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CO-CREATION – FOCUSING ON CHILDREN

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Preface

Billund is the Capital of Children. Here children learn through play and are creative global citizens. This is the vision. CoC Playful Minds wishes to inform and inspire leaders, professionals, children and young persons, parents, companies and organizations to create the Capital of Children together. A key to this achievement is to put co-creation with children at the center of our minds and actions. Children should have the best opportunities to be active citizens and to interact with the world around them in the order to achieve different experiences while co-creating their lives and identities.

Children's and young persons' views of the world as well as their experiences and overall knowledge are of vital importance to both the local and global processes of rethinking and building good, sustainable societies. Co-creation with children is at the heart of all CoC Playful Minds projects and initiatives. It is one of the ways we live out our vision and give value to the Capital of Children in Billund and beyond.

Co-creation with children and young persons can take many different forms, but in every form it is about paying much more attention to children's perspectives, positions and experiences by trying to understand and interact with children on a deeper, more equal and respectful level. It sets the scene for adults to be more sensitive and ethically responsible in order to balance the different interests, the children's voices and at the same time, secure that no harm comes to the children.

If we are to create products for children with children; to create new learning procedures together with children; to create a city for children with children – then we need to know what co-creation means, what it is driven by, why it is important, its potentials and risks, what it is derived from, how it is to be conceived and practiced in a context with children, e.g. in psychological and pedagogical fields, where children spend most of their time at daycare institutions and schools.

As a knowledge driven organization CoC Playful Minds develops and publishes research based knowledge on different issues. Our first Research Journal publication is based on this highly important issue: Co-creation with Children. We are happy that the Danish edition of Research Journal 1, 2019: "Co-create – samskabelse med børn i fokus" has now been translated into a shorter English version by one of its authors, Josefine Dilling. Thank you, Josefine.

We hope you all will find valuable knowledge and inspiration in this condensed English version: Research Journal 1, 2019: Co-creation – Focusing on Children.

Billund, september 2019

**Karin Møller Villumsen,
Director of research lab**

CoC Playful Minds.

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Co-creation – Focusing on children

This report is about co-creation with children. It is based on a comprehensive desk-research and a literature review on co-creation, with a particular emphasis on children, pedagogics and psychology. The original report is in Danish and this translation comprises a recapitulation of the central issues and conclusions. The Danish report was produced by Aalborg University, Denmark (AAU) and is an initiative from CoC Playful Minds. The objective was to co-create a report grounded in scientific research which would enable CoC Playful Minds to develop their own position in relation to co-creation with children, in practice. Focusing on this purpose, the report applies a certain theoretical perspective, which the authors have designed actively and constructed for CoC Playful Minds.

The authors conducted a general exploration of where, how and when to co-create with children in practice, and in addition, a more general literature research on this and related fields of practice. The authors worked around topics such as how to define co-creation, the ethical challenges co-creational processes pose and how co-creation works in practice. Thus, the focus has been on developmental, didactical, ethical, pedagogical, general psychological and learning-oriented perspectives. Furthermore, models and methods for co-creation were considered during the literature search, with a particular emphasis on pedagogical communities of practice. The Danish report was funded by CoC Playful Minds and AAU, and was completed by Professor Lene Tanggaard and research assistant, cand.psych. Josefine Dilling Linneberg from AAU. This translation and summary was written by Josefine Dilling for international readers and edited by Dr. Brian Bloch. CoC Playful Minds and Josefine Dilling are grateful to Brian for his comprehensive editing of the English.

Central points from the Danish report

The Danish report[1] is based on central issues from both the academic and general literature with a focus on theoretical, empirical and practical examples of co-creation with children, seen through a psychological, pedagogical, didactical, developmental and ethical lens. The authors of the Danish report have attempted to capture and construct a meaningful understanding of the phenomenon 'co-creation with children' by looking for definitions, conditions, premises and requisites in the literature. It becomes clear that co-creation is about processes and activities, during which one creates something with someone. These 'someones' are *agents*[2] that vary from major organizations to individuals (as examples) and the 'something' is potentially any kind of output like a new set of values in an organization, democratic code of conduct in institutions, optimization of a digital educational program at a school, or social benefits in a welfare state.[3] Such agents in co-creation most definitely include children as well.[4]

Co-creation is more than co-production and co-operation, due to an increased focus on equal worthiness, rights of participation and initiative for both children and adults.[5] Thus, in this report and several other places in the literature on the topic, co-creation both represents an ideology and a method in which one considers the child from a mixed object-subject position. Object, because the child can be limited in his or her opportunities of expression, due to developmental or contextual factors and subject, because the child is competent, perceptive, experienced, active and creative.[6] The relationship between child and adult is often asymmetric, since it will always be the adult's ethical and moral responsibility to favor the child's needs and well-being.[7] But this aside, as an ideology and method, co-creation challenges both the distribution of power, work and roles between children and adults, with its extended and expanded notion of agency.

One of the main conclusions from the report is that co-creation with children takes many shapes and forms, but is often understood on a continuum between a minimum and maximum level of inclusion of the child's perspective. With a minimum level of inclusion, the child can either serve as a helper or tester in a process where the purpose, approach and product are often decided in advance and/or controlled by one or several adults. With a maximum level of inclusion of the child's perspective, the child is often in charge, or at least present during the entire process, from planning to execution and evaluation.[8] **It is important to emphasize that co-creation with children is not the same as 'child power'. The adult always plays the central role as a facilitator of an ethically responsible framework.**[9] There is no level of inclusion or type of activity which defines a more 'righteous way of co-creation', as long as the pedagogical acknowledgment of actually and actively wanting to co-create is present and hereby facilitate and constructs the necessary settings in order to enable equal possibilities of participation and initiative for the child.

Thus, co-creation seemingly begins with a unique view of children, because co-creation requires the adult to relinquish power and leave some control to the child, if one is to succeed with co-creation and not simply conduct classic collaboration.[10] Further empirical support is needed for such claims, but with the various practical and empirical examples we have seen of co-creation in the literature so far, it seems to be a central premise that the pedagogical
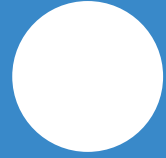
Stay curious

process actively includes – or perhaps even focuses on – the child's perspective through an explorational, playful, experimental, investigative and inquiring approach to the world and its phenomena[11].

This pedagogical premise relies on more than merely a perspective on children. It also entails adults taking a child's perspective by adopting a child's level and/or reach (both figuratively and literally). **The adult actively takes on a role and learning-position which is equivalent to that of the child, whereby they both/all explore a phenomenon together, in order to gain new knowledge in unison, irrespective of whether the adult is or is not already competent in the explored field.**[12] The important thing is the *intentional* declaration of committing oneself to equality – meaning that adults make room for the child to experience and explore ownership, empowerment and cohesion.[13]

Apparently, co-creation might be conducive to learning, excellent relationships, creativity and critical thinking amongst children and adults.[14] Therefore, the question of 'why co-create?' is intended to be answered in the Danish report. The provisional answer is that a **process of co-creation**

1)   **has value in itself,** because it is fun, educational and challenging for children and adults alike, to create and make something together with changed roles and distributed working tasks

2)   **gives rise to intensive learning,**[15] since research indicates that children learn and remember more if they have been actively engaged in the acquisition of knowledge through a more direct and physical interaction with the content

3)   **constitutes a challenge to the contemporary attention devoted to goal-oriented learning** and a focus (especially in Denmark) on methods for counting, measuring and weighing up skills in education

4)   **is conducive to the development of '21st Century Skills'**

Thus, co-creation is not intended as a new strategy for improving efficiency, but rather as an 'impure pedagogical practice and method' where creative processes are wild, chaotic, experimental and imaginative. However, co-creation can easily work as a means of achieving a goal, and it is often found that the activities and processes of co-creation center on themes with which educational institutions and companies are in touch as well – climate change, for example.[16] The pedagogical focus and intention in processes of co-creation are simply different.

The report concludes that co-creation with children as a field, is still in need of empirical research – especially in a Danish context – in order to fully comprehend and clarify the premises, principals, prerequisites and differentiation from other related processes. Co-creation is already occurring in many places, and both practitioners and researchers who have conducted co-creation underline both the possibilities and challenges associated with the ideology and method. Therefore, co-creation as a notion often meets with growing criticism on the one hand[17] and excitement on the other. Throughout the Danish report, the authors attempt to relate to both the pros and the cons, and to extrapolate a perspective which leans on practical experience and scientific research. In this summary and in the original Danish report, the focus is on processes of co-creation with children with particular attention to *content-driven pedagogics.*[18]

RESEARCH
Research on co-creation with children for the Danish report was gathered by Professor Lene Tanggaard and her research assistant Josefine Dilling, both from Aalborg University, Denmark. The report does not rely on a systematic review in a traditional academic sense, but rather on an exhaustive survey of several relevant databases. In developing a framework from which the

"Apparently, co-creation might be conducive to learning, excellent relationships, creativity and critical thinking amongst children and adults."

appropriate literature could be identified and selected, a set of research questions were posed at the beginning of the research process. These questions were as follows:

1.   How do we describe a Danish context for co-creation with children, and how does the specific term *co-creation* differ from other related terms such as inclusion, involvement, participation, citizenship, co-production?

2.   What exactly is co-creation with children and how does it relate to pedagogical and didactical practices? According to research in the area, in which directions are we to look when talking about co-creation with children at different ages and levels of development?

3.   What roles can children take on in processes of co-creation and what types of co-creation exist?

4.   How can we understand a child's cognitive and social development and what can we expect from children across different age ranges?

5.   What ethical considerations and challenges do we experience when co-creating with children?

Desk research was conducted in order to explore and answer the research questions. Such research can be described as an investigation of existing knowledge in a given field. Initially, a wide range of information sources was included and investigated, such as the Internet in general, newspapers, statistics and expert knowledge. Theoretical, empirical and academic works were then included prior to writing the report, in order to support or challenge the information gathered during the initial research phase. These selected works were identified through online academic databases and scientific journals, with a focus on empirical research. Searching for literature can be an overwhelming procedure, so a set of restrictions and inclusion criteria are often

constructed to limit and scope the search. The term 'co-creation' (in Danish: samskabelse) is a rather new term in a Danish context,[19] so everything relevant was included in the first place, irrespective of the year of publication. In addition, the research was spread out to include relevant, related topics, studies and terms that could potentially answer some of our research questions about co-creation with children as well.

Another concrete way of searching for relevant literature is the method of 'rolling-out',[20] which means going through the list of references of selected works, thereby 'unfolding' a particular issue and following up on leads given by other authors.

Worth mentioning is Dr. Ella Paldam from Interaction Minds Centre (IMC), Aarhus University, who is also collaborating with CoC Playful Minds. She piloted the first important steps in the research process on which the report relies. The report is the result of outstanding cooperation between Aalborg University, IMC and Director of Research Lab Karin Møller Villumsen from CoC Playful Minds, who arranged several meetings during the process, in order to continuously clarify the purpose of the report and the most relevant perspectives as the research progressed. In the spring of 2018, the initial results from the report were presented at a workshop and in the autumn of 2018, the final report was presented to key personal, practition-ers and people from Billund community where CoC Playful Minds is located.

CONTENT AND STRUCTURE OF THE REPORT
The Danish report is divided into three main sec-tions distributed over eight chapters. The first main section consists of an introduction to the content of the report, as well as an introduction to the term and notion 'co-creation' in Chapters 1 and 2. The second main section consists of Chapters 3-6, which deal partly with different typologies, models and examples of co-creation with children, and partly a developmental look at children's cognitive and social development, as

well as general learning in the age range from 0-15 years. In the Danish report, the authors provide specific examples of co-creation with children from the selected literature, and highlight central methods which seem conducive to learning (for all participants) and product development ('product' can be understood broadly as material objects, values, processes, activities, meaning etc.). In this translation and brief summary, you will not find as many models and examples from practice, so that we advise you to scan the Danish report for models and illustrations for inspiration, and these do not necessarily require knowledge of the language. These resources might be meaningful if you are looking for ways to conceptualize your own co-creation process with children. In the Danish report, Chapter 6 revolves around ethical matters, considerations and challenges when co-creating

with children, and points out some central precautions to bear in mind. The third and final section of the report covers Chapters 7 and 8. In Chapter 7, you will find the conclusion and key take-aways from the report and (in the Danish version) a set of recommendations provided by the authors to CoC Playful Minds. Chapter 8 is about formalities such as a list of references and appendixes. Given our priorities, many practical examples have been omitted, but the reader is encouraged to explore the landscape of literature him/herself. Throughout this summary, we will point out some promising and interesting directions.

We begin with a summary of Chapter 1 which is about the term 'co-creation'.

Introducing co-creation

Co-creation is a term that covers the phenomenon of creating *something* with *someone*. As an example, this 'something' could be welfare services, material products, a set of values, an organizational code of conduct, activities and processes and these 'someones' could be officials, private people, children, the government and companies.[21] As an example of a process of co-creation, we might imagine how the perspectives of parents and children were included in formulating a pedagogical agenda/curriculum in a daycare institution.[22] Thus, co-creation is a particularly active type of collaboration and exchange of resources and knowledge in making something common. Many similar terms, that are closely related to concepts of co-creation begin the same way with 'co'. When a child makes his/her homework for school, it is called *co*-operation (or simply school preparation). Homework is a well-known part of the *co*-llaboration between homes and schools, but co-creation is more than and different from *co*-production, involvement, participation and *co*-construction.[23]

Often, co-creation is about giving the child more space to take the initiative and thereby expand opportunities for *agency*[24] from its own perspective. As an example, parents, students, teachers and pedagogues could work together in the co-creation of a common solution on how to improve the educational yield for students at school. This would be co-creation, because several agents move towards a common goal of creating something that none of them would have been able to do alone, as the various perspectives work together in a concrete content-driven process. An excellent take on co-creation could be if the child took the initiative to commence a constructive, problem-solving process with

support from the local teacher.[25] Take a minute to consider the two different pedagogical outcomes when the *teacher* takes the initiative, as opposed to the *student* doing so. Taking the initiative sounds easy – but it requires a lot from both agents and settings.

DIFFERENT DISCOURSES – WHAT IS CO-CREATION?

Exploring the scientific landscape of research on co-creation leaves a clear impression that not everyone agrees on what co-creation truly is and how it differs from similar terms and concepts. Some wish to limit the term to concerning the relationship between public and non-public agents[26] who co-create welfare services. Others argue that it is better to leave an openness for interpretation and thereby let co-creation be a model for expanded collaboration in different shapes and forms.[27] Hence, it is evident in the literature that as a term, co-creation cannot easily be defined with simple descriptions. Often, the definitions vary, depending on the context in which it is applied, and as a relatively new concept, co-creation is also often associated with other related terms, such as local democracy, citizenship, user involvement, user-driven innovation, social entrepreneurship, participatory design, empowerment and democratization.[28] Looking for definitions though, the authors did find an interesting way of conceptualizing co-creation in a Danish context by the NGO *The National Council for Volunteering* (Danish; Frivilligrådet):[29]

> Co-creation goes beyond the involvement of citizens and other agents in public tasks of problem-solving. In a process of co-creation, all relevant agents work together

"The new aspect which co-creation brings to collaboration is apparently that the user, receiver, citizen or child is involved as a competent resource when exploring complex solutions to complex problems. Processes of co-creation mostly do not have pre-fixed roles and a distribution of work. The basic principles of equal worth and rights of initiative and participation are the breeding ground for a new ideology"

One of the key principles is apparently a certain view of children, where the purpose is not to consume the child's resources, but rather to enter into lateral working processes where everyone – including the participating adults – learn something new and bring their perspective into play for the benefit of others and the common product.

to identify the essence of a given problem in order to, jointly – and with the use of various relevant resources and expertise – find a solution to the problem. An important element is that co-creation expands rights and possibilities for initiative and participation.

(The National Council of Volunteering, 2014, author's translation)

As is evident from this quotation, co-creation is more than just regular citizen involvement. It is a more radical movement when the citizen is an equal participant in creating welfare services, for example. The citizen is often looked upon as the receiver of welfare services, but in processes of co-creation we experience a disruption of this positioning.[30] Therefore, co-creation with children also entails a more radical view of the child as an (in some cases) equal co-creator and not simply a receiver of the adult's pedagogical 'project'.[31]

SUMMARY OF CHAPTER 1

Co-creation has gained momentum in both a Danish and an international context, politically, pedagogically and occupationally. One of the main discourses conceptualizes the co-creation of welfare services *with* citizens instead of *for* citizens in a broad societal perspective. The idea of co-*producing* welfare (as a similar, yet different term) with citizens is known especially from and associated with the political scientist and Nobel prize winner Elinor Orstrom who coined the term 'co-production' back in the 70's.[32] Developments beyond Orstrom have since come to include co-creation of products other than welfare services such as material products, activities, processes and value where all the included parties have equal rights of participation and initiative. **The new aspect which co-creation brings to collaboration is apparently that the user, receiver, citizen or child is involved as a competent resource when exploring complex solutions to complex problems. Processes of co-creation mostly do not have pre-fixed roles and a distribution of work. The basic principles of equal worth and rights of initiative and participation are the breeding ground for a new ideology** and

ideal for the relationship between collaborators, whether they be the government, public and/or private institutions and citizens – here, also children.

Co-creation with children is in many ways similar to that between adults, when looking at the central premise. A new agenda of co-creation enables new possibilities, even though some of the elements in co-creation are already represented internationally. **One of the key principles is apparently a certain view of *children*, where the purpose is not to consume the child's resources, but rather to enter into lateral working processes where everyone – including the participating adults – *learn* something new and bring their perspective into play for the benefit of others and the common product.**[33] A process of co-creation has value in itself, but can also be used as a means – a method – to an end. The aim could be the development of user-friendly toys, better conditions in a local area, empowering social positions for children and youth, resourceful environments of learning, improved education etc. Accordingly, processes of co-creation go beyond traditional collaboration,[34] because the fundamental ideology and method builds on the declaration and application of a certain view of children, for which the child's perspective is seen as genuinely valuable and understood as of equal worth to that of the adult.[35] This declaration results in actual practices which impact on decisions, structures, the distribution of power and work in processes. The focus is on making way for the child to take the initiative and participate on equal terms, because the sincere persuasion is that such an ideology and methodology results in a different – and perhaps better – product.

To capture the essence, a core quote from the Danish report summarizes the preliminary comprehension of co-creation with children as follows:

".... all involved parties can – and perhaps even ought to – manage and attend to different tasks and areas before, during and after the co-creation process, but the feeling of and basis for ownership, quality and rights of initiative ought to be common and above all, equal"

(Tanggaard & Dilling, 2019).

Typologies and models of co-creation

Where some researchers have tried to limit the scope and apply a normative approach towards co-creation, others work at the intersection between normativity and the instrumental with different *typologies*, *continuums* and *models* of co-creation.[36] Therefore, different typologies and models of co-creation are to be found in the Danish report in Chapter 3, because they contribute and bring perspective to when it is possible to co-create with children in an organization such as CoC Playful Minds, who work with both scholastic learning perspectives and product-oriented goals. In the Danish report, Chapter 3 also revolves around the academic literature and central findings from research in which the premises, principals and conditions of co-creation are described in order to come closer to a delineation of the term as something else, and more than merely different types and collaboration.

In the report, four primary conceptualizations of co-creation are found; the *categorical*, *typological*, *step-by-step approach* and a *co-creation continuum*. These different models are relevant and have been selected, since they all say something about why, when and how to co-create. A common denominator of all four models is that co-creation appears conducive to learning, social and democratic *Bildung*,[37] the development of competences and meaning. Especially *meaning* is something that caught the authors' attention: Why is co-creation meaningful? One might also ask: if co-creation is the answer, what is the question? (Dilling, in press). The preliminary answers, capsuled from the Danish report are:

- Co-creation can potentially expand and unfold children's *lifeworld*,[38] experiences, abilities, possibilities and agency through positions, potentials, empowerment and ownership

- Co-creation contributes to democratic comprehension, competences, initiative, responsibility, active participation in society and local communities

- Co-creation with children is also about inclusion – learning from and with others through differences

- Co-creation can make it evident that learning can occur in worthy, valuable, applicable, motivational, playful, fun and meaningful ways alongside more academic learning

- Co-creation can be about exceeding and transcending both oneself and 'what is known', as something thrilling and insightful, when doing so with others through relationships, artefacts and spaces

- Co-creation can strengthen creativity, play and learning with its focus on content-driven issues

- Co-creation paves the way for better solutions, designs and products

- Co-creation can have a positive influence on the child's development and sense of identity which is shaped by interaction and the experience of taking part in different communities in meaningful and equal ways with others

More research is required in order to draw conclusions on the abovementioned hypotheses, but the literature and preliminary experiences point in the direction of co-creation processes possibly both underpinning academic goals *as well as* being meaningful, fun and challenging learning experiences for both children and adults. One could put it this way: co-creation comes with a pedagogical by-product, since such processes evolve around the child's perspective in a way that triggers delight, enthusiasm, curiosity, critical thinking and engagement in school and learning. Processes of co-creation could also work as a tool in lifting the agenda of inclusion in public institutions and reducing the ever-increasing rates of solitude and failure to thrive amongst children and youths. These possibilities stem from the increased focus on agency, empowerment and equal circumstances in co-creation.[39]

Capturing the specific procedures in co-creation is complex. Several approaches, methods and ways to proceed co-exist, and especially *models* have proven to be a popular way of illustrating and grasping the processes in co-creation. Models can be helpful in creating an overview and could function as a gathering point for groups of co-creators. Especially institutions and companies might find these useful, because they simplify the elements and make way for conceptualization and action.

The problem with such models is that they are quite easy to criticize, because they often lack nuances, seen from an academic point of view. In addition, models are often developed on a basis of *eclecticism*, with which different theories and empirical results from different researchers are assembled in a mosaic where fundamental epistemological and ontological discussion are at risk of being overlooked. Therefore, various different suggestions and models are presented in the Danish report, but no one model is highlighted, as this requires testing and research to be sure of both the pros and cons. Hence, the reader is encouraged to find inspiration and try out different procedures in the pursuit of conceptualizing best-practice in concrete contexts. The authors

merely stress that different models rest on different ontological and epistemological rationales, and overlooking this might compromise the very ideological premise of co-creation.[40]

With these different models come different beliefs of how children can take part in co-creation processes. In some cases, children participate and play an important role throughout the entire process, whereas in other cases, the child's perspective is only included as part of the idea generation, design phase, execution or evaluation. The child's role depends greatly on what one wishes to co-create. This has been well considered by Alison Druin,[41] an American Professor emeritus at the University of Maryland, College Park. Druin has dedicated much time and energy to academic work to children's interaction with technology and as to how children can play an active role in research and product development. Druin (and many other researchers included and referred to in the Danish report) emphasize that outstanding processes occur when the focus is on a common *issue*.

In a content-driven type of pedagogy, one is warned against the instrumentalization and controlled management of methods. Structure and purpose are no sin, but in co-creation with children, it is often necessary to leave openness for novelty and the child's perspective.

Co-Creating with children

The Danish report applies a specific theoretical perspective on co-creation, as mentioned in the introduction. This theoretical approach centers around content-driven pedagogics and is chosen by the authors, partly due to their own academic background in the field of cultural psychology and partly due to the existing literature on co-creation. Here, the focus is on centering processes of co-creation around issues that matter to children. In a content-driven type of pedagogy, one is warned against the instrumentalization and controlled management of methods.[42] Structure and purpose are no sin, but in co-creation with children, it is often necessary to leave openness for novelty and the child's perspective. This is easily jeopardized by the adult's need for control, and the so-called 'pure methods' cannot dictate such processes alone.

IMPURE PEDAGOGICS AND CONTENT-DRIVEN PRACTICES

Content-driven practices are a well-known pedagogical phenomenon of working both through and with the content, instead of being dictated by methods. This line of thought can be found in a book series called 'impure pedagogics' edited by the Danish authors Thomas Aastrup Rømer, Lene Tanggaard and Svend Brinkmann. In these books, the authors adopt a critical approach to the strong emphasis in Danish schools on methods for counting, measuring and weighing up results and skills through a preoccupation with numerical performance data.[43]

One of the central ideas from this perspective is that instead of focusing the pedagogic effort on 'unfolding individual potential', one could favor the matter or content itself through pedagogical practices where *togetherness* and *exploration* are key. The general criticism is that pedagogics – especially in Denmark – tend to be 'pure' and 'neat'. Large areas of pedagogical research have been devoted to finding one-size-fits-all methods in school. Being preoccupied with methods is not problematic per se, but the risk is that pedagogics is reduced to identifying and applying such methods in order to learn *as much as possible*, regardless of *what* is learned (quantity rather than quality). This focus means losing track of the true purpose of pedagogical research. Here, securing 'evidence' and 'systematic methods' becomes a false rubber-stamp and an often false "golden path" to control and learning.[44] 'Impure pedagogics' break with this idea.

With threads back to pedagogical philosophy, pedagogical psychology and literature research, Rømer, Tanggaard and Brinkmann (2011, 2014, 2017) argue that pedagogics is difficult, troublesome, inconvenient, full of surprises and therefore 'impure'. Pedagogics ought to be rooted in contextual and situated practices, whether these be cultures, subjects or people. The authors go beyond mere criticism when they suggest other ways and directions towards 'impure' comprehensions of pedagogics and education.

A counter perspective is to situate development and learning in close connection with content and matter in relation to subjects, people and other objects of interest and thereby learn. Learning processes are 'impure', because they are shaped and given content by the issue that *constitutes* the very process.

As an example, a research team and the authors of the Danish report conducted a study about methods in talent development in the Danish film industry. The conclusion is that talent is neither inherent nor acquired. Talent emerges in relation to a field to which a person is drawn. Talent is about doing. Some researches even suggest we start calling it talent*ing* as a verb instead of a noun, as something someone simply *is*. One of the paradigms of "thinking talent" argues that talent is not visible before it is put in motion through practical tasks and fields in which it unfolds, in close relation to matters and content.[45] Learning has, from an 'impure perspective', become instrumentalized to a point where the most important thing is *learning how to learn*. This metacognitive approach lacks content, as Rømer, Tanggaard and Brinkmann argue. Some experts claim that we learn more when we are not aware that we are learning. Focusing on the object, matter, subject, content, case or other people is more conducive, they claim.[46]

Co-creation as an 'impure' pedagogical practice and method

In the Danish report, a hypothesis is formulated concerning co-creation and how this phenomenon is emerging as part of a new pedagogical agenda in Denmark. Given that children's worldview is 'impure', meaning that it is neither instrumentalized nor metacognitive – it is apparent, intuitive and present. Therefore, co-creation with children is about learning as much as possible. It concerns an awareness of and attention to the child's *lifeworld*[47] and what seems to interest her/him. Here, the object of interest in a pedagogical sense is making room for immersion, absorption, interest and attention towards the *thing* or *phenomenon* that one wishes to learn from, together with children.[48] Thus, the ideal of co-creation – as a process in which participating parties contribute equally – is brought to life in fields of practice where the child's pace, attention and absorption lead the way towards optimal solutions for creating products, teaching methods and pedagogical-didactical practices.

Stay equal

THE MATTER AS KEY IN COMPLEX LEARNING

Though not expressed as explicitly, several empirical studies point in the same direction as the theoretical position presented with 'impure pedagogical' practices. In the empirical examples of co-creation with children from the Danish report, researchers emphasize how observing the child's interaction with various products is often used as a key method in product development, when it comes to the optimization of user-friendliness and profits. These products could include digital services, toys, interactive trajectories at a museum and so on.[49] Apart from economic gain, such processes of co-creation with children also render visible how children best take part and engage in sound learning processes and playful activities. An essential take-way here is that co-creation is more than talk and thought – it is about doing, creating, making, shaping and being together in close interaction with others and often with artefacts. This point is especially central in researcher Allison Druin's suggestions on how to co-create with children. Overcoming challenges, engaging (timid) children and building a bridge between adult and child perception in co-creation is often solved through the common *matter*,[50] once the *making* and *creating* happen. Druin recommends starting creating as early in the process as possible, as a way of forming a common ground for communication and co-creation.[51]

One of the issues that the authors of the Danish report noticed about **co-creation with *children* is the major focus on thriving, meaning, learning and interaction with others, the matter, the case, the content, the community, and the surroundings from *engaging* positions rather than *spectating* positions.**

It is a clear premise in co-creation that everything evolves around *inter*action, which indicates that as a new ideal, co-creation challenges the status quo in countries where an individualized developmental, educational and realization-project has been a cornerstone for decades.[52] Thus, re-focusing on communal projects from political, existential and economic perspectives is apparently

gaining momentum, which is possibly one of the reasons why processes of co-creation are captivating as a break from habit and form an ideological guiding star. Despite all the possibilities, co-creation is not without its obstacles and challenges. It is often complicated, complex, resource- and time consuming. Therefore, to co-create means to prioritize.

Moving on, we now take a look at Chapter 5 from the Danish report, which focuses on describing which developmental, psychological, cognitive and social criteria co-creation requires of children at different age groups.

Children and co-creation at different ages

Chapter 5 in the original Danish report is about co-creation with children of different ages. Based on a breakdown of age groups, children's stages of development are conceptualized and empirical examples constructed as a way of presenting co-creation with children within an age range from 0-15 years. Cognitive and social abilities are the focus, and the authors seek to summarize what one can expect from children in different situations. Through this lens, the authors explore co-creation with children as empowerment-strategies, methods for playful learning in close relation with reality, and with a breaking down of traditional power structures, and a focus on the child's perspective.[53]

Here, you will find a model of age breakdown with related information about methods for co-creation with children. It goes without saying that all specifically constructed models have a certain epistemological and ontological origin by default, and this particular model is anchored in a cultural-psychological theoretical framework, due to the Danish authors' educational background and professional conviction.[54]

Age	Children's development and engaged participation in co-creation
0-2 years	The spoken language is a barrier when co-creating with children of this age. Here, co-creation is about letting the child communicate (pointing to, looking at, moving towards, listening for different things) and show the adult what they feel drawn towards. Central methods for co-creation evolve and revolve around activities with *sensory* perception as the focus. Also, clearly defining and dividing spaces for work, learning and play is fruitful. Smaller areas in which immersion and absorption are possible are recommended, as the child will not be disturbed by interruptions and is thereby able to take more initiative and follow up on expressions of interest. Through different empirical projects, it has been observed that placing material objects, toys and cultural artefacts within the child's reach is pivotal when trying to construct a setting for the child to engage on equal terms.
2-6 years	A learning-based approach in co-creation with children between 2-6 years is recommended, as imagination can be put into play in pedagogical interaction (role play, imaginary worlds). Especially case studies from *Reggio Emilia* stand out as state-of-the-art activities in co-creating a theater curtain together with children and local institutions. Emphasis should be on concrete matters rather than abstract concepts, as the child is still developing higher psychological functioning. Observing the child, paying attention to the child's trajectory and being patient with interventions and 'falling in line' with the child's play, are key methods and positions for the adult.

Stay open

6-11 years	As the child often enters school on turning 6, cases of co-creation with children in institutional settings dominate the literature. The emphasis is on playful learning with strong ties to real-life matters. Co-creation here is still about exploration, playing, experimentation and sensation. Here, the adult lets him/herself get carried away by the child's perspective and enthusiasm and into the world of play as a co-student in learning contexts and common projects. The games evolve and become more complex. The teacher/pedagogue facilitates psychical spaces, conducive settings and conditions that promote the child's ability to take the initiative. Giving the child ownership and responsibility makes him/her feel called upon and needed, which is a great way of enhancing feelings of empowerment and worth, which becomes more possible around this ago group, as the child grows increasingly capable and perceptive of its surroundings. How do others react to my behavior? Thus, co-creation is also about trust. Reading about the qualitative study of co-creating a *'Kinder Garden'* conducted and documented by Jenifer Heinrichs[55] is recommended for further inspiration on how to approach co-creation projects at school.
11-15 years	Appealing and interactive learning environments with ownership and responsibility through experimentation, design thinking,[56] dialogical education[57] and pedagogical/ didactical approaches such as 'Quality Talk'[58] dominate the literature on methods for co-creation with youth and young teenagers. Reflections, critical thinking, philosophical conversations, focus diversity, encouraging children to make up their minds about matters of i.e. political, personal experiences and positions are all central elements of co-creation with youth in this age-span. Peer-to-peer learning is a way of engaging students and creating a setting for diverse reflection and the rehearsal of respectful communication and democratic participation. Letting students take part in decision-making and being able to influence the curriculum are also seen as fruitful methods of engagement.

Even though methods of co-creation vary across different age-spans, many principals remain central, despite different cognitive and social abilities. Some of the consistent remarks in the literature about co-creation addresses it turning up as a methodological break of habit in institutions, companies and communities, which challenge and transcend classical ways of collaboration.

One might not identify activities and processes of co-creation as varying much from common activities, and critics have pointed out that co-creation is just another "fancy way of branding old wine in new bottles",[59] but in fact the difference is there. Co-creation requires a different *pedagogical* focus. The difference is more easily detected when searching for the ideas and convictions behind different pedagogical practices.

It all begins with the way one perceives children. The values, possibilities, potentials and

advantages in co-creation are to be found in more complex learning processes, rather than only in the (sometimes minimal) differences in activities and methods. When practices and activities are carried out in line with the premises and perquisites for co-creation – and when one believes in them – co-creation seems conducive to deep learning, creativity, critical thinking, independency and democratic "Bildung" to mention just a few.

Practicing ethically justifiable co-creation with children

Capturing the essence of co-creation is a complex matter, but the authors behind the Danish report have attempted to collect the premises and conditions from empirical research and the literature in the field. These premises are influenced substantially by ethical reflections.

The progressive Professor emeritus Allison Druin points out that co-creation with children calls for thoroughness and a strong ethical compass. Questions such as *when*, *why* and *what* to co-create, and clarifications of work- and role distributions require a keen ethical awareness.

When scanning the literature, ethical matters on the balance between the protection and involvement of children emerge as central issues.[60] In a comprehensive questionnaire and research review concerning ethically-related challenges when conducting research with children from 46 countries, reveal that "hot topics" were often about *informed consent, protection of the child's rights, confidentiality, payment* and *power dynamics*.

Follow-up research later led to the construction of a so-called *ethics charter* – a kind of 'manifest' consisting of 7 central commitments in research with children which are, to some extent, applicable to processes of co-creation considered in the literature:

1. Ethical research with children is everyone's responsibility

2. Respecting the child's worth and rights is fundamental

3. Research with children must be just and equal

4. Ethical research benefits children

5. Children shall never be harmed when participating in research

6. Children's informed consent must be obtained and re-confirmed continuously

7. Ethically responsible research requires continued reflection and adjustment

Stay updated

Co-creation with children in practice – food for thought

In the Danish report, the authors attempt to capture and summarize some of the most central take-aways, lessons and advice grounded in theory, the literature in the field and empirical research. From an adult position and as a facilitator and/or participant of co-creation, the following aspects are highlighted:

- Explore the way you perceive children and be critical. In your perception, what are children capable of? What kind of consequences does your view on children have on the way you engage with children and possibly the outcomes of co-creation? Is your view challengeable?

- Consider what is ethically reasonable to expect from children across different age spans and competencies, given the cognitive, social, emotional and psychical (even vocational) development in relation to the context in which the process of co-creation is unfolded. What is the impact of contextual surroundings, premises and limitations?

- Carefully asses the purpose, the goal, the means and framework prior to and during co-creation. How can one best succeed? What kind of co-creation process is intended and how do the premises define intentionality as well as the practicalities? What challenges are connected to the different types of processes and how should one prioritize, distribute and disrupt the various roles and working tasks?

- Consider when and how the child can take part and play a role in co-creation. Is the role you intend the child to play ethically justifiable? Is the child potentially more capable than you think? To what extent is experimentation possible in order to challenge traditional world views and the distribution of roles and power?

- Creating a safe space is fundamental to co-creation – not only for the child but for all participants. Co-creation is to some extent about giving up control and traditional roles, and trusting others to share the common tasks. A central challenge is often that children relate to adults in certain pre-defined ways – especially adults they know from other contexts (i.e. teachers, pedagogues etc.) – and the premise of disrupting traditional interaction might pose a challenge. Therefore, being creative about how the adult enters the 'room for co-creation' is central in order for the child to take on another and more active role as well. If your role is normally authoritarian, how can you overcome this? Would it be better for another adult to facilitate instead of you?

- Start creating as early as possible. Spoken language can be a barrier until the child has reached a certain age. Bonding through material artefacts and concrete tasks as mediators of communication and creative, playful interactions will often be a useful way to step into the child's *lifeworld*[61] and show that this type of interaction is defined differently to normal child–adult relationships.

- Try to the best of your ability to keep taking on a role as someone who is learning and creating on equal terms with the child, when

you explore something common together. Radiating curiosity might give the child the right impression and courage it to think that his/her input is as good as yours.

- Monitor and evaluate the process continuously in order to make sure that you co-create and not only collaborate. This is mainly about intentionality and a critical reflection on one's own perceptions and role.

- Make changes, experiment and play games along the way, so as to test your methods and the positions available for the child. Do you make it accessible for the child to participate? If not, why and how can you change this?

- Reflect *with* the child in practice – what are the pros and cons of your ways of co-creating, is there room for improvement, is it possible to reveal what works and what doesn't? From the perspective of 'impure pedagogics', meta-cognition is at risk of stealing the focus from the actual matter, but it can be – when used wisely – enlightening for the participants to talk about important take-aways and common lessons.

- To some, co-creation might on the one hand sound rather easy, and to others very complex. When researchers have a hard time agreeing upon how to limit and define these processes, it suggests that there is no golden rule or 'pure method' in co-creation. Don't be afraid to co-create as a break of habit in everyday life, or at school, in day-care institutions, companies and so on. Co-creation unfolds on a continuum and does not necessarily demand much preparation. The important thing is the intention and the different methods that follow. From there, practices, activities, products, participants and methods vary greatly.

Conclusion and central findings

In the Danish report about co-creation with children, the authors' rely on Anette Iversen's (2017) advice about *conceptual reflexivity*, which means that one ought to explore the phenomenon of co-creation with children from different angles and be open to novelty and interpretation of what co-creation can be in different contexts. However, a provisional definition is proposed, with **co-creation characterized by an expanded notion of agency, since children are not seen as passive receivers of the adult's pedagogical 'project', but rather as actively creative subjects in their own lives.** Thus, a substantial focus on equality in terms of positions, tasks and the distribution of power, with broadened rights of initiative and participation is evident in the literature, together with practical experiences of co-creation – also with children. As a consequence, the child's perspective is consulted, included or even placed at the center of attention, as the distribution of roles and power is directed substantially towards *common* tasks and solutions.

Looking at the literature, it is evident that the child's position in processes of co-creation varies greatly, depending on the purpose. As an example, the child may engage as a *designer*, *user*, *tester* and/or *co-developer*, as well as an agent in everything extending over the range between planning, execution and evaluation. Choosing and identifying an ethically justifiable position for the child depends on the purpose and age/development-appropriate expectations. It goes without saying that not all roles are appropriate for children. Knowing when, how and why to co-create requires competent decision-making from the adult participants. The adult ought to seek the appropriate balance between taking responsibility – such as looking for signals and behavior that might suggest something about the child's well-being – and making room for new and yet unexplored roles and positions. Thus, responsibility is also about remaining critical of one's own interpretations of the situation, believing in general, the perceptions, comprehension and views of the child. **Co-creating with children begins with and centers around a certain *child view*.** Therefore, initiating co-creation processes often commences with a pedagogical declaration of how the child is perceived as an agent. Obviously, it works more powerfully if this is in line with one's own prevailing beliefs.

Co-creation processes take many shapes and unfolds on a continuum of possibilities, and it is not necessarily a seal of approval if *all* parties have taken part in *every* step. It is advisable to distribute tasks meaningfully. This point might seem to contradict the very premise of co-creation, but with the adult's ethical responsibility follows from the role as a respectful facilitator as well. The adult ensures a legitimate framework, and whenever possible and meaningful, invites the child to co-create. This requires that the adult be curious, competent and tries actively to understand, translate and include the child's perspective in important decisions about planning, choice of method, execution, interpretation and evaluation. An excellent example would be to let the child(ren) decide how to solve the task in question. Such a pedagogical focus is apparently conducive to creativity and complex critical thinking, because it triggers imagination and sets the child free to experiment in ways that do not necessarily lead to the 'right' solution (as is often the focus at school). Rather, it is about building confidence and contributing to the task, community or society. This is co-creation, because the child is an

equal participant with expanded rights of initiative. As a by-product, research in motivation and drop-out furthermore suggests that ownership and sense of contribution are key factors in persistency.

Research indicates that **co-creation teaches the child that it is worthwhile to pitch in and step forward into the world.** It is commonly known from developmental psychological research that the experience of being 'seen' by others – and especially significant others – develops a sense of self and confidence, which is often required in order to take a chance and conduct creative experiments instead of 'safe play' in life. Additionally, some research reveals that co-creating with children teaches adults a lot as well.

One particular area of interest in research is that the adult is evidently reminded to perceive, experiment, play and explore phenomena from other angles than usual. A key example is that **children often perceive through their hands rather than only through their eyes. A theoretical take on this is called 'the epistemology of the hand', meaning that adults are reminded to activate more tactile ways of exploring objects and methods by children.**

Therefore, co-creation is framed in the Danish report as a break of methodological habit, with help from the perspectives presented in the book-series 'impure pedagogics'. In this respect, a critique is expressed of the tendency to favor methods for 'counting, measuring and weighing', as the only way of reaching golden standards from numerical performance data. With empirical examples, the authors encourage pedagogical practice and research, as a break of habit, to direct attention towards content-driven learning with a common matter as the point of departure.

One apparently learns more when one does not necessarily know that learning is taking place, because the focus is on the object, the subject, matter, case or other people. From this case in point, it is suggested in the Danish report that co-creation is possibly gaining momentum as

part of a new pedagogical paradigm and agenda, because the child's perception of the world is 'impure' in the sense that it is not as frequently directed or motivated by 'pure' guiding stars of evidence-based methods, learning goals etc. It is not (yet) instrumentalized or meta-cognitive; it is immediate, perceptive and present.

Co-creation with children therefore means that the adult explores and follows the lead of the child and its interests, which can then form a central object in the pedagogical focus. Hereby, the adult facilitates a space for exploration, absorption and attention on the matter one wants to teach the child about – or learn about together. **Focusing on a common matter, object, feeling, space or case is emphasized as an excellent method to ensure being at the children's level.**

So why co-create in the first place? **Co-creation is not only to be understood as a means to an end – it is a goal in itself.** Letting the child guide the adult teaches the child that it pays off to get involved. Therefore, research acknowledges that co-creation processes are of great value in themselves, because the central premises are likely to boost agency, *thriving* and learning, because children who are actively engaged in learning processes have a better memory and deeper understanding of the things they do, since they are encouraged to express what they experience. **Including the child in joint responsibility makes learning fun, exciting, engaging and conducive to excellent and tolerant social relationships, since co-creation 'forces' all agents to be inclusive towards different approaches, points of view and suggestions.**

Drawing inspiration from researchers like Jean Lave, the authors of the Danish report conceptualize co-creation processes as having potential for both simple and complex learning, because the activity – building a playground, landscaping a garden, staging a play or solving math – is not only about specific competencies of acting or arithmetic. It covers more complex processes such as the ability to co-operate and come up with creative strategies for problem-solving. This

means that **one should not only look for (measure) the yield of co-creation in terms of products, but equally consider the pedagogical structure, intentions, declaration and points of focus.**

As an example, there is considerable methodological variance in the ways adults engage children in learning. Learning about wood species, the adult can *tell* the child about them from the classroom or he/she can talk with the child, observe and ask the child what he/she experiences, perceives, thinks and feels in a common exploration of trees *in* nature. The "product" might be the same – the child learns about wood species – but the pedagogical yield and level of understanding is different, due to the child's new *position* in relation to the process, adult and matter. It is simply a different way of relating to the world, other people, phenomena and consequently oneself.

Thus, monitoring and adjusting the distribution of roles, planning phases, ethical considerations, execution strategies and methods for evaluation is key in co-creation, as the pedagogical declaration means taking on the responsibility of ensuring equal rights of participation and initiative. Researchers call this 'a mindful practice' (or the reflective practitioner[62]) with a major focus on the *presence*, which requires the adult to be brave enough to relinquish power and control, at least to some extent.

So, how to co-create? The answer is not simple. Research suggests the use of mixed-methods as a promising way to co-create with children. This means including a set of methods to capture and document the child's actions and ensure that it thrives. This might be in direct contact with the child, or through observing it from a distance. Methods could be of an academic nature, such as interviews, observations, action research, questionnaires, video recordings, experiments and last but not least, games and play. Thus, it is a central premise in co-creation with young children that the adult respectfully and carefully interprets the child's behavior, which imposes

great demands on the adult's professional competencies and morality to translate the child's communication justifiably and appropriately. Consequently, an appropriate framework is fundamental. The framework in co-creation is not limited to simple, physical and material boundaries, but is equally defined by agreements, matching of expectations, facilitation of informal social interaction, and a continuous decisioning of whether the scope is right and whether one understands the child, and that the child is able to express him/herself freely. This relates substantially to ethical reflections, which include informed consent, protection of the child's interests and well-being, as well as attention being paid to the power dynamics at play in the relationship, the 'space' and the meeting place for co-creation.

Methodologically speaking, an ethical premise in co-creation thus means constantly checking with the child to determine whether the observations made and conclusions drawn are in line with the child's perceptions, thoughts, experiences, feelings and behavior, without removing the focus on the common matter. **Co-creation is therefore often described as "temporary chaos" with a common acceptance of the unstructured premises of mindful practices with 'impure' pedagogical methods.** This applies to all parts of the process.

The current conceptualization and comprehension of co-creation as a new phenomenon, methodologically speaking, is often met with criticism, since both researchers and practitioners claim that co-creation is merely 'old wine in new bottles'. It is believed that co-creation is already taking place to a great extent, although we might call it something else. More empirical research is certainly necessary to further limit, delineate and define the premises of co-creation and the differentiation from other types of co-operation. However, throughout the Danish report, it becomes evident that co-creation is here to stay.

The framework in co-creation is not limited to simple, physical and material boundaries, but is equally defined by agreements, matching of expectations, facilitation of informal social inter-action, and a continuous decisioning of whether the scope is right and whether one understands the child, and that the child is able to express him/herself freely.

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Notes

1   Tanggaard & Linneberg, 2019.

2   Bandura, 1999.

3   Agger & Tortzen, 2015; Voorberg, Bekkers & Tummers, 2013, 2015; Lehman, 2013.

4   Arndal, Hansen, Højholdt, Johannesen, Stein, Nielsen 2017; Bohm, Olson, Dyrby, Beckett, Schwartz, Sommersel & Detlefsen, 2018; Donoso, Verdoodt, van Mechelen & Jasmontaite, 2016.

5   Bresser, Andersen, Kok & Beuschel, 2013.

6   Bo & Gehl, 2003.

7   Øvreeide, 2009; Bolin, 2015.

8   Druin, 2002.

9   Lipmanowicz & McCandless, 2013.

10 DCUM, 2018; Larsen & Larsgaard, 2017.

11 Heinrichs, 2016; Baker, Krechevsky, Ertel, Ryan, Wilson & Mardell, 2016; Singer, Golinkoff & Hirsh-Pasek, 2006.

12 Strawhacker, Sullivan & Portsmore, 2016.

13 Krechevsky, Mardell, Filippini & Tedeschi, 2016; Parnell & Iorio, 2015; Moss, 2016.

14 Edwards, 2002; Grundahl & Wiwe, 2016a, 2016b; Jakobsen, in press; Kangas, 2010; Krechevsky, Mardell, Filippini & Tedeschi, 2016; Leinonen & Sintonen, 2014; Beckett, 2018.

15 Barab & Plucker, 2002; Barab, Squire & Dueber, 2000; Horgan, 2017.

16 Matthiesen, 2018; Reitenbach, van Dijk, Hochstenbach, & Resink, 2013; Sirianni, 2009; Vicini, Bellini, Rosi & Sanna, 2012.

17 Iversen, 2017; Tortzen & Espersen, 2016.

18 Tanggaard, 2019.

19 Paldam, 2018.

20 Tanggaard, Birk & Ernø, 2012.

21 Agger & Tortzen, 2015; Voorberg, Bekkers & Tummers, 2013, 2015; Lehman, 2013.

22 Matthiesen, 2018.

23 Holdt, Bygum, Gerber, Hunt, Boll & Nielsen, 2014.

24 Bandura, 1999.

25 Winther, 2016.

26 Tortzen & Espersen, 2016.

27 Iversen, 2017; Kolleseck 2007a, 2007b; Thykjær, 2015.

28 Alsem, van Meeteren, Verhoef, Schmitz, Jongmans, Meily-Visser & Ketelaar, 2017.

29 Bresser, Andersen, Kok & Beuschel, 2013; Frivilligrådet, 2014.

30 Larsen & Larsgaard, 2017.

31 Warming, 2011.

32 Alford, 2014.

33 Grundahl & Wiwe, 2016a, 2016b; Davies, Kiemer & Meissel, 2017; Hart; 1992; Espersen, 2014.

34 Bovaird, 2007; Bovaird & Loeffler, 2012.

35 Frivilligrådet, 2014; Sommer, 2003; Bo & Gehl, 2002; Warming, 2011.

36 Agger & Tortzen, 2015; Voorberg, Bekkers & Tummers, 2013, 2015; Ulrich 2016; Iversen, 2017; MTIC, rns2018.

37 Helskog, 2019.

38 Inglis & Thorpe, 2012.

39 Mayer & McKenzie, 2017; Moss, 2016; Koike, Ogino, Takamura, Miyaji, Miyajima, Kato, Uemura, Kunieda & Yamada, 2011; Vicini, Bellini, Rosi & Sanna, 2012.

40 Iversen, 2017.

41 Druin, 2002.

42 Tanggaard, Rømer & Brinkmann, 2014; Rømer, Tanggaard & Brinkmann, 2017, 2011; Rømer, 2017; Steinweg, 2017.

43 Andersen & Tanggaard, 2016, 2017; Rømer, 2017, 2019; Biesta, 2010.

44 Steinweg, 2017.

45 Tanggaard & Hansen, 2017; Tanggaard & Dilling, 2018; Gold, Oldroyd, Chesters, Booth & Waugh, 2016.

46 Tanggaard, 2019.

47 Inglis & Thorpe, 2012.

48 Heinrichs, 2016.

49 Jensen, Wagoner, Endsleff, Linneberg, Jeffrey, Spooner, & Idema, 2016; Druin, 2002; Rusu & Avasilcǎi, 2015.

50 Iversen, 2017; Winther, 2016.

51 Druin, 2002.

52 Glǎveanu, 2010; Tanggaard, in press.

53 Feldman, 2008; Kangas, 2010; Reitenbach, van Dijk, Hochstenbach & Resink, 2013.

54 Vygotsky, 1980; Brinkmann, 2006; Lave, 1977, 1997; Lave & Wenger, 1991; Berk, 2013; Cole, 1996.

55 Heinrichs, 2016.

56 Brown & Wyaat, 2010; Gram, 2011.

57 Ligorio & César, 2013.

58 Davies, Kiemer & Meissel, 2017.

59 Paldam, in review.

60 Woodgate, Tennent & Zurba, 2017; Christensen & Prout, 2002; Einarsdóttir, 2007; Graham, Powell & Taylor, 2015.

61 Inglis & Thorpe, 2012.

62   Schön, 2017.