimate part of thinking and doing education. While this is an important point to make explicit, this thesis focuses on the challenges and opportunities for educators in the concrete everyday teaching practices of being able to contribute to the continual design challenge of designing for the conditions which support students playing with ways of knowing. As Ramsden (2003) argues in relation to improving the competence of teaching in higher education:

What is needed in the long run is the institutional spirit and the political commitment... But...we do not have to wait for the whole system to change... It is up to us as teachers to

take control of improving teaching, especially by listening respectfully to our students about how we can help them to learn. In the process of improvement, I hope we shall realise a conception of teaching and learning as an imaginative, arduous, but pleasurable process. There can be no excellent teaching or learning unless teachers and learners delight in what they are doing. (p. 269)

Following Ramsden's comment in relation to the theme of this thesis tends to the dual aspect of how even though there continuously needs to be a deeper level of political and institutional commitment towards designing through play as a legitimate way of doing teacher education, then part of the opportunities is also placed in the everyday teaching practice. In this way there is a space for thinking about the opportunities placed in the continual everyday design practice of educators for designing through play.

How to talk about play in teacher education

The opportunities in the everyday design practice of educators for designing through play is although as shown through this research followed by a challenge in how talking about play in relation to teaching in teacher education is contrasted with notions of 'seriousness', 'only time for important things', 'the boring' but 'important', 'this balance' and 'more at stake' mentioned throughout Chapter 11 'Playing with performance'. Whitton (2018) argue in relation to the issue of how to talk about play in higher education how:

There is a need to better understand the way in which language and terminology shapes the use, acceptability, inclusivity and accessibility of play in higher education, the ways in which playful learning is discussed and the structures of power that are implicit within these discourses. (p. 10)

The terminology related to the field of play in higher education makes for defining power structures of what can be said and done, what is included and excluded from the discourse as well as how play is accessible and termed useful in this realm. As Langer (1967) argue through the quote drawn forth in Chapter 4, then ways of saying things makes for ways of seeing things, and this is important to consider in any theorizing. But when dealing with the issue of theory development in educational design research centering around the process of designing, the effects of the discourses can become

even more profound, while it also makes for ways of *doing things*, echoing again the pragmatic notion of communication as practice.

I argue the importance being twofold in requiring both a critical reflection on the terminology framing this inquiry as well as how the knowledge contribution of this thesis shapes articulations of the opportunities and challenges of play in higher education and educational design research going forward. First to the last part, on how the knowledge contribution in this thesis supports productive articulations of play in higher education going forward to aid overcoming some of the challenges of designing through play, coming back to the terminology of moods and atmospheres framing this inquiry later.

As also shortly discussed in Chapter 11, Jensen et al. (2021) point to how articulations and the use of playful approaches can instead of providing a way of resisting tendencies towards performative goal-oriented behaviors in higher education, in some research becomes suggestions for coping with these increased demands for performing towards set external metrics and as a way of avoiding the risk-taking associated with these forms of performance (p. 3).

Articulating designing through play in teacher education as a means and route for attuning towards playing with ways of knowing is a contribution of potentially making designing through play a critical resistance towards these compliant strategies of using play in higher education, through insisting on not making knowing a uniform process of coming to know in a specific way to avoid risk.

This articulation of the role of designing through play is furthermore a way of taking into account the dual didactic perspective (Iskov, 2020) of teacher education. Designing for diverse teaching practices through play potentially create space for theoretical or linguistic knowledge practices and the physical experiential practices of knowing (H. Collins, 2011) as both representing important dimensions of preparing students towards becoming teachers in their future professional practice in Folkeskolen.

Western ways of knowing and playing

While the above point towards how articulating the role of designing through play as being towards playing with ways of knowing, potentially aid destabilizing set and fixed epistemologies in an attempt to overcome a dualism between practice and theory and

hierarchizations of ways of knowing, I am also aware how this articulation might still sit too heavily integrated in dominant Western epistemologies.

This point suggest how there is a space for exploring still more counter-narratives towards these dominant epistemologies through including different conceptions of play such as for instance proposed by Trammell (2023, pp. 4–5) or Schechner (1993, p. 35) arguing for the inclusion of other non-European understandings of play.

Through including different understandings can potentially lead to considering other (im)possibilities of playing with ways of knowing. I argue how designing through play through the understanding undertaken here can in the most optimistic of views be interpreted as a rite of passage towards including narratives of other ways of knowing and other views on play not only characterized through the Western epistemological ideologies.

Participation as a challenge and opportunity

A key aspect of the open meaning production involved when designing teaching practices through play, is how there is designed for creating a frame for exploration and participation for students towards the process of coming to know. However, participation as pointed to in this thesis can also become a challenge in teaching practices designed through play. As mentioned above, Whitton (2018) comments how there is a task in research of being critically aware of the implicit power structures as well as the exclusivity of play in higher education and how this might bring different opportunities of engagement for different students (p. 10). Play is a privileged practice and as Whitton reminds, practices designed through play are not free from the ingrained power structures always already present in educational practices (Lave & Wenger, 2008, p. 36).

Recalling Apter's (1990) notion of how play for adults can only be experienced if the practices involved are perceived to have no long-term consequences, an important consideration when designing through play becomes how the playful protective frame from consequences outside of the situation, is for various reasons potentially easier felt by some students than for others. This can form a challenge towards ensuring the accessibility of participating in playing with ways of knowing in teaching practices for everyone. As touched upon in Chapter 9, play media present the challenge of potentially making it easier for some students with a greater extent of 'media capital', inspired by

Bourdieu's (1986) forms of capital, to sustain positions of more-intensive ways of participation than for others not sensitized towards playing with media in the same way. Broadening this reflection to involve all aspects of participation in teaching practices designed through play, the opportunity of designing through play for attuning the atmospheric configurations towards affording practices of exploration and open meaning production privilege those students who can find meaning in, and hence define these configurations in the first place (Sumartojo & Pink, 2019, p. 5).

As mentioned in Chapter 2, Skovbjerg (2021a) argues how in play practices there is a rhythm which is created when participating in play situations. To participate in the social practices of playing, in this case participate in playing with ways of knowing, students need to develop an understanding of the practices and doing in the situation and attune towards each other in the unfolding of these. This implies how there is a learning process involved for students to participate in the co-production of such atmospheric configurations. Due to personal experiences and cultural (academic) background, these atmospheric configurations might be experienced quite differently among students. As Edensor and Sumartojo (2015) suggest "Accordingly, particular atmospheric intensities can privilege certain participants who are already attuned..." (p. 258). This is not about students not knowing, since not knowing I argue can be viewed as part of the spectrum of playing with ways of knowing. Rather it is about the opportunities for legitimate peripheral participation in the possibilities for coming to play with this spectrum of knowing (Lave & Wenger, 2008).

Through designing for different and potentially unfamiliar atmospheric configurations in teaching practices through play, there is an obligation for educators and educational design researchers to foster routes for attuning all students regardless of their previous experiences and prior attunement towards opportunities for increasingly more-intensive ways of participation in playing with ways of knowing.

Moods and atmospheres as useful concepts in educational design research

In the following I will attend to the research question of how the concepts of moods and atmosphere support pointing towards opportunities and challenges of designing through play in teaching practice and how these concepts can be useful in educational design research going forward. In this way the following pages also attend to the critical

reflection on the terminology framing this inquiry into opportunities and challenges of designing through play in teacher education.

Inquiring through an atmospheric outlook

Overarching the conceptualization of play is in this study rooted in the perspective of play as a mood practice. Through this definition of play, the interwoven and related concept of atmospheres has been useful in this study as a way of coming nearer the empirical configurations of the unfolding of moods and atmospheres in practice, as well as providing an analytical framework and design framework in this study.

Conceptualizing play as a mood practice in teacher education is a way of considering and taking seriously the social situated processes of teaching and learning by not making play or playfulness into a matter of a certain playful or aesthetic mental attitude towards play and playfulness, which I argue essentially provide the downside of articulating playfulness and play in higher education as potentially an individual, exclusively cognitive phenomenon.

If designing through play is to make able playing with ways of knowing I argue it cannot in an educational practice setting be a solely individual student responsibility to approach the objects of study, themes, or subject matters through a playful attitude. Framing and talking about play through moods and atmospheric experiences emphasize how notions of opportunities and challenges of designing through play is made up of both individual and socio-material processes through imagination, memory and foreknowledge and carried across time-spaces which either inhibits or enables students' opportunities of participating and engage as co-producers in attempts of creating atmospheric configurations for coming to know in different ways.

While moods and atmospheres are concepts difficult to define and seem to be just as ambiguous to get a hold of as theoretical accounts of play (Sutton-Smith, 1997, p. 1), the serviceability of having an atmospheric outlook in this research is argued to be precisely because of this vagueness of conceptual boundaries and not despite of them. The concept of play as a mood practice, with point of departure in a phenomenological conceptualization of moods help emphasize how the practice of play is an ongoing and emergent practice. This emphasize how play is not to be understood as something entirely stemming from the inside as a cognitive processing (M. M. Andersen et al., 2022, pp. 1–2) and hereby make it possible to nuance the question of opportunities and

challenges of designing through play in teacher education to not only be a question of ‘psychologistic-reductionist-introjectionist’⁷ feelings to use Schmitz’ (2017) pompous atmospheric terminology (p. 19). Instead, the diffusing boundaries of inside-outside (B. Anderson, 2016, p. 147) creates an attention to how the experience of play is instead rooted in an active engaging and not least socio-material relationship through being-in-the-world. Whilst attending to the atmospheric configurations of designing through play in teacher education also contribute to taking a more nuanced assessment through including concepts of emergence, possibility, attunement, and affordance of the discussion about the opportunities and challenges of designing through play in the educational context.

Moods and atmospheres in educational design research

Interlinked with the serviceability of the concepts of moods and atmosphere to the contributions of this thesis is how the concepts of moods and atmosphere is argued productive as concepts in educational design research, supporting different dimensions which reflect the uncertainty and risk involved in educational research through the various factors at play in the educational context (Barnett, 2004; Biesta, 2013). Not only in the sense of the educator being in need of an atmospheric competence as Wolf (2019a) argues for as a form of pedagogical relational competence resembling also Bollnow’s (1989) notion of a pedagogical atmosphere. Rather I argue how educational design research needs concepts which can contribute describing more accurately the dynamics at play in teaching practices essentially the uncertainty of these, also in relation to the subject content, and in this way contribute to nuancing aspects of the continual design challenge of education.

Further, by articulating and employing both concepts of moods and atmospheres is to capture the essentially contingent structure of learning and knowing as a practice of doing (Laurillard, 2008) and not something only inherent in the individual, but always already an embodied situated and socio-material process in practice. The atmospheric outlook make way for a potential through the concept of attunement in overstepping

⁷ Following Slaby’s (2020) translation of Schmitz’ text (p. 277).

the tired dualism between subject and surroundings, individual and social, and between embodied and cognitive understandings of learning. This overstepping can potentially render the emotional and experiential sphere as something both important but also essentially *intersubjective* as an ongoing and emergent configuration in relations between places, things and surroundings, the sensory perception, memory, anticipation and the moods these ongoing configurations might make possible.

The role of design experiments as knowledge generating approach

In the following the research question of how methodological considerations in this study can support a development of the role of design experiments as knowledge generating approach in educational design research is to be discussed.

This discussion is unfolded in three parts through a discussion; on an interpretation of the iterative and refinement element in design-based research; on how application-oriented methodologies such as design-based research are critiqued for how the imperative of collaborating closely with practice makes for the researcher risk losing a critical analytical distance as well as; on how in close collaborations on design experiments there is argued a risk of not coming to other conclusions than enabled by practice itself.

The role of design experiments as an expansive and abductive inquiry

A focus on an iterative and refinement element of design experiments in order to support the knowledge generation is highlighted in design-based research (T. Anderson & Shattuck, 2012; Lehrmann et al., 2022, pp. 15–16; McKenney & Reeves, 2019). This means that knowledge is thought as created through iterative cycles of trying out design experiments in practice and refining these designs through linear consecutive rounds of experimentation in practice. As mentioned in the methodology section of the thesis an iterative refinement focus has been moderated in this study through making use of an expansive approach for design experiments proposed by Krogh et al. (2015).

In Krogh et al.'s (2015) typology of the methodological role of design experiments, the serial approach emulate in characteristics the iterative and refining aspect proposed for design experiments in design-based research (p. 46). While in Krogh et al.'s (2015) typology this approach only mark one of the possibilities of the methodological role of design experiments in the context of design research (p. 44). As mentioned in Chapter

5, the proposed approaches are accumulative, comparative, probing, and the expansive approach as used in this study.

Attending to the expansive approach for the role of the design experiments has aided the knowledge generating process of contributing with contextual design knowledge on what designing through play might challenge and make possible in teacher education rather than developing prescriptive design frameworks through iterative refinement of specific designs. This form of differentiated typology of the role of design experiments is suggested as extending the understanding of how the role of design experiments can be thought differently than as only being a knowledge generating approach through iterative refinement in design-based research.

Interwoven with this suggestion is on the basis of defining design as process and possibility (Baumgartner & Bell, 2002; Sumartojo & Pink, 2019) one of emphasizing the role of design experiments as providing an inquiry through a creative, abductive process of possibility and uncertainty (Brinkmann, 2014; Pink, 2021, p. 193) in design-based research. As mentioned in Chapter 5, Ludvigsen (2006) describes how discovery in research-through-design is founded on a creative and aesthetic process. The aesthetic and creative aspects of the design of experiments often only receive not more than a sidenote if at all in most literature on design-based research (Edelson, 2002, p. 108; McKenney & Reeves, 2019, pp. 12–13), being instead particularly focused on the theoretical underpinnings of design experiments (Barab & Squire, 2004; Kolmos, 2015; Ørngreen, 2015). For instance, McKenney and Reeves (2019) state only in a parenthesis, that also creative inspiration and craft wisdom is part of the design process (pp. 12-13). This leaves a primary focus on the deductive aspects of the role of design experiments. When design is primarily thought of as a way of creating solutions through deductive reasoning with an emphasis on refinement, it might too easily be interpreted as the aim of research being a focus on more efficiency, predictability, calculability, and control (O. B. Jensen & Vannini, 2016, p. 26). Design experiments can, in a purely deductive interpretation of design be viewed as experimenting towards definitive and objective answers.

Wickman (2006) argues through work on aesthetic experience in science education how what is important to keep in mind in the scientific research process is that “...there is not one well-defined problem with only one solution in science... inescapably aesthetic decisions also have consequences for the knowledge produced by science” (p. 12).

Wickman's argument about how aesthetic considerations is critical part of both the research process and results is an important point to make explicit, not least when introducing design as a central methodological concept.

When arguing for a creative and aesthetically founded process here, I refer to the abductive process of moving between 'mixes of' deductive and inductive processes in an abductive process (Brinkmann, 2014; Layder, 1998) where inspiration, intuition, foreknowledge and sensory knowing is part of the design process of experiments, through the collaboration between educator and researcher. This means that the role of design experiments as knowledge generating approach as it is considered here, provide an equally theoretical and creative, aesthetically informed inquiry through an abductive approach towards the researched.

Collaborating on design experiments as a mode of unsettling

The role of design experiments in design-based research is partly that of collaborating with practice on closing the gap between research and practice in context of education. A critique in research is raised of how educational research methodologies interested in closing the gap between educational research and practice risk disabling a critical analytical distance towards educational practice (P. Ø. Andersen, 2020; Biesta, 2007). In this critique research in close relationship with practice is argued to hinder researchers in distancing themselves from the analytic object of research and in this way being unable to produce insights which can be critical of practice. As Biesta (2007) argues "By getting too close to educational practice, [researchers] may well put themselves in a position where they can no longer be the conveyors of any „bad“ or critical news" (p. 300). In agreeing with Biesta's point on how being immersed in the collaboration with an educator on developing design experiments can make it difficult to be critical of thoughts and practices in the research, these reflections have taken up space in my research too. At the same time, my experience in the process of collaborating with all the educators in this study has been an open dialogue about critical aspects of our mutual experimentations together.

Where Andersen (2020) and Biesta (2007) are critical of research methodologies which have a strong relationship with practice, Amiel & Reeves (2008) consider the benefits of design-based research as a methodology which through design experiments create possibilities for a necessary democratic space for dialogue together with practice on

what will make the research valuable (from a broad pragmatist notion of value). These reflections seems to encompass Dewey's pragmatist notion of democratization of knowledge and science (Gimmler, 2012, p. 55).

At the same time, tension between educator and researcher's thoughts about what is the right questions to ask in the research I argue also provide a way to investigate own possible assumptions and foreknowledge as researcher. In this way the role of the collaborative aspect of design experiments can be viewed as a 'mode of unsettling assumptions' (Akama et al., 2018, p. 48) in the abductive research process and help gain new forms of analytical distance to the research.

Creating common understanding and showing the possible

Practice-based research methodologies according to Andersen (2020) posits the problematic risk beside not being able to criticize practice of additionally not enabling coming to other conclusions in research than what can be concluded by practice itself (pp. 63-64).

This critique of practice-based research methodologies as designed-based research I argue does not do justice to the researcher's knowledge of own responsibilities in the process of a research study. However, the critique I argue can be used as an implicit aid in considerations of the role of design experiments as knowledge generating approach. Design experiments is in this research interpreted and utilized as a way of trying out new things with educators to be able to reflect and learn as mentioned in Chapter 5. Hallnäs and Redström (2006) help explicate this point through what it means in design research approaches to develop practice through an experimental approach:

What does it mean to develop practice as opposed to understanding actual practice? ... It is not a result – in the sense of an answer to a scientific question – but a suggestion on how to change practice. Such a suggestion is of course not true or false – it might for sure be good or bad in a given context – it is rather suggestive or in-suggestive. This means that what we do is to show the possible in more or less systematic ways – in contrast to prove what is true or describe the actual. (pp. 125 -126)

Hallnäs and Redström argue how design experiments are not to be understood as something which mainly portraits the actual practice as it is now. Neither is the development of practice through design experiments to be understood as a scientific

answer as a solution. Rather design experiments are to provide a notion of showing what is possible (for both educator and researcher) through development of practice. Showing the possible can arguably also be interpreted as showing how different forms of knowing can come together through these design experiments and echo Redström's (2017) argument of how design thrive on dichotomies by opening a space for negotiation of potentially opposing tendencies between for instance theory and practice (p. 141).

This way the role of design experiments can be thought as a way of creating the distance towards the actual and supporting thinking with and about practice in new ways in terms of potential and possibility instead of what is. Through the collaborative demand of design experiments knowledge is created without knowing beforehand what this knowledge is going to be. This also relates to the notion of how common understanding in communication in a pragmatic Deweyan sense is based on a 'joint activity' of cooperation, discussed in Chapter 5, where meaning is created through a shared experience. In this understanding the role of design experiments is to be understood in this research as common reference frame for coming to know while being engaged as collaborators in designing and unfolding the experiments. At the same time the design experiments also enabled the different interviews with students in the study to be framed through a joint activity of having been in the common experience of the design experiments to negotiate meaning through.

The role of the design experiments as knowledge generating approach in this study then become a springboard towards coming to understand together through showing the possible, going against the precaution of creating a distance towards the field in order for the researcher coming to know differently.

Summing up

The educational context is too much a situated practice for solidified solutions to provide reform, especially if education is viewed as a continual design challenge following Baumgartner and Bell's (2002) definition. Through the methodological considerations stemming from how design experiments have been utilized in this research process, it is suggested how an interpretation of the role of design experiments should include different types of approach strategies such as for instance an expansive approach employed in this research. Together with an emphasis on how design

experiments through an abductive approach provide an equally theoretical and creative, aesthetically informed inquiry these considerations are suggested to temper the focus on the deductive iterative refinement role of design experiments as only way of supporting knowledge generation. Additionally, design experiments can also be considered as providing a route for showing the possible and through the closeness with practice through collaboration around a joint activity can show as a productive mode of unsettling assumptions.

The suggestions on interpretations of design experiments provided here are guided by inspiration in methodological considerations from design research outside educational design research. Arguably these methodological considerations opens for a suggestion for further research in developing the role of design experiments through finding inspiration in for an example design ethnography as proposed by Pink et al. (2022). Design ethnography following Pink et al. (2022) provide suggestions for ways of coupling ethnographic research practices with design practices towards more creative, sensory, affective understandings of knowing with people (p. 8).

These above considerations are drawn forth to support a continual development in understanding of the role of design experiments in design-based research within educational design research while still being a methodological approach with the force of being rooted in an educational context with the original ambition of bridging the gap between educational research and educational practice in close collaboration with educators in practice.

Chapter 14: Conclusion

Play in relation to education has been given attention in research as a sight of discussion on whether the concept of play at all fits within the constraints of the educational realm with an intentionality at stake reaching outside of the voluntary boundaries of play. Yet, in recent years play has been brought onto the research agenda in relation to higher education among other factors primarily endorsed as a way of countering what in educational research is pointed to as an increasingly performative milieu in higher education.

This thesis is set in the ambiguities of bringing play into the educational realm. It focuses on what designing teaching practices through the lens of play provide of different opportunities and challenges in the context of Danish teacher education, as a site deeply entangled with students future practice as teachers in the Danish Folkeskole. The interpretation of play as a mood practice (Karooff, 2013b; Skovbjerg, 2021a) and with inspiration in configurations of knowing through the concept of atmospheres (Sumartojo & Pink, 2019) has enabled an atmospheric outlook in this thesis. This atmospheric outlook is foundational for making sense of how designing through play can aid an attunement towards playing with ways of knowing in teaching practices as argued an important part of teacher students coming to know when knowing and learning is interpreted as an active, emplaced, and experiential socio-material practice of participation. The exploration in this thesis is framed by the overarching question of: *What opportunities and challenges do designing through play provide for attuning students towards playing with ways of knowing in teaching practices in teacher education?*

This above main research question is through a sub question framed by the key themes of learning media, space, and performance and additionally by the theme of assumptions emerging in the analysis on the background of the design experiments in teaching practices. Furthermore, aspects of participation as well as the theme of ambivalence towards interpretations on how knowledge is taught and learned through teaching practices emerged as additional themes through the research process. These themes hold the key findings in this thesis towards the main research question.

The first theme of exploration is into the opportunities and challenges of defining learning media in teaching practices as play media when designing through play. The immediate opportunity of designing for and unfolding teaching practices through

conceptualization learning media as play media following Skovbjerg's (2021a) definition lies in how this conceptualization can aid avoiding a naturalization of learning media in teaching practices, where this naturalization can come to afford certain forms of knowledge rather than providing differentiated understandings. In this research students point to how media is one of the main contributions towards making teaching practices playful, and more than pointing towards how media or materials as such signify a playful environment, it is argued in the thesis how students find teaching practices playful through media by employing these as equipment for playful inquiry. This opportunity extends furthermore towards the dual didactic perspective of through an awareness of the equipmentality of learning media as play media by playing with it aiding students in avoiding a naturalization of learning media also in their future professional practices as teachers in Folkeskolen.

Despite these opportunities, challenges emerge through the same set of opportunities of conceptualizing learning media through the concept of play media as instruments for playful inquiry. When opening learning media towards something to play with, potential atmospheres of knowing can become laced with uncertainty and an increased sense of contingency of teaching practices. For novice teacher students, this can potentially make it difficult to get a sense of grasping the world in a more stabilized fashion and in this way further opening an ontological uncertainty towards being-in-the-world (Barnett, 2004).

Through the groundwork of the conceptualization of learning media as play media the second theme of space emerged as providing opportunities and challenges for playing with ways of knowing when designing through play. An opportunity is argued becomes available when space is conceptualized as play media as proposed for learning media. While this theme is then an expansion of the former theme of learning media, the opportunities of space as an aspect to consider in the design process when designing through play is argued first to arise when space is treated as an individual category of equipment for playful inquiry. I argue how this renders space an individual and important part of providing opportunities for attuning students towards playing with ways of knowing but can also provide the challenge of educators to take additional components into account, making the design process of designing teaching practices through play more complex.

In relation to the theme of performance, while a focus on goal-oriented behaviors as well as external assessment is included here as part of the challenges of attuning towards coming to play with different ways of knowing, the challenge of performance not only a matter of an increasingly performative milieu in context of teacher education as highlighted in research on play in higher education. This research contributes with a notion of how performance is more complex and diffused in the sensory atmospheric felt qualities of the mundane teaching practices at teacher education. Rather than interpreting the theme of performance as necessarily regarding freedom from assignments formulated as only providing one specific way of knowing. At the same time, I argue how designing teaching practices through play make performance present an opportunity of making it possible to frame meaning production as not something evaluated as towards the future but as playing with ways of creating meaning in the here and now of teaching practices. Designing through play as a mood practice and attending in the design process to the creation of a protective frame (Apter, 1990) of 'this is play' (Bateson, 2000) is argued to provide a basis for viewing performance not only as a challenge, but also as part of the possibilities of creating atmospheric configurations providing a possible gateway to alleviate students' risk-aversiveness towards trying on new ways of doing and being, aiding an attunement towards playing with ways of knowing in teaching. Further an opportunity of designing through play is how play as a mode of taking practices in teaching lightly can help students reflect on assignments in new ways, countering the performative aspect of these. These above notions on performance creates a contribution to nuancing the theme of performance in relation to the opportunities and challenges of designing teaching practices through play in the higher educational realm of teacher education.

How designing through play creates 'a door opener' to students' assumptions on playing and learning provides a key finding in the thesis through the theme of assumptions. While unfolding teaching practices designed through play and when reflecting on play with students in relation to knowing and learning, a space for both explicating as well as playing with assumptions potentially emerge, especially when play moods and atmospheres of the silly, out of line and euphoric is provided a place in teaching practices.

The opportunities and challenges argued here around the theme of assumptions unfolds around acknowledging how these assumptions coming forth can be interpreted as

centering around trust and hope towards the atmospheric configurations of students future professional practice possibly alleviating the challenge of making teaching practices designed through play feel as situations of student exposure of assumptions. Throughout the research what stand forth through the collaborations with educators on designing through play, is how it for educators create a commitment towards a focus on students active and direct perceptual engagement and participation (Ingold, 2000). Creating the foundation for potentials of participation and engagement is as such an opportunity which follows these practices and atmospheric configurations designed for through play, while participation might not be equally distributed for all (Whitton, 2018). Therefore, difficulties of participating seeps through in various ways as feelings of not having the 'media capital' inspired by Bourdieu's (1986) forms of capital, to utilize learning media as instruments of playful inquiry or how the protective frame from consequences outside of the situation is for different reasons potentially easier held by some students than for others. Together with how this research point to an epistemological ambivalence in relation to designing through play enabling playing with ways of knowing rooted in the social, historical, and cultural epistemological values in Western thought, these issues are argued as creating underlying challenges but also potential opportunities towards designing through play in teacher education. Through installing contingency, uncertainty, and emergence in the conceptual apparatus of this research, the concepts of moods and atmospheres has supported the exploration undertaken here in how it emulates the ever-present contingency and uncertainty which is part of the everyday practices of teaching. It is not despite of the difficulty of pinning precisely these concepts of moods and atmosphere down into concise categories, but because of it that these concepts have shown productive in relation to researching into the challenges and opportunities of designing through play and additionally can be pointed to as productive concepts in educational design research going forward. This research is not about designing play in teacher education, and through conceptualizing play as a mood practice and in taking an atmospheric outlook at the configurations in teaching this point becomes more transparent through how it is arguably impossible to design a specific mood or an atmosphere. Designing through play does not necessarily feel playful for students even though the experience often for students contributes to the opportunity of playing with ways of knowing. Instead, one of the key findings is

how designing through play can potentially provide routes for students in taking the risk of participating in the meaning production in teaching practices.

Getting a nuanced understanding of the challenges and opportunities has been made possible through engaging in collaborating around the approach of designing experiments with educators. Design experiments are used in this research through taking an expansive approach as strategy for utilizing design experiments as methodological approach (Krogh et al., 2015) as a way of creating common understanding through joint activity, unsettling research assumptions, and as a way of showing the possible instead of the actual and utilizing the aesthetically founded inquiry at the core of design research. These methodological considerations based on the use of design experiments in this research is a contribution towards supporting a development in understanding the role of design experiments as a relevant methodological approach for generating knowledge in educational research going forward.

The aim with this thesis has not been one of exhausting opportunities and challenges of designing through play. The aim has been to contribute with nuances towards the ambiguities of opportunities and challenges which is found in designing through play as a way of furthering the critical discussion of play in higher education and understanding how this particular continual design challenge is a way of contributing to attuning towards playing with ways of knowing in teacher education.

Summary

Playing With Ways of Knowing – Play, Atmosphere and Experience in Danish Teacher Education

Through a conceptualization of play as a mood practice, the mood and atmospheric configurations of the opportunities and challenges of designing through play, for attuning students towards playing with ways of knowing through the teaching practices in context of Danish teacher education, is central for the exploration of this thesis.

Play and playfulness have in recent years in research received increased attention in relation to the realm of higher education as an opportunity of remedying or even countering the effects of what is argued have become an increasingly performative educational landscape. Simultaneously play in education are discussed through positions of approval and opposition making the field ambiguous as play itself is argued to be.

The argumentation in the thesis for an understanding of how designing through play is to contribute to the intention of playing with ways of knowing is to be seen in light of an understanding of knowledge argued for as an active, emplaced, and experiential socio-material practice of participation. At the same time, the relevance of how designing through play is to attune towards playing with ways of knowing is grounded in how teaching practices in teacher education are oriented towards students' future action-oriented professional practice as teachers in the Danish Folkeskole, where students as coming teachers are to know in more ways than solely through a theoretical way of knowing to act.

Through a phenomenologically-informed pragmatic notion of knowledge, a design-based research approach with a focus on researching through design experiments is chosen as methodological framework in researching the main theme of this thesis. Collaborations with five educators on 14 design experiments in total in combination with forms of qualitative interviews has formed the inquiry into aspects of designing teaching practices through play. The themes of this thesis have been explored via an abductive analytical process through the orienting concepts of play as a mood practice and atmosphere with an overarching analytical framework of tending to the differences between what can be known in, about and through atmospheres.

Key themes of this thesis are analyzed through corresponding analytical chapters as well as in the discussion and evolves around learning media, space, performance,

assumptions, participation, and epistemological ambivalence towards coming to know through different ways of practicing teaching. These themes hold the key findings of the research and all center around how designing through play creates opportunities and challenges for attuning students towards playing with ways of knowing, but also highlights how these opportunities and challenges are not sharply demarcated, making challenges hard to dissolve through specific prescriptive methods or principles.

The research findings in this thesis stemming from a three-year research process, centers around firstly how interpreting learning media through a conceptualization of play media opens the reflection on and affordances of these in teaching practices while also challenging teacher students by furthering the always already contingent atmospheres of coming to know and teach in relation to the practices of teaching.

Utilizing this same conceptualization for space as play media in the design process in relation to the spaces of teaching is in the thesis shown to mark opportunities of coming to know differently as well as opening the affordance structures of learning media in new ways when treating space as a separate and important instrument for playful inquiry in the design process. This is argued in the thesis as albeit not without a challenge, while the demand for treating space as a separate element can potentially further the complexity of the design process for educators.

Performance is shown to provide different opportunities regarding students' potentials of the feeling of being in a protective framing to play around with practices and playing with ways of knowing. However, there are also challenges pointing to how sometimes not only performative practices towards external metrics, but also mundane day-to-day teaching practices can be interpreted as difficult to play with when students feel there is only one way of coming to know.

Designing teaching practices through play seem to call forth a space for both explicating as well as playing with assumptions for students. It is argued in the thesis that interpreting and acknowledging how students' assumptions and beliefs center around trust and hope towards the atmospheric configurations of students future professional practice, can potentially alleviate the challenge of risking teaching practices designed through play to become sensed as situations of student exposure of assumptions.

Issues of challenges and opportunities of students' legitimate peripheral participation is set forth as part of the key findings. At the same time a discussion of the opportunities and challenges of the sensed epistemological ambivalence which seeps into the

processes of designing through play and in the unfolding of these teaching practices is part of the key findings in the thesis.

Through taking an atmospheric outlook in this research, this thesis contributes further with pointing to how atmospheres and moods can be viewed as productive concepts in educational design research as supporting understanding in the process of research of the contingent, uncertain, and emergent characteristics of the design process in the educational context.

Through methodological considerations from the use of design experiments in this study a methodological contribution is proposed for how design experiments show productive as knowledge generating approach through utilizing the aesthetically founded inquiry at the core of design research more explicitly in educational design research.

This thesis contributes to initiating and nuancing the discussion of the opportunities and challenges of designing through play for the continual design challenge of attuning students towards playing with ways of knowing in Danish teacher education.

Dansk Resumé (Danish Summary)

At lege med måder at vide på – leg, atmosfære og oplevelse i læreruddannelsen

Gennem en forståelse af leg som stemningspraksis, er det centrale fokus i afhandlingen på de stemnings- og atmosfæremæssige konfigurationer af muligheder og udfordringer ved at designe gennem leg, for at stemme studerende mod at lege med måder at vide på i undervisningspraksis, i kontekst af læreruddannelsen.

Leg og det legende har i de senere år oplevet en øget forskningsinteresse i relation til videregående uddannelse, særligt som en mulighed for at afhjælpe eller udfordre indvirkningerne af hvad der i forskning påpeges som et stadig mere performativt miljø. Samtidig er det at kombinere leg og uddannelse omdiskuteret. Dette gør at leg i relation til uddannelse fremstår lige så paradoksalt og tvetydigt som legen gør i sig selv.

Argumentationen i denne afhandling for at det at designe undervisningspraksis gennem leg skal bidrage til at lege med måder at vide på, skal ses i lyset af en forståelse af viden som værende en aktiv, stedslig og erfaringsmæssig socio-materiel, deltagende praksis.

På samme tid er relevansen af hvorledes det at designe gennem leg, mod at stemme studerende til at lege med måder at vide på grundet i, hvordan undervisningspraksis på læreruddannelsen er orienteret mod studerendes kommende fagprofessionelle virke, som lærere i folkeskolen. Dermed kan der argumenteres for, at studerende har behov for at vide på andre måder end teoretisk, for at kunne handle professionelt.

Gennem en fænomenologisk inspireret pragmatisk forståelse af viden, er en design-based research tilgang med et fokus på udvikling af designeksperimenter valgt, som metodologisk rammeværk for afhandlingens forskningsfokus. Samarbejdet med fem undervisere omkring i alt 14 designeksperimenter, samt forskellige kvalitative typer af interview, danner afhandlingens empiriske grundlag for undersøgelsen af at designe gennem leg i læreruddannelsen. Temaerne i denne afhandling er undersøgt gennem en abduktiv analyseproces, der er guidet af leg som stemningspraksis og atmosfære som orienterende begreber, samt rammesat af en forståelse af den analytiske forskel mellem hvad der kan vides i, om eller gennem atmosfærer.

De centrale temaer i denne afhandling er diskuteret i korresponderende kapitler og i afhandlingens diskussion og centrerer sig om læringsmedier, sted og rum, performance, antagelser, deltagelse samt epistemologisk tvetydighed mod måder at vide på gennem forskellige undervisningspraksisser. Disse centrale temaer holder afhandlingens fund og

understøtter et bidrag til afhandlingens fokus, omkring hvad det at designe gennem leg tilvejebringer af muligheder og udfordringer for at stemme studerende mod, at lege med måder at vide på. Samtidig understreges det gennem disse centrale temaer og fund at muligheder og udfordringer ved at designe gennem leg ikke er skarpt adskilte og afgrænsede, hvilket medvirker til, at udfordringer ikke blot kan løses gennem specifikke præskriptive metoder og designtechnikker.

Afhandlingens vidensbidrag centrerer sig først om hvorledes læringsmedier gennem en definition som legemedier kan bidrage til at åbne refleksion og mulige muligheder af disse i undervisningspraksis, men samtidig også hvorledes en sådan definition kan udfordre lærerstuderende ved en potentiel forøgelse af fornemmelsen af den kontingens og usikkerhed, der er forbundet med undervisningens atmosfærer.

En brug af samme definition for sted og rum som legemedier i forbindelse med undervisning, markerer i denne afhandling muligheder for at lege med måder at vide på samtidig med muligheder for at åbne affordances eller mulige muligheder for læringsmedier og teoretiske perspektiver på nye måder når rum og sted betragtes som et separat og vigtigt instrument for legende udforskning i designprocessen. Dog viser der sig samtidig en udfordring ved fordringen om at betragte sted og rum som separat element, ved potentielt at gøre designprocessen mere kompleks for undervisere.

Performance udgør forskellige muligheder og udfordringer vedrørende studerendes mulighed for at føle, at der kan leges med måder at vide på i undervisningen. Ikke kun det at præstere for at opnå udefrakommende fastsatte mål udgør en udfordring, men samtidig kan hverdagslige praksisser være en udfordring for at lege, hvis oplevelsen rammesættes af at undervisningspraksisser kun tilbyder en bestemt måde at vide på.

Det at designe gennem leg synes at fremkalde et rum for at udforske studerendes egne antagelser i forhold til læring, elever og undervisning. I afhandlingen foreslås at tolke og anerkende studerendes antagelser og forforståelser som et udtryk for, hvordan studerende håber og kan have tillid til de atmosfæriske konfigurationer af deres fremtidige fagprofessionelle undervisningspraksis i folkeskolen. Denne tolkning skal medvirke til at afhjælpe risikoen for, at undervisningspraksisser af de studerende fornemmes som eksponerende at deltage i udfoldelsen af.

Forskellige udfordringer og muligheder for studerendes legitime perifere deltagelse fremdrages som del af de centrale bidrag gennem afhandlingen, samtidig med en

diskussion af den epistemologiske tvetydighed, som synes at gennemtrænge processen med at designe undervisningspraksisser gennem leg samt i udfoldelsen af disse.

Et bidrag gennem afhandlingen er endvidere, hvorledes atmosfære og stemning foreslås som produktive begreber i uddannelsesdesignforskning for at understøtte forskning i de kontingente, omskiftelige og emergerende karakteristika af designprocesser i denne kontekst.

Gennem metodologiske refleksioner for brugen af designeksperimenter i denne forskningsproces er et bidrag i afhandlingen ydermere at pege på, hvordan designeksperimenter som vidensgenererende tilgang mere eksplicit kan drage fordel af at bruge den æstetisk kreativt funderede undersøgelsestilgang, der danner designforsknings fundament ind i uddannelsesdesignforskningen.

Afhandlingen bidrager samlet set til at initiere og nuancere diskussionen om muligheder og udfordringer ved at designe gennem leg, i den kontinuerlige designproces, der er forbundet med det, at muliggøre at stemme studerende til at lege med måder at vide på i læreruddannelsen.

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Appendix

The appendix referred to in the thesis is provided in the following. Further empirical material from the research process for *Playing With Ways of Knowing* can be required on request from the author.

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Appendix 1. Schematic overview of empirical research activities

Holding an overview of the most central research activities and the empirical material created in relation to *Playing With Ways of Knowing*. The schematic overview is divided into: *Design experiments and design collaboration meetings, interviews and reflections, and contextual material.*

Design experiments and design collaboration meetings

DATE	ACTIVITY	MATERIAL	DESCRIPTION
November 2020 5 hours	Design collaboration meeting with educator Emma, collaboration on design experiments. Social education	log notes, audio recordings.	Workday, collaboration with Emma in social education around potential design experiments in spring semester.
December 2020 1,5 hours	Online design collaboration meeting on design experiments with educator Christian.	Recording; partly transcribed.	After observing online teaching the conversation evolved into a talk about designing design experiments in General teaching competence with educator Christian.
December 2020 2 hours	Online design collaboration meeting with educators Louise and Benjamin.	Log notes, module description for subject.	Design work meeting with Louise and Benjamin on idea generation for experiments in Innovation and

			entrepreneurship in school.
January 2021 4 hours	Online design collaboration meeting with educators Louise and Benjamin.	Log notes, recording. Documents from meeting.	Design work meeting with Louise and Benjamin on idea generation and designing of experiments in Innovation and entrepreneurship in school.
January 2021 2 hours	Online design collaboration meeting with educators Louise and Benjamin.	Log notes, recording. Documents from meeting	Design work meeting with Louise and Benjamin on idea generation and designing of experiments in Innovation and entrepreneurship in school.
January 2021 2 hours	Online design collaboration meeting with educators Louise and Benjamin.	Log notes, recording. Documents from meeting	Design work meeting with Louise and Benjamin on idea generation and designing of experiments in Innovation and entrepreneurship in school.
January 2021 3,5 hours	Unfolding of design experiment I: Playing with	Field notes. Recording; partly	Unfolding of online design experiment I:

	bachelor project exercises	transcribed. PowerPoint slides.	Playing with bachelor project exercises. 16 students present. Louise as educator.
January 2021 Part of 4 lessons	Unfolding of design experiment II: Playing with being learning space designers	Field notes. Recording partly transcribed. PowerPoint slides. Pictures of student products.	Unfolding of online design experiment II: Playing with being learning space designers. 16 students present. Louise as educator.
January 2021 3 hours	Online design collaboration meeting with educators Louise and Benjamin.	Log notes. Work documents.	Re-design process meeting on design experiments because of extended lockdown due to COVID-19.
February 2021 3 lessons	Unfolding of online design experiment III: Playing with designing evaluation methods	Recording; partly transcribed. PowerPoint slides. Field notes.	Unfolding of online design experiment III: Playing with designing evaluation methods. 20 students present. Lotte Agnes as educator.
March 2021 4 lessons	Unfolding of online design experiment IV: Playing with peer teaching online.	Recording; partly transcribed. Field notes. Pictures from student products.	Unfolding of online design experiment IV: Playing with peer teaching online. 22 students present. Louise and Benjamin as educators.

March 2021 3 hours	Design collaboration meeting with educator Emma, collaboration on design experiments. Social education	Audio recordings.	Workday, collaboration with Emma in social education around the design experiments VII: Playing with being presented with moods & VIII: Playing with spin the bottle
March 2021 Part of 3 lessons	Unfolding of online design experiment V: Playing with writing and choice.	Recording; partly transcribed. written student feedback from teaching in online platform. PowerPoint slides. Field notes.	Unfolding of online design experiment V: Playing with writing and choice. 14 students present. I was educator.
March 2021 1,5 hours	Design collaboration meeting with biology educator Anna and PhD fellow colleague Marie at teacher education	Log notes	Design meeting on designing VI: Playing with space and materials in nature
March 2021 Part of five lessons	Unfolding of design experiment in the field VI: Playing with space and materials in nature	Field notes. Assignment description on paper. Pictures.	Unfolding of design experiment in the field VI: Playing with space and materials in nature. 24 students present. Anna as educator. In the field in nature.

April 2021 Part of six lessons	Unfolding of design experiment in the classroom VII: Playing with being presented with moods	Recordings; partly transcribed. Semester plan. Field notes. Document with assignment for students. Pictures.	Unfolding of design experiment in the classroom VII: Playing with being presented with moods. 25 students present. Emma as educator.
May 2021 Part of six lessons	Unfolding of design experiment in the classroom VIII: Playing with spin the bottle	Fieldnotes, Recordings; partly transcribed. Pictures. PowerPoint slides	Unfolding of design experiment in the classroom VIII: Playing with spin the bottle. 25 students present. Emma as educator
May, 2021 4 lessons	Unfolding of design experiment in the classroom IX: Playing with outdoor school and materials	Fieldnotes, Recordings; partly transcribed Pictures. PowerPoint slides	Unfolding of design experiment in the classroom IX: Playing with outdoor school and materials Five students present. Louise as educator
June 2021 2 hours	Design collaboration meeting with teacher educator Christian	Recordings. Log notes.	Design work meeting with Christian on designing experiments XII, XIII & XIV: Playing with peer teaching
August 2021 1 hour	Design collaboration meeting with	Log notes, recording, semester plan document.	Design collaboration meeting with Christian on designing experiments XII, XIII

	teacher educator Christian		& XIV: Playing with peer teaching – final details.
August 2021 4 lessons	Unfolding of design experiment in the field X: Playing with biology and visual arts practices	Field notes. Document with assignment explanation for students, Recordings; partly transcribed. Pictures.	Unfolding of design experiment in the field X: Playing with biology and visual arts practices 40 students present. Emma and Charlotte as educators.
August 2021 4 lessons	Unfolding of design experiment in the field XI: Playing with field work practices	Field notes. Recordings; partly transcribed. Pictures.	Unfolding of design experiment in the field XI: Playing with field work practices. 21 students present. Anna as educator.
September 2021 4 lessons	Student introduction and preparation for design experiments in the classroom XII, XIII & XIII: Playing with peer teaching	Field notes, pictures, class material on Columbus. Semester plan for the course. PowerPoint slides.	Student introduction and preparation for design experiments in the classroom XII, XIII & XIII: Playing with peer teaching. 25 students present. Christian as educator.
September 2021 4 lessons	Unfolding of design experiment in the classroom XII: Playing with peer teaching	Field notes. Pictures. Recordings; partly transcribed. Reflection questions for student group work.	Unfolding of design experiment in the classroom XII: Playing with peer teaching 25 students present. Christian as educator

September 2021 4 lessons	Unfolding of design experiment in the classroom XIII: Playing with peer teaching	Field notes. Pictures. Recordings; partly transcribed. Reflection questions for student group work.	Unfolding of design experiment in the classroom XIII: Playing with peer teaching. 25 students present. Christian as educator.
September 2021 4 lessons	Unfolding of design experiment in the classroom XIV: Playing with peer teaching	Field notes. Pictures. Recordings; partly transcribed. Reflection questions for student group work.	Unfolding of design experiment in the classroom XIV: Playing with peer teaching. 24 students present. Christian as educator.

Interviews and reflections on design experiments

DATE	ACTIVITY	MATERIAL	DESCRIPTION
March 2021 30 minutes	Student focus group interview VI: Playing with space and materials in nature	Field notes. Interview guide.	Student focus group interview around VI: Playing with space and materials in nature. 24 students present. Lotte Agnes as Interviewer.
April 2021 1,5 hours	Interview with physical education (PE) educator, Michael	Recording. Transcription. Interview guide.	Interview with Physical education teacher educator Michael on the use of play and play moods in teacher education.

April 2021 1 hour	Individual student interview with Niels	Recording. Transcription. Interview guide.	Individual student interview with Niels, teacher student 4th year, Innovation and entrepreneurship in school. Lotte Agnes as interviewer.
May 2021 30 minutes	Student focus group interview Innovation and entrepreneurship in school	Recording. Transcription. Interview guide	Student focus group interview Innovation and entrepreneurship in school 5 students present. Lotte Agnes as interviewer.
May 2021 3 hours	Individual educator interview with Emma, social education	Recording. Partly transcribed. Field notes. Interview guide.	Individual educator interview with Emma on VII: Playing with being presented with moods & VIII: Playing with spin the bottle. Video-stimulated recall interview. Lotte Agnes as interviewer.
May 2021 1 hour	Individual educator interview with Benjamin	Recording. Transcription. Interview guide.	Individual educator interview with Benjamin on design experiments in Innovation and entrepreneurship in school.

			Lotte Agnes as interviewer.
May 2021 1,5 hours	Individual educator interview with Anna.	Recording. Transcription.	Individual educator interview with Anna on VI: Playing with space and materials in nature. Worked more as a reflection workshop than a semi-structured interview.
May 2021 1,5 hours	Individual educator interview with Louise.	Recording. Transcription. Interview guide.	Individual educator interview with Louise on experiments in Innovation and entrepreneurship in school. Lotte Agnes as interviewer.
August 2021 1 hour	Educator workshop with demonstration and reflection on design experiment VIII: Playing with spin the bottle	Field notes. Recordings; partly transcribed. Reflection questions for workshop.	Educators from teacher education and social education joined for a reflection workshop on the design experiment of VIII: Playing with spin the bottle, where educators tried out the experiment and then we reflected together on the playful, the usefulness and transferability to other

			teaching situations of the design experiment. 11 educators present. Emma and Lotte Agnes as workshop presenters.
September 2021 30 minutes	Student focus group interview on X: Playing with biology and visual arts practices & XI: Playing with field work practices	Recording. Transcription. Field notes. Interview guide.	Student focus group interview on X: Playing with biology and visual arts practices & XI: Playing with field work practices. 21 students present. Lotte Agnes as interviewer.
September 2021 30 minutes	Student focus group interview on XII, XIII & XIII: Playing with peer teaching	Recording. Transcription. Field notes. Interview guide.	Student focus group interview on XII, XIII & XIII: Playing with peer teaching. 25 students present. Lotte Agnes as interviewer.
November 2021 2 hours	Individual educator interview with Christian	Recording. Transcription. Interview guide.	Individual educator interview with Christian on the design experiments XII, XIII & XIII: Playing with peer teaching. Lotte Agnes as interviewer.

April 2022 2 hours	Reflection meeting with educator Anna	Recording. Log notes.	Collaborative reflections with educator Anna on design experiments VI: Playing with space and materials in nature, X: Playing with biology and visual arts practices & XI: Playing with field work practices.
June, 2022 1 hour	Individual student interview with Karl Johan	Recording. Transcription. Interview guide.	Individual student interview with Karl Johan on XII, XIII & XIII: Playing with peer teaching. Lotte Agnes as interviewer.

Contextual material: Collaborative reflections through meetings, seminars, observations, and workshops with educators

DATE	ACTIVITY	MATERIAL	DESCRIPTION
April 2020 1 hour	Informal online meeting with three educators; Anna, Ib and Michael	Field notes	Informal online meeting with three educators from social education and teacher education about their interests around play and play moods in teaching
June 2020 1 hour	Meeting with Playful learning colleagues,	Field notes, photographs of	Meeting at teacher education with

	round tour at the institution, visiting Playlab	Playlab at the University College	educator colleagues. Round tour and visiting Playlab at Campus.
September 2020 2 hours	Educator workshop at University College	Field notes, photographs	Workshop at University College for a diverse range of educators from social education, teacher education, and continuing education reflecting together on playful learning in groups and in plenum.
September 2020	Mail correspondence with two educators	Pdf of mail correspondence	Mails with reflections on group talk on group work from educator workshop in September at University College about play in relation to teacher and social education.
September 2020 1 hour	Attending an educator-led workshop by physical education educator Michael about play moods in teaching	Audio recordings, transcription of audio recordings	Participation in workshop about play moods in teacher education, playing and reflecting together with educators.

October 2020 2 lessons	Observation in mathematics lessons on geometry in teacher education, with Karen	Field notes	Observations of math lessons in teacher education on geometry, first semester students. Informal conversation with Karen after ended lessons.
November 2020 30 minutes	Informal conversation with educator Christian from teacher education.	Log notes	Informal conversation with Christian from teacher education regarding the possibility for observing in his teaching sessions with third year students.
November 2020 2 lessons	Observations in Christians online teaching at teacher education	Field notes from online sessions and recordings – partly transcribed, lecture plan.	Observations in online teaching at teacher education 3 rd year students, 5. semester – they are halfway in their internships and are gathered in this teaching session to do a mid-evaluation, get possible questions answered and some guidance on challenges for the students in their internships, as well as working on a re-

			didactization of their didactical plans for the internship from a theoretical perspective.
November 2020 2 hour workshop	Informal conversation with educators at workshop + following mail correspondence	Field notes and two mail correspondences	At an afternoon educator workshop about play and playfulness I joined a group and discussed informally with the educators about their views on play and playfulness in their own teaching practices. Following this meeting I had a mail correspondence with two educators with reflections on what we discussed at the workshop.
December 2020 2 lessons	Observations in online teaching at teacher education with teacher educator Christian	Recordings partly transcribed. Lecture plan.	Observations in online teaching at teacher education. Follow up on earlier teaching lessons in student's internship period. Students presenting their thoughts on theoretical re-

			didactizations from their internships.
January 2021 4 lessons	Observation in teaching in Innovation and entrepreneurship in school Louise and Benjamin as educators	Field notes. Recordings. Lecture plan. PowerPoint slides	First teaching of the semester in Innovation and entrepreneurship in school. 22 students present.
January 2021 4 lessons	Observation of teaching in lessons in Innovation and entrepreneurship in school, teacher education with Benjamin as educator	Field notes. Online recordings of online teaching. Lecture plan. Educator PowerPoint slides.	Second teaching for students in Innovation and entrepreneurship in school. 20 students present.
February 2021 3 lessons	Observation of teaching in lessons in Innovation and entrepreneurship in school, teacher education with Benjamin as educator	Field notes.	Observation of teaching in innovation and entrepreneurship 15 students present.
February 2021 4 lessons	Online teaching in innovation and entrepreneurship with Louise as educator	Field notes. Online recording of lessons. Educator PowerPoint slides.	Observation of teaching in innovation and entrepreneurship – about multimodality in learning. 20 students present.

March 2021 4 hours	Work group meeting on play and playfulness with educators.	Log notes	Work group meeting with educators on their practice work with play and playfulness in teaching.
March 2021 1,5 hours	Work group meeting with educators on play in their teaching	Log notes	Work group meeting with three educators on using sound as playful instrument in their teaching practices in teacher education.
March 2021 4 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Louise as educator	Field notes and PowerPoint slides	Observation in Innovation and entrepreneurship in school on a FIRE design process. 18 students present
March 2021 2 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Louise as educator	Field notes and PowerPoint slides	Observation in Innovation and entrepreneurship in school on a FIRE design process. 18 students present
March 2021 2 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Louise as educator	Recordings.	Observation in Innovation and entrepreneurship in school on a FIRE design process. Students finishing their designs.

			18 students present
March 2021 4 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Louise as educator	Field notes and PowerPoint slides	Observation in Innovation and entrepreneurship in school on a FIRE design process. Students presenting their designs. 21 students present
April 2021 2 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Louise as educator	Recordings and PowerPoint slides.	Observation in Innovation and entrepreneurship in school. 17 students present.
April 2021 4 lessons	Observation in online teaching in Innovation and entrepreneurship in school. Benjamin as educator	Recordings of teaching and PowerPoint slides	Observation in Innovation and entrepreneurship in school. 16 students present
February 2022 3 hours	Work group meeting on play and playfulness with educators.	Log notes	Work group meeting with educators on their practice work with play and playfulness in teaching.

Appendix 2: Interview guide – student focus group interviews

I conducted focus group interviews after the design experiment rounds in a subject was finished. This led to in total five focus group interviews with classes of students. I followed what the students answered to some degree, and this sometimes took the interviews in a different direction than the questions I had planned for. In this Appendix I have pulled the questions from the different focus group interviews together, to provide a general view on the questions asked in these focus group interviews.

Playfulness in general in relation to teaching practices

1. When does teaching here at teacher education feel playful for you? Why is this?
2. What is the opposite of playful for you in relation to teaching practices?
3. Can you give an example of what has been the most playful experience in general while you have attended teacher education?

Playfulness in relation to the subject

4. What do you think is especially playful in this subject?
5. Is there a difference between what is felt playful in each subject you attend?
6. What has been especially playful in this subject throughout the semester?
7. Could you imagine doing some of the practices in this subject which are not felt as playful in a playful way?

Playfulness in relation to design experiment

8. How was it to be part of this design experiment?
9. What was the difference between the two/three experiences?
10. What do you take with you from the experience of being in the design experiment(s)
11. What do you feel you miss out on when doing more experiential work in class?
12. Do you feel you miss the more analytical and theoretical aspects of teaching when doing this design experiment?

13. How was it to work with the same material throughout these rounds of teaching?
14. How did it work for you being provided with constraints during the design experiments?
15. How could you imagine designing it to be even more playful for you?

Last remarks

Appendix 3: Overview of focus group interviews in subjects

The five focus group interviews I conducted in the research process is distributed between subjects and design experiments as shown in the following figure:

Innovation and Entrepreneurship in school	Biology	Social education module “The Child’s Learning Development and Formation”	Biology	General teaching competence
I: Playing with bachelor project exercises II: Playing with being learning space designers III: Playing with designing evaluation methods IV: Playing with peer teaching online V: Playing with writing and choice IX: Playing with outdoor school and materials	VI: Playing with space and materials in nature	VII: Playing with being presented with moods VIII: Playing with ‘spin the bottle’	X: Playing with biology and visual arts practices XI: Playing with field work practices	XII: Playing with peer teaching XIII: Playing with peer teaching XIV: Playing with peer teaching

Appendix 4. Interview guide - individual educator interviews

I conducted individual interviews with the educators after the design experiment rounds in a subject was over. This sums up to in total five individual educator interviews. Even though I had an interview guide, the interviews evolved in most of the interviews into a reflection conversation together and this took the interviews in a different direction than the questions I planned. In this Appendix I have pulled the questions from the different individual educator interview guides together, to provide a general view on the questions I had prepared for the different interviews.

General reflection together

- Reflection together on how the teaching went generally.
- Reflections together on the design process of the design experiments.

Individual experience on experiments

- What have you experienced as the most playful in relation to the design experiments?
- Do you feel the design experiments could have been designed even more through a playful frame?
- What have the design experiments contributed with to your teaching practice?
- What moods do you experience emerge when taking a playful approach in teaching?

Thoughts on student experiences

- What do you think that the students have experienced as being the most playful in relation to the design experiments?

Individual teaching experiences and online teaching

- How does the online teaching format work for you when teaching?
- When you plan your teaching, do you think about moods and atmospheres?
- What do you especially focus on generally when you design for your teaching?

Thoughts on student reflections through the design experiments

- How do you experience the students get to reflect when designing in this way?

Summing up together and last remarks

Appendix 5. Interview guide - physical educator

interview

During the course of the research project, I talked several times with the physical education educator Michael about play in teacher education and how play is part of his teaching practices. I attended a workshop held by Michael on play in relation to education at the institution, and I asked him if he could be interested in sharing some of his reflections in an interview. While the other educator interviews in this research evolves around the collaboration on design experiments, this interview with Michael was not rooted in a collaboration, hence a separate interview guide was needed and is formed by my participation in the workshop Michael held for educators at the educational institution.

Intro questions

- You tell me, that you use play in the context of your teaching, could you tell me what you do and what has made you think play into the teaching?
- Do you specifically focus on play moods in your planning of your teaching? If so, how?

Individual experience of play

- When do you as an educator experience teaching as playful?
- What do you like to play or set in motion with the students in your teaching?
- When does play stop in relation to teaching?
- When do you not bring play into teaching?

Workshop experience

- You sometimes talk, like in the workshop you held, about self-forgetfulness. Can you say something about how this is important in the educational context and how it relates to play?

Play generally in teacher education

- What conditions do play have in teacher education in your opinion?
- When do you think play is not suitable in teacher education?

Online teaching

- When do you think online teaching becomes playful in your teaching?
- What hinders reversely online teaching in being playful in your teaching?

Summing up together and last remarks

Appendix 6: Interview guide – individual student interviews

I conducted in total two individual student interviews in the study. One of the students, Niels had attended the semester of ‘Innovation and entrepreneurship’ and in this way the various design experiments unfolded in that semester. The other student, Karl Johan attended the design experiments of ‘XII, XIII & XIV: Playing with peer teaching’. In this Appendix I have pulled the questions from the two different interviews together, while they were to some extent similar with small nuances because the student Niels had experienced other design experiments than evolving around peer teaching as Karl Johan only had been part of.

General thoughts

- When do you feel playfully attuned in teaching practices? What does it take?
- What does it mean to you when the teaching is experienced as playful?
- When, on the other hand, does teaching not feel playful?
- What expectations and hopes do you have in general when you enter a classroom as a student?
- When do you feel you learn the most in teaching practices?
- Can you give me a few examples of when teaching practices are especially meaningful to you in teacher education?

On experiences on being in the design experiments

- Which parts of this semester do you think have been playful for you? And why?
- Which parts of the teaching of each other did you experience as playful?
- When do you think online teaching becomes playful?
- How was it to be in the work process of developing teaching for your peer students?
- How do you experience having to teach the other students in this way?
- Do you have any suggestions for improvement through your experience of trying it out?

Future professional practice

-Have you thought about teaching through play or playful approaches as part of your teaching practice when you become a teacher?

Summing up and last remarks