
Objects-To-Relate-With: Exploring Playful Learning Experiences of Students in Interprofessional Higher Education Co-Creating and Playing with Objects

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ABSTRACT

This research article aims to examine the playful learning experiences of higher education students co-creating and playing with objects in interprofessional education and collaboration. The article draws on two design-based research studies, and the analysis investigates how Danish teacher education and social education students experience meaningful collaboration through new communicative strategies situated in shared social spaces for learning. In the collaborative and playful learning experiments, the students co-create interpersonal and playful objects that become evocative boundary objects connecting the participants across professional educations. Lastly, the analysis addresses challenges in adults re-learning to play, legitimising playful learning approaches in higher education and the barriers to connecting across educational boundaries. In the discussion, I develop the concept of 'objects-to-relate-with' and further reflect on the pedagogical potentials and challenges along with the situational constraints of time and culture in higher education playful learning.

Introduction

A variety of approaches to higher education playful learning has emerged in recent years, displaying hopes of developing or changing the current cultures and practices of adult learning, teaching and pedagogy in universities and university colleges (e.g., Holflod, 2022a; James, 2022; James & Nerantzi, 2019; Jørgensen et al., 2022; Nørgård, 2021; Nørgård et al., 2017; Whitton & Moseley, 2018). In playful learning, or play in general, objects, tools, things, or materialities are recurrent phenomena. There is, however, a growing academic interest in the role of objects in playful learning experiences (Koeners & Francis, 2020; Nørgård et al., 2017; Whitton, 2018; Williamson, 2019) and how they influence playful learning approaches in higher education (Jørgensen et al., 2022; Lean et al., 2018; Moseley & Nørgård, 2021). A recent literature review of space and materiality in higher education playful learning (Jørgensen et al., 2022) identified the need for more detailed investigations of the role, function and constraints of materiality and space. They also found in-depth discussions of materiality, and its connections to learning, pedagogy and theory, infrequent and scattered:

Overall, we conclude that materiality is a popular agent in play and playful learning practices in higher education. Nevertheless, the materialities in this review were not challenged, scrutinised or treated pedagogically (...) Moreover, a theoretical perspective in which space and materiality are turning points was missing, and the identification of playful materials or playful spaces in learning processes was not addressed. (Jørgensen et al., 2022, p. 12)

The authors furthermore discuss that no reviewed studies examined the interplay between university colleges (e.g., teacher education and social education) and playful learning to address the pedagogical connections to future professions and specific practices (Jørgensen et al., 2022, p. 12). These findings address a problem and need in higher education playful learning to further examine the relationship between objects in playful learning, professional education, and learning, participation, and pedagogy. The present article examines the purpose, potential, constraints, and relevance of exploring interprofessional education and student collaboration through making and playing with co-creative objects, drawing upon two Design-Based Research studies across teacher and social education at a Danish university college. The following research question guides the article:

How does the playful co-creation of objects influence collaboration and communication across boundaries within higher education learning experiences?

At the 2022 Playful Learning Conference in Leicester, England, I held an interactive workshop on playful learning in higher education. During the workshop, the participating researchers and educators constructed paper origami boxes to explore co-creative play and perspectives on playful learning. They further collaborated on investigating and creating perspectives on what higher education playful learning looks, sounds, and feels like. The workshop aimed to illustrate the potential of co-creating, exploring, and playing with objects and materialities in playful collaboration to encourage generative collaboration and dialogic learning. With this article, I aim to contribute with analysis of playful and boundary-crossing student collaboration guided by their co-creation of playful objects that aid them in communicating, collaborating, and connecting across educational boundaries. These objects become evocative and dialogic (boundary) objects to relate students across differences in educational understandings, cultures, knowledge, and terminologies. While this article examines objects in playful learning specifically, herein conceptualised as object-guided playful learning, it also generally relates to playful learning in higher education. The research and practice field of higher education playful learning is currently concerned with the lack of more in-depth conceptual and theoretical explorations and frameworks to further guide and expand it as an academic field of its own (Holfod, 2022a; James, 2019; Nørgård & Moseley, 2021; Whitton, 2018). Consequently, this article seeks to contribute with a conceptual framework of 'objects-to-relate-with' and provide reflections on its relevance for adult playful learning, higher education pedagogy, and collaboration and participation across educational boundaries.

Background, Theory and Concepts

The following section presents the theoretical underpinnings and conceptual inspirations for examining object-guided playful learning. First, I describe a frame of play theory and recent research in higher education playful learning as a contextual background for the article relating play, playfulness, and objects. Hereafter, I present and explain the concepts that guide this article's analysis: object-mediated communication (Roos, 2006), evocative objects (Turkle, 2011) and boundary objects (Akkerman & Bakker, 2011; Star & Griesemer, 1989). These conceptual perspectives aid the analysis by providing different lenses for examining and discussing the material and social co-creation of objects in higher education playful learning as processes and experiences of affective participation, dialogic and generative collaboration, communication mediated by making and playing with objects, and their potential in permeating boundaries to connect students across diverse social worlds.

Playful Learning and Objects

There is an emerging interest in the interplay between players and objects in higher education playful learning (Moseley & Nørgård, 2021) that address the material culture of play and playfulness in learning, teaching and pedagogy. Material culture refers to the research into corporeal and tangible people-created objects, their attributes and properties, and how they are part of understanding culture and relations (Prown, 1982). In higher education, objects are recurrent elements in designing for or guiding playful learning approaches (Jørgensen et al., 2022, Nørgård et al., 2017), but objects are not inherently playful; through play, design and

redesign, exploration, and manipulation, they can become imbued with playfulness (Moseley & Nørgård, 2021). Playfulness draws on the characteristics of play but is an attitude rather than specific activities (Sicart, 2014), whereas, in higher education, playful learning can emphasise both play and playfulness in learning approaches (James, 2019). Herein, objects are relevant in guiding and sustaining playful learning experiences for students (Holflod & Berg, 2022; Jørgensen et al., 2022). In this article, I explore playful objects materialising from playful practices as closely connected to ways of both individual and collaborative world-building with objects in play:

Play is the act of creatively engaging with the world, with technologies, contexts, and objects, from games to toys and playgrounds, exploring them through ludic interaction. Play creates its objects and communities. To play is to make a world, through objects, with others, for others, and for us. It is a creative way of expression, shared but ultimately personal. Play creates (itself) through objects, rules, players, situations, and spaces. (Sicart, 2014, p. 17)

Miguel Sicart consequently describes how objects in play are central aspects of being and relating with others (Sicart, 2014, p. 18). Thus, when making, exploring, and playing with objects in playful learning, it relates to both creation and expression - and how play is an agent for negotiating and constructing perspectives, relations, spaces, and objects. Play scholar Eugen Fink further illustrates how objects are perpetual parts of play and how they aid the players in creating and framing playful situations:

Play always has to do with play objects. The play-thing alone is enough to assure us that play does not take place in pure subjectivity without any reference to the concrete world around us. The play world contains both subjective imaginary elements and objective ontic elements. (...) Man not only has the capability of creating artifacts, he can also give form to artificial things possessing an element of "real" illusion. He designs imaginary play worlds. (Fink et al., 1968, pp. 27-28)

Central to this understanding is how play objects reference the real world. Creating them is designing imaginary play worlds between the real (ontic) and the unreal (imaginary). Like Fink, Dutch play historian Johan Huizinga (1949) argues for the distinction between a physical and imaginary play space and the natural world around us. The play space is created by the players in and around it, where the real-world rules are flexible and negotiable, allowing for experimenting with modes of participation and being. The act of framing play situations is then communicative - and meta-communicative. Through dynamic negotiations of the play situations, the players demarcate a space for play (Bateson, 1972), an imaginative framing of play contrasting the ontic elements of the real world. However, in playful learning, the aim is often to adopt the elements or characteristics of play into other situations and contexts that might benefit from them. In other words:

We want play without play. We want playfulness - the capacity to use play outside the context of play. Playfulness is a way of engaging with particular contexts and objects that is similar to play but respects the purpose and goals of that object or context. (Sicart, 2014, p. 21)

From this perspective, playful higher education projects the culture or essence of play into learning activities and contexts. In this article, I thus approach the students' co-creation of playful objects as a collaborative and playful process of engaging with each other through material and social intervention and imagination, where a shared, social play space for collaboration can emerge from the creation and exploration of objects together. By connecting the concepts of object-mediated communication (Roos, 2006), evocative objects (Turkle, 2011) and boundary objects (Star & Griesemer, 1989), I seek to emphasise playful objects' social and affective elements and analyse the co-creation and collaborative exploration of objects in playful learning.

Object-Mediated Communication

In *Thinking From Within* (2006), Johan Roos describes object-mediated communication and its potential in collaborative play to facilitate communication and create both hard and soft symbolic representations to mediate communicative processes. Object-mediated communication influences us in three distinct ways.

It 1) enables learning and knowledge sharing, 2) provides opportunities for coping with dissensus and framing common ground, 3) and becomes meaningful objects in diverse communicative processes (Roos, 2006, p. 77). Thus, (play) objects can transform communication and create spaces for relational meaning-making: "In sum, the power of object-mediated communication stems from its possibility, when the session is well facilitated, to make use, think (and feel), agree and cope differently" (Roos, 2006, p. 89). Objects can transmit any meaning but are rarely arbitrary (Roos, 2006, p. 78). Object-mediated communication thus focuses on shared sense-making and creating narratives as tentative and dynamic meaning production captured in and mediated by objects (Roos, 2006, pp. 83-84). A central aspect of object-mediated communication for this article's purposes is how it might develop new participation and coping strategies for the students collaborating across educational boundaries. When transferring language or utterances from the subject to the object in explorative and developmental processes, insecurities, contradictions, and risks are processed and managed in new ways. Sharing ideas and knowledge and communicating experiences becomes more accessible when the focus shifts from the speaker to the specific materiality and playful object. Roos articulates that these processes invite the participants to dialogic modelling and object transformation (Roos, 2006, pp. 86-87). This article approaches object-mediated communication in higher education playful learning as an emergent social and communicative space. Here, creating and sharing perspectives becomes more accessible by enabling new communicative strategies and projecting the self, one's thoughts, feelings, and perspectives, into things.

Evocative Objects

An evocative object is characterised by its potential for connecting thought and feeling; marking a relational or emotional connection to personal experience (Turkle, 2011, p. 5). They can be natural objects like pieces of fruit, artefacts like vehicles, made by the person reflecting on them such as constructed playful objects, or ready-made objects like books. Turkle's edited book (2011) reveals numerous short stories of designers, architects, artists, and researchers reflecting on objects such as the stars, a knot, a suitcase, a laptop, a slime mould and several more. Particular objects evoke memories and provide a sense of reminiscence; however, the meaning we attach to things is dynamic and can change over time as we change and as circumstances, thoughts, emotions, and perspectives evolve.

Evocative objects are connected to personal experience and inner life, enabling thoughts and feelings, becoming objects to think and feel with. In this article, I approach the concept of evocative objects to explore and make sense of collective life, emphasising how objects in playful learning become affective (e.g., emotions, moods, and atmospheres) and relational (e.g., connected, interpersonal and communicative) mediators for collaboration across educational boundaries. A recent study on designing evocative objects accentuated their potential in externalising imagination to evoke personal and dialogical narratives, experiences, and meaning-making, which become valuable resources in design processes (Su & Liang, 2013) - or for this article's purpose in co-creation of evocative, playful objects. Turkle further states that "evocative objects bring philosophy down to earth. When we focus on objects, physicians and philosophers, psychologists and designers, artists and engineers can find common ground in everyday experience." (2011, p. 8). Thus, shifting the focus from the persons creating objects to the objects in-between social worlds might aid our understanding of how people from different educations, disciplines, or professions connect and collaborate to create interpersonal moments of common ground and shared thinking.

Boundary Objects

The concept of boundary objects provides a lens for examining how objects help to permeate boundaries, enable social and dialogic learning, and thus become relevant in approaching collaborative playful learning across boundaries. In 1989, Star & Griesemer examined how - successful - heterogenous work requires cooperation between multiple actors. The actors came from different backgrounds and had diverse concerns, beliefs, and outlooks. Star and Griesemer posit that cooperation between these diverse actors hinged on 1) the

development of standards and 2) the creation of boundary objects. Generally, a boundary object is any object that is part of multiple social worlds and facilitates communication between them (Star & Griesemer, 1989). They are characterised by 1) interpretive flexibility, 2) the material/organisational structure of different types of boundary objects and 3) dimensions of scale/granularity (Star, 2010, 602). Star further highlights how they enable groups without consensus to collaborate, the ill-structured aspects of the objects and that they reside between social worlds to ease cooperation (Star, 2010, 603-05). Akkerman & Bakker (2011) later reviewed how boundary objects can articulate meaning and address multiple perspectives, have different meanings in different social worlds, and play an essential role in dialogic boundary-crossing (Akkerman & Bakker, 2011, pp. 140-41). In a recent study using Lego Serious Play for cross-disciplinary higher education, the authors found that metaphor-rich material creations became boundary objects to accelerate student socialisation and bridge communication gaps between the disciplines (Jensen et al., 2018). The concept of boundary objects aids this article's analyses in two ways. First, to examine the playful co-creation of objects across boundaries as dialogic and social processes, with the objects becoming vessels for generative collaboration. Second, as material and processual playful objects that enable dialogic communication in boundary-crossing collaboration.

Methods

The research informing this article draws on Design-Based Research (DBR) as a pragmatic and collaborative methodology. DBR is interventionist, with the researcher collaborating closely with practitioners on complex and often messy problems in authentic educational contexts (Andersson & Shattuck, 2012; Barab & Squire, 2004). This collaboration is iterative with recurrent and fuzzy phases of developing, experimenting with and evaluating learning, educational, or pedagogical designs. Furthermore, DBR is recognised as a flexible methodology - allowing for diverse methods of inquiry - and as theory-driven (Wang & Hannafin, 2005). Theory guides the intervention in developing educational designs based on academic and practical knowledge of the research problem and context. As a pragmatic approach, it aims for the social transformation of practices (Buch & Schatzki, 2018, pp. 4-5) and emphasises that implications for practice should elevate ideas and theories - and that it is a philosophy of flux with its view of the world as emergent, dynamic, and situated (Dalsgaard, 2014, pp. 146-47). I approach DBR with a theoretical backdrop in dialogic thinking and theory (Holflod, 2022b) with co-creational design as dynamic, multivocal, democratic, and tensional processes (Bakhtin, 1981; DiSalvo, 2022; Manzini, 2018; Olesen et al., 2018). Central to a dialogic position is understanding meaning-making as a vibrant relation between humans further influenced by other-than-humans' (e.g., objects, things, spaces). Mikhail Bakhtin writes: "I hear voices in everything and dialogic relations among them" (1981, p. 169). Here, he addresses the relational and social ontological thinking of a dialogic approach recognising a fundamental condition: We are related - and it is the relationships between phenomena that are ontologically relevant, not the phenomena themselves. Finally, ways of knowing and experiencing the world are thus through the entanglements of dialogic relations, voices, and perspectives, with meaning-making as emergent and continuous (Shotter, 2013; Wegerif, 2007). The relationship between the researcher and the participating educators in the present studies aimed for dialogic, democratic, and generative collaboration with educators considered as 'epistemic partners', inspired by experimental ethnography, through dialogic problematisation, inquiry and experimentation (Holflod, 2022b; Estalella & Criado, 2018).

In the present article, I draw on two empirical and iterative playful learning studies theoretically inspired by phases of context, lab, intervention, and evaluation (Christensen et al., 2012). These phases were, however, intertwined in practice. The first study is an undergraduate interprofessional educational course on diversity across Danish social education and teacher education that ran the first iteration in Autumn 2020 and the second iteration in Autumn 2021 - each time with approximately 100 students and situated across three days of project-based and playful learning processes. In the first iteration, I collaborated with a team of four educators from social education and two from teacher education. In the second iteration, there were two educators from each education. The second study, 'BA-Lab', is an extra-curricular offering for students writing their bachelor's thesis. Again, the framing is playful interprofessional education and collaboration. It has run in three iterations

during the Spring of 2021, the Autumn of 2021, and the Spring of 2022. Each iteration consists of three afternoon seminars and learning designs, with thematic focuses on playful approaches to 1) subject and problem examination, 2) academic inquiry and methods, and 3) data exploration and analysis. For the current total of 9 seminars, 10-30 students have participated each time - and the educator team consists of two teacher educators and two social educators. The DBR studies examined in this article thus revolve around 15 playful learning designs from the interprofessional course (n=6) and the 'BA-Lab' (n=9). Each contains different playful learning experiments of engaging in activities inspired by construction play, role-play, and imaginary play.

This article focuses on the playful learning experiments regarding the co-creation of objects and analysing the students' collaborative learning experiences. The primary data source for this inquiry is the students' short (225-300 words) individual reflective writings (n=170) on experiences of playful and interprofessional learning, collaboration, and education. This approach to reflective experience writing draws inspiration from dialogic writing pedagogy and introspective ways of knowing (Dysthe, 2005) and reflection-on-action as retrospective reflections on playful learning activities (Schön, 2001). The secondary data sources are reflective workshops with the students, participatory observations of and field notes from the experiments and interventions, and the co-created playful objects documented visually. Research ethics were addressed before all data production by briefing participants on the purpose and scope of the research project, data management, and the use of data in research and dissemination. All participants - students and educators - received a written inquiry for consent to use anonymised texts and images in the research project. Finally, the primary method of inquiry, individual reflective writing, is developed to approach inquiry on thoughts, feelings, and experiences ethically and carefully. By focusing on personal writing, the participants did not have to voice ideas, perspectives or reflections in settings that might be experienced as unfamiliar and uncertain, thus hopefully enabling more participant agency and freedom to communicate.

Two specific playful learning experiments are examined in the analyses: 1) the *moodboard*, and 2) the *bento box*. They are both developed as co-creative playful activities to explore, discuss, and play with disciplinary and professional differences, perspectives, and voices in interprofessional education through the material, symbolic and aesthetic creation and representation. The *moodboard* is a three-dimensional physical planche to examine and create understandings, experiences, and feelings on a given topic. It is preceded by collaborative ideation and aims to convey individual and collective feelings and experiences through various items (constructed from, e.g., fabric, paper, pictures, and colours) on a surface. The goal is to facilitate boundary-crossing exploration and communication using verbal and symbolic language. The *bento box* is a creative conceptual activity about creating a section-divided lunch box, a bento box, interviewing each other, and then filling the boxes with disciplinary and professional perspectives, stereotypes, and preconceptions from the participating educations. It began as a two-dimensional playful learning activity and has further developed as a playful origami activity through studies and experiments. The two object-guided playful learning experiments have - besides being recurrent parts of the mentioned studies - been iterated in other contexts with playful learning educators (n=10) from teacher education, social education, and continuous education at the local university college, at workshops with educators and consultants from a UK university, and the Playful Learning Conference 2022.

Analysis

The following analysis examines and discusses three themes of student learner experiences in object-guided and boundary-crossing playful learning activities. The first theme is *communication*, which accentuates how the students experience the object-guided activities as potentials for gaining new communicative strategies to participate and relate to each other. The second theme of *collaboration* highlights the experiences of creativity, exploration, joyfulness, and flow in playful collaboration as a shared social space for learning - and how co-created playful objects become mediators for meaning, culture and experience. The third theme, *connection*, centres on the concept of boundary objects - and how the students in making, exploring, and playing with

creative and aesthetic objects experience the potential for dialogic boundary-crossing and permeating boundaries. The final part of the analysis draws attention to critical *challenges* about becoming playful in higher education – and re-learning to play as adults, along with dealing with the uncertainty and open-ended nature of playful processes.

Playful objects for communication and participatory strategies

Throughout the present studies, the students' articulate experiences of exploring differences and agreements across educational and professional boundaries and becoming enabled to cope with uncertainty and difficulty through material and social processes in playful learning. These processes of co-creating playful objects become ways of engaging collaboratively in comfortable atmospheres and learning spaces that enable new communicative and participatory strategies.

It was a way of opening up and loosening the group work, and it made it easier to discuss freely, which might be because of the creation of an informal atmosphere. It also helped loosen my thoughts about ways of approaching problems and how to engage them. The playful approach and relaxed atmosphere enabled new perspectives and possibilities that would not have been visible otherwise. (Student, Social Education)

Constructing and playing with objects – in this context, the moodboard - helped the student experience new strategies to engage with the other participants. The collaborative setting felt informal and comfortable, enabling the individual to approach and manage the educational case problem. Furthermore, the student articulates the dialogic potentials of collaborative playful learning in exploring ideas and perspectives. This ease of communication and experiences of relatedness guided by the co-creation of playful objects occur across the students' experience writings:

I remember a situation with developing the moodboard and later presenting it to the whole class. Initially, we were unsure about the activity and came to a standstill. However, when we understood what to do, we began - without noticing it - being playful. The focus was suddenly not so much on the disciplinary subject but more on allowing creativity to unfold and hearing each other's ideas and beliefs to incorporate them into the moodboard. During the process, we felt more attached to each other, strengthening the relatedness between our professions. We became more attuned to the meaning and importance of communality in creating a finished design. (Student, Teacher Education)

The quote exemplifies several relevant perspectives of the relationships between participants, objects, and playful approaches. First, becoming playful in educational situations is not necessarily easy, and it did not emerge spontaneously from the object-guided playful learning activities. It relates to Nørgård et al. (2017) and how tools themselves do not promote playful attitudes or behaviours (Nørgård et al., 2017, pp. 278-79). Second, when they began feeling playful, they experienced a shift from discussing disciplinary subjects to creative and dialogic processes in creating their moodboard. They could externalise imagination and elicit personal experience, as discussed regarding evocative objects (Su & Liang, 2013; Turkle, 2011). The articulated experience of collective creative expression is addressed across multiple written reflections and resonates with the earlier described elements of objects in playful learning, potentially stimulating ludic interactions (Sicart, 2014) and (co-)design of imaginary play worlds (Fink et al., 1968). Third, the playful processes catalysed new experiences of relatedness and communality, with the student reflecting on its importance in boundary-crossing group work and creating collaborative solutions. Communality as a dimension of higher education playful learning is explored as an interpersonal co-construction of playful space and culture. It contrasts the current higher education and university characteristics of solitude, individualisation, and isolation (Nørgård, 2021, pp. 150-51). Nørgård describes it as a playful *collaboratorium* of future higher education that emphasises care and concern in being playful together and as empathic communities of play (Nørgård, 2021, p. 151). The students engage in object-mediated communication as collaborative and communal relation-making across professional and educational perspectives and differences with the shared material constructions, promoting

novel learning and knowledge-sharing possibilities while becoming influential objects in the communication processes (Roos, 2006).

(...) our thoughts and creativity were flowing. In my group, we initially focused on the difference between the teacher and social professions. We were in the PlayLab. During the creative process, it became clear that only a few and relatively limited concepts and subjects separated us. We ended up focussing on the things that unify the professions. In this process, one's outlook was developed by the boundaries between the professions becoming more invisible. (Student, Teacher Education)

In co-creating playful objects, the students experience creative processes that enhance their thoughts and awareness of their professions and educations while illuminating how they relate to each other. From this perspective, the students' co-construct objects that mediate and permeate relations through symbolic and verbal communication expressing the playful collaboration to ambiguate and recreate the boundaries between them - and this collaborative shift allowed new perspectives to unfold.

Playful objects for collaboration and shared social spaces

When the students create objects together in the playful experiments, the material interventions become carriers of meaning, experience, and culture to create space for generative collaboration. During the second iteration of the interprofessional educational course, the students began their project by creating bento boxes. The students were to create a collaborative bento box exploring initial interprofessional understandings and preconceptions using paper, glue, tape, scissors, sticks, and other available materials. Working from brief 5-minute interviews, the students explored what the other profession or professional education thought of one's own and examined differences and relatedness regarding professional culture and identity, along with disciplinary perspectives on the case problems of citizenship and diversity. This playful activity is explorative and about examining 'the other'. In this iteration, this preliminary activity led to creating a moodboard and, i.e., moving from a collaborative space of primarily verbal communication to symbolic communication.

The activity with the Bento boxes was a different way of reflecting on stereotypes and the potential of collaborating across different professions. It was a meaningful way of establishing a new collaboration before the moodboard activity. We came closer to each other, which enabled us to learn about each other and move forward with the project. I feel like there was a nice flow during the work. The playful approaches provide a more fun way of collaboration and different opportunities for collaboration across professions. We found the playful elements community-building, though we never completed the role plays (...) There was, in general, an openness toward each other's perspectives (...) which we also experienced during the bento activity where we collaboratively negotiated the box's content. (Student, Social Education)

Central to the student's experiences of co-creating bento boxes and exploring understandings and perspectives are how it helped provide a foundation for later collaboration and accelerated interprofessional socialisation. What might otherwise be a challenging task, establishing common knowledge across different social worlds and their backgrounds, vocabularies, perspectives, methods, and approaches (Edwards, 2011; Holflod, 2022b; Rasmussen, 2017), happened more readily in this situation and context with student experiences of the playful collaboration as something joyful, immersive and community-building. The collaborative negotiation of content is significant. It is a dialogic experience of becoming open to each other's perspectives and creating something new together through listening and sharing, mediated by the co-creation and exploration of playful objects. From creating bento boxes to moodboards, the students articulate the potential in making and playing with objects that allow for new collective explorations and thinking together to move forward with the collaborative group work and as a way of coping with the unfamiliarity or uncertainty of participating across educational boundaries.

I think it was an excellent assignment to create a moodboard. It was different, and we all had to think deeply about how to approach it. The learning experience was fun and meaningful. The playful

elements of the assignment made it more exciting and, in a way, also easier to approach. It was a transgressive experience working with unfamiliar people, but we made it work. In this way, I think it has been a good week because I have managed to push my boundaries while also learning new people. (Student, Teacher Education)

The object-guided playful activities facilitate shared social spaces for learning and overcoming personal and collaborative boundaries. By describing the transgressive experience and extension of boundaries in playful learning and relating it to fun, meaningfulness, excitement and exploring new relations, the students address the challenges of boundary-crossing collaboration becoming easier to navigate and manage. This indicates the potential of co-creating playful objects to mediate collaboration and create social play spaces related to the idea of the 'magic circle' that demarcates a socially constructed liminal space where different rules, norms and behaviours are possible (Jensen et al., 2022; Nørgård et al., 2017; Whitton, 2018).

Playful objects for connecting across and permeating boundaries

In the interprofessional educational course and the BA-Lab, collaborative and creative playful objects act as boundary objects. Making objects together is experienced as negotiating a common ground, a material intervention to connect people across disciplinary, professional, and educational boundaries. When playful objects become boundary objects, they enable generative collaboration through flexible interpretation (Star, 2010; Star & Griesemer, 1989) while representing different identities in each social world as simultaneously concrete and abstract objects. Star & Griesemer writes: "Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (Star & Griesemer, 1989, p. 393).

Furthermore, Star highlights that boundary objects allow different communities to collaborate without necessarily finding consensus and can be interpreted differently by each community interacting with it (Star, 2010, p. 602). In making playful objects like bento boxes or moodboards, the students do not reach a consensus or unified understanding of complex subjects. However, the goal is not to aim for dissensus as it might dissolve the group work quickly. Co-creating playful boundary objects become a context-sensitive material approach to examining and expressing different perspectives while collaborating through their diversity.

I think that creating a moodboard positively influenced our collaboration the most. We might have spent more time on its appearance and aesthetics than the content, but the board became our common third, which we all equally contributed to and collaborated on. We entered a flow-like attitude in expressing ourselves with the board and creating numerous creative elements. The moodboard ended up filled with colours, and it was apparent that we all had a part in creating it. (Student, Social Education)

Making a creative and aesthetic playful object is addressed as co-creating a common third, or boundary object, as engaging in immersive social processes of creating a shared and imaginary play space of multiple perspectives and expressions. The concept of the common third relates to social pedagogical practice and how activities between participants can create shared situations, bringing the participants together. This is particularly relevant for interprofessional higher education, where differences are both recurring potentials and challenges when the playful objects become material carriers of multiple perspectives and the polyphony present. In the playful learning experiments, the students relate to each other through symbolic communication, expressing themselves through fabrics, colours, and perspectives. These processes enabled safe and open-ended spaces for learning about each other, learning to collaborate with diverse groups of people and relating across boundaries while holding on to their differences.

The playful element made the collaboration easier from the start. Immersing oneself in group work and learning about each other became easier. Additionally, the collaboration helped us learn to collaborate with different types of people, handle differences and strengthen the relationships between disciplines.

These experiences will create better preconditions for the future professionals that will be part of a work-life we have all chosen. (Student, Teacher Education)

Collaborating across professional and educational boundaries is difficult when each community has different languages, concepts, theories, methods, problem fields, and professional cultures (Holfod, 2022b; Rasmussen, 2017). However, reflecting on the experiences from co-creating shared playful objects, the students articulate their potential for collaborative boundary-crossing participation in and beyond education as both current students and future professionals.

Playful objects and challenges between objects, people, and playful learning

The final section of the analysis highlights patterns of recurrent challenges articulated by the students in their reflective writings. A general experience is the difficulties in becoming playful or re-learning to play that relates to adult playful learning and barriers to play and playfulness in higher education (James, 2019; Walsh, 2019). Additionally, the students address difficulties in the playful, creative, and aesthetic creation of objects and move beyond more straightforward symbolic activities; it is initially easier to begin ideational brainstorming with post-its than to create three-dimensional, playful, and affective objects. This might relate to what is expected in current higher education learning and pedagogy and moving beyond one's comfort zone, as some students articulate, or to the challenges of staying in explorative, processual, and artistic modes of learning and collaboration.

It felt inspiring when future pedagogues and teachers could agree on handling the assignment or problem. The interprofessional collaboration was good - and we all contributed to integrating playful and pedagogical elements. At the beginning of the course, it was quite challenging to grasp what the outcome of it would be. However, gradually, it became more evident when we began 'playing' and providing each other with group feedback. It has been a long time since we last had to play, so we had to become attuned to it. As soon as we "got it", creative and fun ideas and experiences started pouring out. We made small figures to visualise our ideas, and the result was quite fun (...) I could feel that this was something I would like to do in practice one day. (Student, Teacher Education)

The student stresses the uncertainty of engaging in playful learning processes as their outcomes appear less tangible. Staying in the process, however, allowed the students to experience a different mode of engagement in learning and collaboration, where the playful immersion sustained the creative development of their shared playful object. The feeling of "getting it" indicates the mutual establishment of a 'magic circle' of collaborative and processual trust and immersion through playful attitudes. As a future teacher, the student finally reflects on the value of playful learning, adopting it in their future practices. I have previously addressed how co-creating playful objects enable the students to relate to each other in new ways and express multiple and diverse perspectives, and it can facilitate meaningful generative collaboration. However, getting to this point is not necessarily effortless. With adult playful learning regarded as frivolous, inappropriate, or even childish and in need of repeated legitimisation in the current higher education culture (James, 2019, 2022; Walsh, 2019; Whitton, 2018), it can be both difficult to become playful in formal learning settings and challenging if these types of learning processes have been absent in their earlier education.

During multiple playful experiments, I observed that the students quickly engaged with co-creating playful objects to share and develop perspectives, feelings, and thoughts. However, it was also apparent that while the object-mediated activities encouraged safe play spaces, other playful experiments, e.g., role play, were experienced vastly different. It was more challenging for the students. The written reflections support this view, with numerous students emphasising the ease of transitioning and immersing themselves in object-guided playful learning and the difficulties of engaging in open-ended, playful activities using only themselves.

Generally, I would say that playful approaches do something wonderful for collaboration (...) Though I think some playful activities were relatively closed, and we did not get the needed space to develop ourselves. If I reflect on the role-play of today, it was, in fact, not all that wanted to be part of it; it was not transparent what we had to do. (...) In fact, I generally think that the play experience was lost in it, that we were left with something very academic. (Student, Teacher Education)

These challenges of participant engagement draw attention to elements of progression in and design of adult playful learning and how specific modes of playful activities appear more inclusive and easier to participate in. This student articulates the difficulties of encountering the open-ended and explorative elements of a student-led role play and how its challenging aspects led to experiences of dissolving the playful element. These findings resonate with earlier studies of adult playful learning regarding the challenges of transitioning from non-play to a playful attitude (Walsh, 2019, p. 11).

Discussion

In the analysis, I have emphasised how students co-create playful objects within higher education playful learning and experience 1) new participatory and communicative strategies, 2) that the process enables the construction of a dynamic shared social space for learning and collaboration, 3) and that the objects the students co-create act as boundary objects to mediate and connect people - and their ideas, thoughts, and perspectives - in interprofessional education and collaboration. I conceptualise the playful objects they co-create as *objects-to-relate-with* drawing conceptual inspiration from 'objects-to-think-with-together' (Stevens et al., 2013). *Objects-to-relate-with* are co-created playful objects that encourage social and dialogic learning, thinking together and relating through verbal and symbolic communication. With this article drawing on dialogic thinking and theory, the students' creation of object-mediated play spaces of different and diverse viewpoints relates to the notion of dialogic space (Wegerif, 2007); a space of dialogue enabled and driven by the creative tension between different perspectives (Palmgren-Neuvonen et al., 2021). Dialogic space consists of three elements, namely, "*opening* to enable a shared space of possibilities, *broadening* (alternatively expanding or widening) to bring in new voices with multiple perspectives and *deepening* to invite shared reflection of those perspectives and to challenge the participants' assumptions" (Palmgren-Neuvonen et al., 2021, p. 412). The students articulated how - when becoming playful in collaboration - they were opening up to each other, expanding their thought and communication by listening to each other's voices, and engaging in co-reflection that enabled new understandings of each other, themselves and their future professions and current educations. However, the students' co-creations of *objects-to-relate-with* as communal and shared play spaces extend the dialogic relations by addressing the symbolic communication and interactions as potentials for interpersonal affective communication and relating. It becomes relevant for higher education pedagogy in the opportunities to develop and provide novel and diverse communication and participation tools beyond traditional or conventional pedagogical approaches. As objects of evocation and communication (Roos, 2006; Turkle, 2011), they enable spaces for affective relations and experiences across educational boundaries. The students generally articulate positive experiences of engaging in these playful processes. With the experiments and iterations performed, the studies point toward a pattern of potential and meaningfulness for interprofessional and higher education playful pedagogy.

In the following sections, I will address significant elements of *situational constraints* (Gudiksen & Skovbjerg, 2020) related to the article's results and general experimentation with playful learning and objects in higher education pedagogy. Gudiksen and Skovbjerg propose that to create play space boundaries; one must "allow for uncertainty, building up the capacity to deal with complexity and relate to the participants involved" (Gudiksen & Skovbjerg, 2020, p. 22). Establishing the play space boundary - conceptualised as the temporal world of imagination created through play activities (Gudiksen & Skovbjerg, 2020, p. 16-17) - is however challenging. It often contradicts existing practices and routines of education with its open-ended, ludic, explorative, and affective approaches (Holflod, 2022a). Furthermore, it is in dynamic tension with numerous

situational constraints of time, structure, culture, regulations, roles, and relations (Gudiksen & Skovbjerg, 2020, p. 23). Taking a reflective approach to interprofessional higher education object-guided playful learning and discussing the results of the present article, the concepts of *time* (e.g., allowing for immersion and uncertainty in playful processes, utilising playfulness to dwell on the process) and *culture* (e.g., differences in professional and educational cultures) appear especially important.

In a recent literature review of higher education playful learning and culture, the authors address the current educational cultures of efficiency, speed, and quantity and find that playful learning approaches may disrupt the existing cultural traits of outer performance and optimisation by balancing results and utility with time and space for dwelling, slowing down and having more possibilities to notice and relate (Jensen et al., 2022, p. 213). The present analyses display the challenges of staying in processes of unpredictability and experimentation, not striving solely for end products or external goals in education but allowing oneself to become immersed in learning and collaborating. It resonates with suggested themes of polarities of play (James, 2022) or paradoxes of playful learning (Holfod, 2022a) in higher education, wherein tensions between, e.g., freedom and structure, tangible and intangible outcomes, or control and uncontrollability of educational and learning processes are experienced as difficult to navigate, participate in and design for in teaching and pedagogy. In interprofessional education, the situational constraints of professional, disciplinary, and educational boundaries and cultures are equally relevant. In the present students, the students connecting across boundaries meet each other for the first time in an educational context. It is a space for colliding cultures and differences that influences collaborative experiences, with students framing their contrasting professional identities, beliefs, voices, and approaches. The differences appear as initial constraints in understanding and relating to each other. Still, as the analysis shows, they experienced working towards common ground. They shared language through the playful activities of co-creating objects together to symbolise and communicate thoughts and perspectives. Concerning the temporal culture, the students had opportunities to dwell on the multiple perspectives present, explore them and create common meaning with objects-to-relate-with establishing a play space boundary in their boundary-crossing collaboration. The situational constraints of time and culture are persistent conditions in higher education playful learning, though, to be reflected upon for meaningful and context-sensitive learning, teaching and pedagogy.

Conclusion

This article examines the collaborative and communicative influence of co-creating playful objects across educational boundaries - and how it influences the learning experiences of higher education students. The primary insights reside in the playful learning experiments, where objects created by the participants become mediators for playfulness, collaboration, and communality. The objects act as symbolic communicative elements and aid in enabling generative collaboration and creating dialogic play spaces for learning and relating. In the discussion, the concept of objects-to-relate-with is developed that frame how students co-create, explore, and play with objects and herein gain communicative and participatory strategies for playful boundary-crossing in interprofessional and higher education. Objects-to-relate-with thus becomes agents for communication, collaboration and connecting with diverse others in higher education learning situations and contexts. The article further frames challenges in playful learning through experiences of re-learning to play and immersion in ludic processes and discusses situational constraints and difficulties for boundary-crossing collaboration within interprofessional and playful higher education. Further empirical research is, however, needed to strengthen and expand the knowledge of the interplays between objects, participants, and spaces in playful learning and when, how and under what conditions objects can become permeating or transitional tools between educational boundaries.

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