

(Re)framing Lego® Serious Play® for Children & Young People

Holly Henderson and Richard Shipway

Abstract

This study adopts a creative methodology whereby Lego® Serious Play® was (re)framed for children & young people (CYP), using participatory action research. Data was collected in a UK junior school from sixty-four children, ranging from seven to eleven years of age. The children were split across four workshops, and data was collected in two stages, in the pre and post period surrounding their annual school ‘transition day’. A survey was also conducted with staff who attended the sessions to obtain their observations. The findings demonstrate that a (re)framing of the Lego® Serious Play® methodology allowed play to be used in an educational setting, which was not directly related to either learning outcomes or free play. Importantly, children were able to drive a bottom-up approach to solving issues that caused them anxiety. The findings review the application of the learning pyramid and highlight the contribution of more creative pedagogies such as play-based learning and Lego® Serious Play. In doing so this study furthers the debate about the value and contribution of using play within educational settings.

Keywords: Play, Play-Based Learning, Lego®, Children and Young People.

1. Introduction

The concept of using play within education is not a new phenomenon, and previous studies have demonstrated both the developmental and educational benefits of play (Pyle & Danniels, 2017). Within the debate surrounding the use of educational play, both free play (Miller &

Almon, 2009), and adult led play (Wallerstedt & Pramling, 2012), have formed a key narrative. In an educational context, play enables learning by allowing children to interact with each other and their learning environment, to build skills, and to further develop knowledge (Ashiabi, 2007). However, tensions still exist between these developmental and academic perspectives and their respective impact upon learning and play (Goldstein, 2007). This study demonstrates how the concept of (re)framing Lego® Serious Play® sessions can be used to support the annual transition process for children in junior schools, and the subsequent positive influence on student wellbeing. In the context of this study, children and young people (CYP) will be referred to as children from here onwards, *given* the age range of the sample (seven to eleven years old). Henderson and Shipway (2022) identified that this age group were negatively impacted by the COVID-19 pandemic and required positive narratives and tangible solutions. One aim of this study was to harness the power of play to explore these goals.

This study provided children with the opportunity to use Lego® to explore challenges, consider barriers, contemplate new ideas, and reflect on their experiences of anxiety in relation to the annual school transition process, whereby the children move either to a new year group, or new school (Shipway et al., 2022). An underlying aim of the study was for both teachers and Lego® facilitators to co-learn with the children and help smooth the passage and remove potential barriers, through various phases of Lego® ‘builds’. Handley et al., (2006) identified that children with heightened anxiety may encounter challenges that can threaten and lead to them becoming lost and in doubt. By confronting what Henderson and Shipway (2022) describe as ‘anxiety monsters’, students can use Lego® to develop coping strategies, facilitate transformation, and traverse a liminal threshold (Shipway & Henderson, 2023).

The findings highlight how Lego® Serious Play® workshops provided a space whereby a ‘state of flow’ occurs (Csíkszentmihályi, 1990). This state emerged from the LSP process, and subsequently enhanced the children’s participant experience and levels of engagement. As a result, the study identifies areas for consideration associated with (i) play pedagogy; (ii) serious play; and (iii) Lego® Serious Play®. The study outcomes complement the findings of Henderson and Shipway (2022) on the contemporary landscape of wellbeing and mental health, and the lived experiences that children can bring to their education environment and everyday social and leisure-based encounters.

2. A Review of Literature

2.1 Play Pedagogy

Play is a direct consequence of the evolution of the pedagogical phenomenon which Ariès (1960) defined as ‘the discovery of childhood’. This placed it at the beginning of Humanism; a phenomenon which characterized the modern history of western education (Farne, 2005). In contemporary society, play is now recognised in both development and human learning for complex environments (Kolb & Kolb, 2010). There is no obvious agreement of what constitutes a clear definition of play, given the contrasting perspectives and iterations proposed by educational scholars. This varies from nominal and explanatory definitions (Lonergan, 1957), perceptions of a lack of a common theme (van Oers, 2013), other criteria-based assessments considering predicated behaviour factors (Smith, 2009; Magnuson & Barnett, 2013), or subsequent evaluations taking a practical perspective (Burghardt, 2011). As such, the definition of play is complex, and remains subject to continued debate and diffusion (Sutton Smith 1997, Brooker et al., 2014). More recent evidence suggests certain personality traits are

more inclined to play and to be playful (Barnett, 2011), linked to both the dimensions and construct of playfulness (Guitard et al., 2005; Barnett, 2007). Notably, reviews of literature around play consistently highlight beneficial themes such as exploration and imagination, social interaction, and increased motivation to learn (Grob et al., 2017). Additionally, negative themes of play were considered most recently by Moon-Seo et al., (2022), which included rough, unstructured, culturally inappropriate play and excessive screen time whilst playing.

Pedagogy and play have been the subject of extensive discussion with a narrative focused upon (i) the role of adults in play, such as whether it is free play or structured, with an underlying notion that children learn more effectively using free play (Karpov, 2005; Paley, 2004); and (ii) the need to safeguard free play and the disappearance of play in pre-school settings (Nicolopoulou, 2010; Sundsdal & Øksnes, 2015). Justification for these assertions indicate that some early years educators either disengage with pedagogy (Stephen 2010), focus on the child's behaviour not their own and place emphasis upon degrees of control (McInnes et al., 2011), or rely upon co-creation with a focus upon sharing (Siraj-Blatchford et al., 2002). However, there appears to be a degree of consensus on the wide-ranging benefits of play, dating back to the foundational works of Freud and Piaget (Bergen, 2014), and the role of scaffolding the development of cognitive, social and emotional dimensions (Bubikova-Moan et al., 2019). It is worth noting that the COVID-19 pandemic negatively impacted children's play time and teachers noted detrimental impacts associated with the characteristics of play development (Kourti et al., 2021).

Play-based learning (PBL) is playful with child-led aspects, guided by adults, helping to achieve learning objectives (Weisberg et al., 2013). Education scholars have reviewed the value of play-based learning pedagogies as benefitting children's social skills (Barnett et al.,

2008), their socio-emotional skills (Pyle & Danniels, 2017) and for supporting cognitive, emotional, and social development (Lillard et al 2013). A notable discussion point has been the role of the teacher within sessions which use play-based learning. Suggested roles include supporting (Pramling et al., 2006), intervening (Pyle & Danniels, 2017), or hijacking (Goouch, 2008). The premise of guiding learning is a movement towards facilitation (Weisberg et al., 2013), as a proactive step that encourages the participant to be actively involved, rather than an intervention-based approach. Holistically, these discussions have helped move the agenda forward from previous debates about free and structured play. During lockdown restrictions, children occupied their time participating in indoor activities (Kourti et al., 2021). Consequently, structured play such as playing board games were not so popular, in comparison to playing on a desktop computer, tablet, or smartphone (Medrano et al., 2021).

2.2 Serious Play

When exploring the notion of play in the adult domain, it has been suggested that the same characteristics of children's play can also extend to adults, albeit with more context required (Kerr & Apter, 1991; Colarusso, 1993; Rieber et al., 1998). This has developed into the concept of serious play, whereby adults deliberately play to produce work-based objectives (Statler et al., 2009), outcomes (Heracleous & Jacobs, 2008), innovation (Jacobs & Statler, 2005), or 'hard fun' (Papert & Harel, 1991). Slater et al., (2009) went further, reframing serious play as a practice of paradox and citing Bourdieu, Heidegger, and Foucault, examining serious play from the perspective of practice theory (Cetina et al., 2005). It should perhaps be acknowledged that adults can often be keen to reject the concept of play as being trivial, despite the recognised benefits which have been evidenced (Brown, 2010; Gaunlett, 2015; Quinn et al., 2022).

The perspective of tacit integration, unitising Polyani's (1969) concept of challenging questions and acting, is grounded in the concept of serious play. The theme of acting, actors, and players provides the framework for serious play, via the use of artifacts (e.g., models) (Schulz et al., 2009). This argument is further propelled by Roos and Victor (1999) who suggest that the use of serious play enables the participants to think with their hands by building a model, using artifacts. Serious play uses playfulness, integrated with intention (Stater et al., 2011). This allows the actor to deliver the story of the artefact, or model built, by blending the two elements of composition and improvisation (Amabile, 1996; Sanders & Stappers, 2008; Fisher & Amabile, 2008). This has a direct link to constructivism (Piaget, 1936) and the perspectives of Papert's (1986) linking of mental models to the creation of physical models, which is in essence a form of expressive imagery (Argyris & Schon 1997). These concepts have also evolved into expressions of experiential learning which pairs both visual and kinaesthetic activities with verbal sharing (Gauntlett, 2007; Nolan, 2009). Similarly, other techniques have been cited as forms of serious play, including role play (O'Sullivan, 2011) and dance (Bagley & Cancienne, 2001). However, these alternative forms remain less established (Gauntlett, 2007; McCusker, 2014). Further synergies with theories such as constructivism are woven into the fabric of serious play. McCusker (2020) notes that social-constructivist practice also uses artefacts, albeit cultural ones such as language, to enhance cognitive potential. Additionally, a constructivist perspective advocates the sense making of life experience as a tool and resource to activate both new learning (Peabody & Noyes, 2017) and transformative learning (Taylor, 2008; Brookfield, 2010).

Ackerman (2001) suggests that the linking of feelings associated with learning, including both conscious and unconscious arousal (Bettigia et al., 2017), is of significance. This reflects both Papert's (1986) 'inner voice' and the later work of Sylvander (1983) on the

‘inner clown.’ A possible consideration is the extent to which adults, unlike children, often appear to be inhibited with play, due to both social norms and perhaps ego. This could require further endorsement of the ‘serious’ dimension to enable adults to further explore those feelings and discover their ‘authentic voice’ (Peabody & Noyes, 2017). Aligned to this is the application of the theory of flow within the immersion and engagement of an activity or activities (Csíkszentmihályi, 2000; Slater et al., 2011). Sonnerburg and Primus (2020) describe the feeling of a state of flow as being about performance and peak levels which can drive creativity and creative output (Harmat et al., 2016). The concept of flow is prominent in other domains such as sport, games, and other rituals (Csíkszentmihályi, 2009), and its application is both individual and co-created as part of a collective group (Sawyer, 2014).

2.3 Lego® Serious Play®

The Lego® Serious Play® methodology is based on four central pillars, which are (i) the use of metaphors; (ii) underpinned by the concept of play, (iii) the theory of flow; and (iv) constructivism (Shipway & Henderson 2023). The Lego® Serious Play® methodology is ‘playful, exploratory and creative, with freedom for participants to experiment and test out ideas without fear of failure or being wrong.’ (James, 2013 p.2). It uses visual, auditory, and kinaesthetic learning (Blair & Dröge, 2020), which enables greater inclusivity within widely recognised learning modality, as highlighted in Figure 1, the Learning Pyramid. This concept was first implemented by Dale (1946) to highlight different modes of imparting information as the ‘Cone of Experience.’ This has evolved into the ‘The Learning Pyramid’, developed by the National Training Laboratories Institute for Applied Behavioural Science (NTL), with the framework underpinning educational design (Gibbs et al., 2011). Whilst there has been considerable debate within educational literature about the validity of the percentages used for

assessing the respective levels of retention (Masters, 2013), Lego® Serious Play® puts the student in the centre of the learning process. As such, it can be applied as an educational tool due to the visual, auditory, and kinaesthetic nature of the Lego® workshops which exhibited learning elements of acquisition, investigation, production, discussion, collaboration, and practice (Laurillard, 2013).

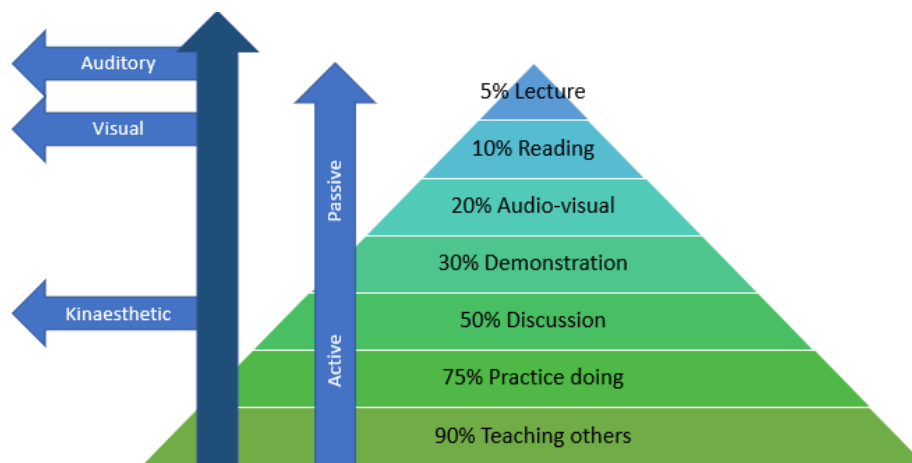


Figure 1: Learning Pyramid adapted from National Training Laboratories Institute for Applied Behavioural Science (cited in Masters, 2013)

Lego® Serious Play® is a method commonly used by organisations to help solve their complex real-world problems (Kristiansen & Rasmussen, 2014). In a business context, it has been used by global organisations including eBay, NASA, Google and the International Red Cross, to name but a few, to develop ‘more engagement, imagination and playfulness in staff meetings’ (James, 2013 p.2). Whilst these strategic business benefits have been acknowledged, there has been variable academic coverage of the use of Lego® Serious Play® in further and higher education (McCusker, 2014). Although not an exhaustive list, scholars have reported the use of LSP in educational settings across a diverse range of student cohorts including engineering (Bulmer, 2009; Kurkovsky 2015); nursing (Hayes & Graham, 2019; Warburton et

al., 2022; Ajibade & Hayes, 2022); paramedic studies (Hayes, 2018); business (Geithener & Menzel, 2016; Gkogkidis & Dacre, 2021); tourism (Wengel, et al 2021); accounting (Elkelish & Ahmed, 2021); doctoral studies (Nerantzi, 2018); and creative studies (James, 2013). Warburton et al., (2022) highlighted samples which varied from nine to twenty-nine, and identified variable approaches from descriptive, qualitative studies (autobiography, focus groups and phenomenological interviews) to mixed methods, with emerging themes focused on reflection and exploration. Scholars exploring the integration of Lego® Serious Play® into the classroom noted the need to better align both the process and purpose, via learning outcomes or summative assessment of knowledge (Biggs, 1996). However, the use of Lego® Serious Play® with cohorts of children has not been commonly reported (Henderson & Shipway, 2022), and where it has received coverage, it has been used as a participatory method in action research projects, on a single use basis (Nunez, 2018).

During a Lego® Serious Play® session participants progress through an open-source methodology of ‘build’ questions, where four steps are encountered. Participants are set a challenge by the facilitator; they respond by building an answer; the metaphoric story of the model is shared; and then space is provided for participants to reflect (Lego® Serious Play®, 2014; Peabody & Noyes 2017). Given the limited time available for the participants, their models must be somewhat abstract, requiring them to use verbal description to explain both the metaphors and the overall meanings which are captured in each model (Hyvönen, 2014). This use of metaphors in metaphorical building, with peer discussion to explore complex issues, represents a unique way to reflect, think, and communicate (Peabody & Noyes, 2017).

Dann (2018, p.122) notes that Lego® Serious Play® ‘is a facilitation technique that uses a combination of personal focus through Lego® model creation, the creation of meaning

through story-telling and structured sequences of active listening, engagement, and story-making'. Critical to the success of a Lego® Serious Play® session is the ability for participants to reflect on the challenge and process that they have engaged with. Consequently, this reflection deepens learning (Barton & Ryan, 2014; Mobley & Fisher, 2014; Peabody & Noyes, 2017). Shipway et al., (2022) suggest this is an area which is often overlooked in the design and construction of learning and development within education. Much has been written about traditional approaches towards reflection in education and the use of conventional methods such as blogging, essays and discussions (Crème, 2008). However, in contrast, this study advocates a move towards more experiential learning activities, notably Lego® Serious Play®, which better support reflection (Gauntlett 2007; Nolan 2009; Statler et al., 2011).

3. A creative methodology of (re)framing Lego® Serious Play® for Children & Young People

The creative methodology implemented within the study utilised participatory action research, using Lego® Serious Play®. The approach both assessed and evaluated the outcomes, context and mechanisms that best support children during their annual 'transition' process within schools, and thus formed the basis of a realist evaluation (Pawsom 2006; Pawsom & Manzosantella, 2012). A key rationale was for children to be actively involved and able to influence change within their annual transition process, rather than being mere spectators (Baum et al., 2006). The children were partners in the process.

To achieve this aim, there were two separate cycles of data collection during June and July 2022 in a Southwest of England Junior school. The junior school is a UK state school for boys and girls, with approximately 700 pupils aged between seven and eleven. The children

attending the workshop sessions were selected by the school, and participating pupils came from all four age groups (year 3-6) which were the year groups directly affected by the transition process. Teaching Assistant (TA) staff attended the sessions to specifically support children with additional learning needs. The first cycle of data collection took place within the school two weeks prior to the annual 'transfer day', with a second set of data collection sessions occurring two weeks after (Henderson & Shipway, 2022). Two cycles of action, followed by a period of reflection, helped to facilitate collaborative change. Aligned with the observations of Robert (2013), this approach supported a child centric design incorporating metaphors and storytelling to help instigate change.

The concept of framing is grounded in sociology (Goffmann 1967). Semino et al., (2018, p. 626) proposed that to frame it is important to have 'a background knowledge that (i) concerns a particular aspect of the world, (ii) generates expectations and inferences in communication and action, and (iii) tends to be associated with particular lexical and grammatical choices in language'. With a creative methodology like Lego® Serious Play®, the process progresses through four distinct phases of challenge, build, share, and reflect. Given this process involved a younger generation of participants aged between seven and eleven years of age, it was important to focus on the framing of each individual component of the workshop as an additional fifth phase to provide clarity and understanding, as illustrated in Figure 2.

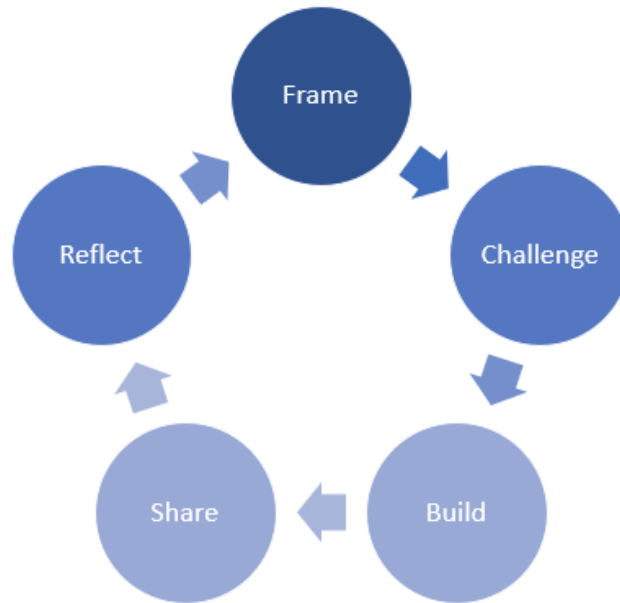


Figure 2: Lego® Serious Play® Phases (adapted from Blair & Dröge, 2020)

The framing of the workshops was imperative, and the facilitators spent time crafting this within the preamble for the workshop and the various stages of model building and reflection (Henderson & Shipway, 2022). The process was kept simple and straightforward, given the ages of the children. The crucial point was to reiterate to the children that there were no wrong answers, and whatever they chose to build in response to the challenge set was their answer (Blair & Dröge, 2020). This framing process helped further scaffold the phenomenological approach (Creswell 2003). It also helped the children to progress towards a ‘state of flow’ (Csíkszentmihályi, 1990), by channelling their focus, attention, and enjoyment, which also helped to enhance their levels of engagement and subsequent outputs (Schutz & Pekrum, 2007).

After completing the process of sharing and reflection of the models, the facilitators reiterated some basic principles to support the children. These were once again to reinforce the issue that there were no wrong answers. The facilitators emphasised that (a) participants should

trust their hands; (b) participants should trust the process; (c) all participants should build; and (d) all participants should take part (McCusker 2014). Although, the children were all given an identical Lego® Windows Explorer kit (Figure 3), they were all building models from their own perspectives and were therefore creating something entirely individual and unique. Shipway and Henderson (2023) highlighted this point to emphasise how diversity was not only included but valued.



Figure 3: Lego® Windows Explorer Kit

The initial design of the first 55-minute session was structured on a Lego® Serious Play® three-stage skills build and then a fourth core build (see Table 1). This structure was also modified both following a pilot study and ‘live’ during the first session, to meet the needs of the children. Given the ages of the children, it was critical to ensure that step two of the skills

build was delineated effectively to ensure that there was a clear understanding that a brick could mean anything to them, and to explain the use of a metaphor.

To further highlight the need to (re) frame the session for the children, in an adult session the norm would have been to use either a four-or five-brick model for the metaphor challenge (commonly known as ‘Explain this!’). After trialling the adult approach with the children during the pilot study, it was established that this did not provide the clarity or understanding required to either engage or deliver an output (Shipway et al., 2022). As a result, the metaphor was reframed. In a ‘flipped’ approach, the children were asked two ways to use the bricks as metaphors. To clarify the process, the facilitator applied a meaning to a selected brick, before rotating around the room allowing each child to pick a brick and ascribe their own independent meaning. This process was revised in both cycles of data collection. During the third stage of the skills build (storytelling), the facilitators found that the children required more time to complete the tasks. Therefore, this was extended from three to five minutes, which also enabled time to write their narrative to support the model.

Build Type	Build Question	Original Plan	Post Pilot	Live Plan
Skills Build 1 Technical	Build a model of a Tower	3 min	3 min	5 min
Skills Build 2 Metaphor	‘Explain this!’: 4 or 5 Bricks	1 min	-	-
	Flip method: 1 Brick	-	1 min	1 min

Skills Build 3 Storytelling	‘Build a model of what worries you about changing classes at school’.	3 min	3 min	5 min
Core Session Build	‘Build a model of something that would make changing classes at school better’.	3 min	3 min	5 min

Table 1: Methodological changes to (re) frame session 1

Two weeks after the school’s annual ‘transfer day’, an integral part of supporting the school transition process, the same children returned for a second workshop and cycle of data collection. The aim of this second workshop was to ascertain whether changes made, based on the first workshop session before the transfer day, had reduced their anxiety towards the school transition process (Shipway et al., 2022). The second workshops were framed with recall exercises from the first session on (i) the use of metaphors, (ii) a short dialogue about the transfer day, and (iii) then a (re)framing for the session they were about to participate in.

For the second cycle of data collection, having reflected on the modifications from the first sessions, the children completed a metaphor recap task [5min] using the one-brick method previously outlined in Table 1. This was then followed by an individual task [5min] where each child was asked to ‘*build a model of the things that would make your perfect first day back at school after the summer holidays*’. The children then came together on their tables for a final task where they were given 30 minutes to complete a group build exercise incorporating all aspects of their individual models, with some new bricks added. The children addressed the

same key question. The group build enables the children to focus on a common goal and collaborate in the task using communication and negotiation to achieve the build.

Thematic analysis is commonly implemented in qualitative research studies associated with wellbeing (Gennings et al., 2023). Data was obtained by examining the models that the children had built in both cycles of data collection during their two workshops sessions, along with the narratives written at the time on the flash card. This helped with the development of a coding structure for the analysis (Jones, 2022). On a very practical level, photographic images were taken of both the Lego® model constructed by the child and the comments written on the card. This ensured that both written comments and models were coupled (Henderson & Shipway, 2022). The cards were subsequently collected by the facilitators, after photographic images had been taken, for further thematic analysis. To ensure rigor in the approach, analysis involved both academic researchers and the school assistant head teacher, to minimise bias. They were also involved with several rounds of review to agree the codes, themes and sub themes which emerged from a combination of the Lego® models and the photographic images. In addition to data gleaned from the children, the six school teaching assistants (TAs) who attended the sessions were invited to share their observations, reflections, and evaluation via an online feedback form. Adopting the approach used in Kirkpatrick's (1975, 1994) framework for evaluating training programmes, the online feedback form incorporated the phases of reaction, learning, behaviour and results.

4. Results and Discussion

Using participatory action research, Lego® Serious Play® can provide an invaluable tool for a cohort of children facing school anxieties, and the developing of coping strategies to help them

navigate the complexities of the annual school transition process (Shipway & Henderson, 2023). Though a process of both framing and (re)framing children were able to utilise serious play without a need for either intervention (Pyle & Danniels, 2017) or hijacking (Goouch, 2008), whilst also benefitting from educators adopting a supportive role (Pramling et al., 2006). This shows the importance, irrespective of age range, of student-centred learning whereby children became ‘partners in the process’ based on this (re)framing ‘process’. In Figure 4 we have (i) modified Laurillard’s (2002, 2013) conversational framework; (ii) incorporated perspectives from Blair and Dröge (2020); and (iii) then (re) framed in the context of children’s transitions. This allows the Lego® Serious Play® methodology to now be applied both in theory and practice, although this naturally changes the role of the teacher to facilitator. In doing so, it embeds the skills build methodology, build challenges, enabling the builds to articulate the learner concepts through sharing, discussion and reflection. Whilst beyond the scope of this paper, future studies should explore the component parts of Figure 4, to develop a better understanding of the complexity, accessibility and intricate nuances of the interaction of the Lego® Serious Play® phases, the conversational framework, and the school transition process.

Interestingly, the six school teaching assistant (TA) staff who attended the workshops, whilst they had all encountered Lego®, they had never used it within a school setting or heard of Lego® Serious Play®. Therefore, there were no preconceived ideas about how the sessions with the children would operate. As a result, broader awareness of the portfolio of Lego® Education™ products (early years, primary and secondary) was not obtained through educational channels, but via play, in informal non-educational settings.

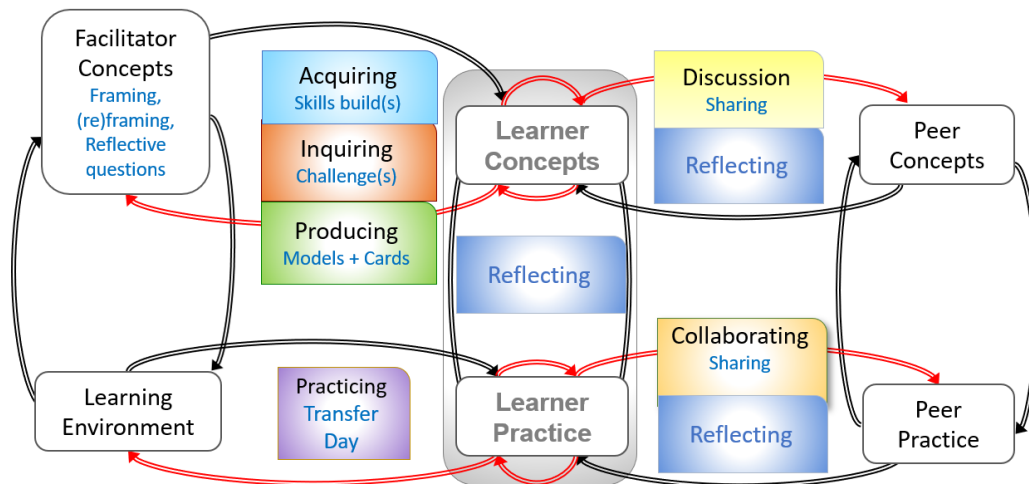


Figure 4: Interaction of Lego® Serious Play® phases, the conversational framework, and the school transition process (adapted from Laurillard, 2002, 2013 and Blair & Dröge, 2020)

When considering the perspectives, values, assumptions that the children brought to the Lego® Serious Play® workshops, and supporting the historical narrative on play (Ariès, 1960), one school staff member, Lisa (TA1), commented: *‘They enjoy Lego, Lego is a game, so therefore positive and relaxed connotations are assumed, and they have an “I can do” mentality, as they have used Lego before’*. When further probed about whether the Lego® Serious Play session had achieved the underlying objective of managing the transition process, one class teacher, Sofia (TA4), observed:

It was a good way of showing the children they were not alone in their worries. It allowed the children to think creatively about what they were worried about, and therefore what could be done to help them. This, in turn, helped me to plan the

transition day for those specific children in my class, and others, who may well have felt the same.

What was notable from this statement is the link to pedagogy. The child-led strategies had developed from the metaphoric Lego® builds and the process of co-creation and a focus upon sharing (Siraj-Blatchford et al., 2002; Walsh et al., 2006). On a practical level, the adult-led ‘transfer day’ was then amended and reframed to better understand the anxieties facing some of the children. Three staff members commented that crucially the ‘voice’ of the children was heard, and all six teaching assistants were in unanimous agreement that the sessions had provided ideas for better facilitating an effective and smooth transitions process. One very experienced teaching assistant, Juliette (TA3), reflected: *‘The workshops brought about solutions that the children wouldn’t have had without them’*.

The study findings build on the concept of play-based learning (Weisberg et al., 2013) and incorporating the applied theory that is integrated within Lego® Serious Play®, such as Papert’s (1936) ‘inner voice’. The children were able to make sense of their lived experiences at school and consider what was making them anxious during the transition process, and, in doing so, activate elements of transformative learning (Taylor, 2008; Brookfield, 2010; Peabody & Noyes, 2017). For example, the facilitators followed the three-step process, advocated by Semino et al. (2018), to provide the children with detailed background information and context about the transition process and the ‘transfer day’, what it might mean, and what feelings they may or may not have towards it. This led one staff member, Lisa (TA1), to observe: *‘Sometimes the things they might be worried about were given to them as examples.* This resulted in fewer examples being required, whilst proving helpful for the children to

receive prompting from both the teachers and TAs, but without taking away the voice of the child.

A key theme emerging from both the Lego® builds and the written comments on the flash cards was the importance of the children being able to choose where they sat within their new classroom. Once again, in the second cycle of data collection, ‘sitting with my friends’ was key (Figure 5). Additionally, the precise locality within their new classroom was frequently mentioned as a theme which caused pupil anxiety, with several children stressing the importance of being located either next to a window, at the front of the classroom, or nearer to the teacher. Similarly, there were several requests from the children for ‘going outside’ and having a break from the traditional and more conventional classroom environment (Figure 6). This sub theme, linked to ‘place’ (see Shipway & Henderson, 2023), was of high value. Closer scrutiny of the Lego® models and comments on the flash cards suggested simple remedies such as practicing the walk and route to the assembly hall, guidance on the locality of the fire drill lining-up points, or opportunities to engage with some of the school's wellbeing and / or physical activity initiatives, which were based outside of the classroom environment.

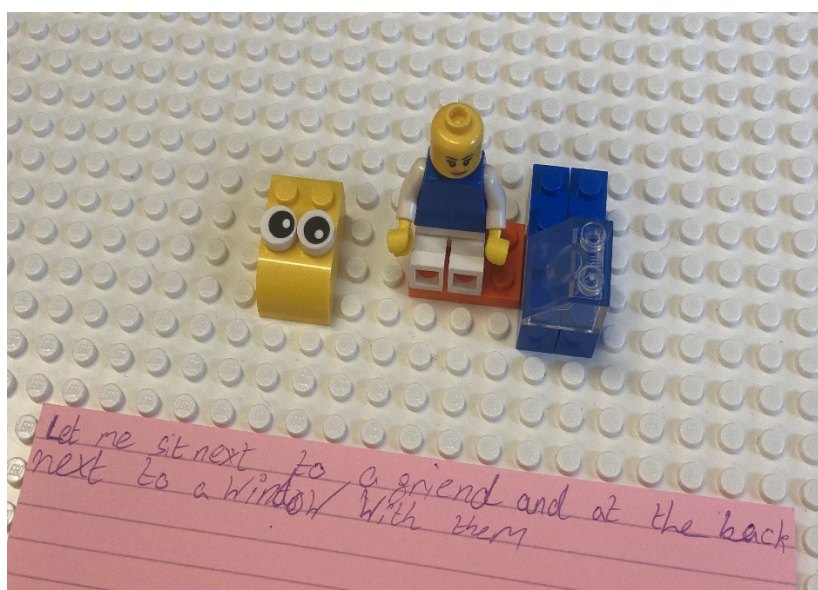


Figure 5: Example of a child's Lego® build of 'sitting with my friends'

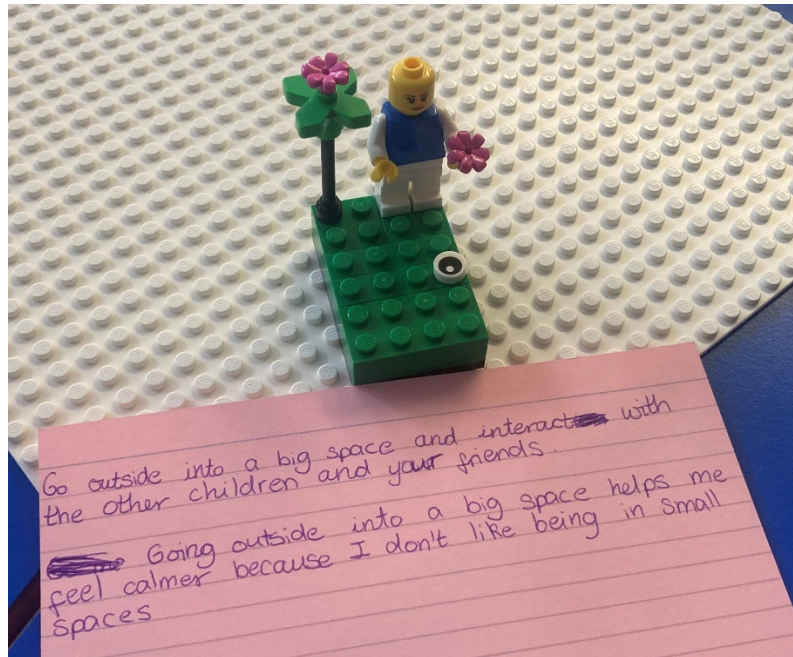


Figure 6: Example of a child's Lego® build of 'going outside'

Anecdotally, at the start of the second cycle of workshops, post 'transfer day', a significant percentage of the children were able to recall their previous 'builds' and their underlying meanings. The objective of the second series of workshops was to consider what could be improved, or be reincorporated for the children, after the summer break and before the start of the new academic year linking to reformation (Conroy & O'Leary-Kelly, 2014). The theme of making new friendships and maintaining their current ones was of central importance to the pupils, and a source of anxiety. Several flash card comments requested more 'getting to know you' activities at the start of the new academic year. The children also placed central importance upon the schools providing them with opportunities to meet up with their existing friends in other class groups, as valuable activities which would help them to settle into a new academic environment. This reinforced the findings of Shipway and Henderson (2023) on the important role of place and space for children within an educational setting.

In the second cycle of data collection, during the sessions the use of metaphors was increasingly evident in the children's Lego® builds. For example, one child wrote on their flash card 'a big ship we can sail away from learning and fun', with the metaphor being 'big ship' and 'sailing away'. Another child described 'green flags show that we can do anything' on their comment card, with the metaphor being 'green flag' (Figure 7). This highlighted the contribution of LSP and metaphors as a unique way to think about, communicate and reflect (Peabody & Noyes, 2017). It also identifies that play-based activities are helpful not only for extracurricular conversations but have potential to provide learning enhancements to a curriculum (van Oers & Duijkers, 2013).

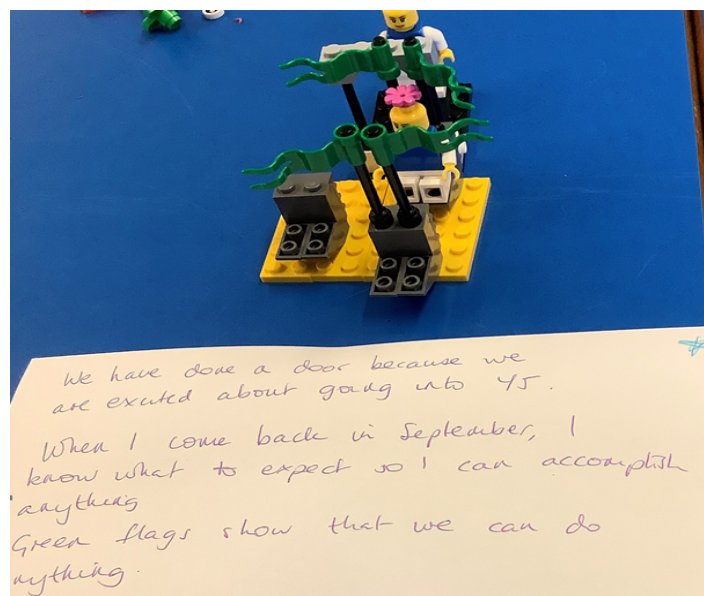


Figure 7: Example of a child's use of metaphor

The findings highlight the value of Lego® Serious Play®, and the importance of implementing Kirkpatrick's (1975, 1994) evaluation framework to assess various phases and milestones. To support this observation, the six staff members that attended the two cycles of workshops all recommended the future use of the Lego® Serious Play® methodology in a school setting, providing a rating assessment of 4.5/5. When asked to consider what could have

provided additional support for the workshops, one staff member, Janine, (TA6), observed: *'Perhaps having adults in the room to scribe for the children, as they are building their models, so you have the words on the cards and the children get to talk about it, one to one, with an adult'*. Lucy, (TA5), suggested: *'Longer sessions so children don't feel rushed'*. Samantha, (TA4), emphasised the importance of *'making sure the behaviour of the children is the only focus for the adults in the room and recognising that some children are much louder than others and can dominate the session a little'*. These observations illustrate that children required more time and space to transfer the meanings from their Lego® model builds into words. For children, the process of crystalising their thoughts in writing needs time.

The atmosphere during the construction of Lego® models was described by John (TA5) as *'somewhat lively'*. Moving forward, having more clearly defined roles for adults participating in the workshops is critical to ensure the process is not disrupted by behavioural issues. Additionally, within an educational setting there are certain restrictions in terms of both class sizes and availability of time to conduct the workshops, which are distinctly different to Lego® Serious Play® workshops for adults, often conducted in corporate environments, and over prolonged periods of time, which school timetabling cannot accommodate and are not suitable for children (McCusker 2014; Warburton et al., 2021). Upon reflection, there is scope for better utilising teaching assistants which would assist with both classroom management and providing support for scribing the comments of the pupils onto the flash cards (Shipway et al., 2022).

The participating school staff members were asked to consider how Lego® Serious Play® could be further utilised in an educational school setting. Juliette (TA3) suggested there was scope to investigate the *'anxiety and emotional traumas they are experiencing'*. Lisa,

(TA1), suggested there were opportunities for *'working through relationships, socialising in different settings, building resilience and then applying this to their schoolwork'*. These observations indicate that the school staff members recognised the value of using Lego® Serious Play® as a wellbeing tool for children to communicate, support and discuss uncomfortable topics they might experience within an educational setting. This has a close synergy to previous findings amongst adults that advocate Lego® Serious Play® as a technique that can offer therapeutic benefits (Grayburn, 2020), and improve communication resilience, social intelligence, cognitive flexibility (Jensen et al., 2018; Koeners & Francis 2020). In addition, the study also highlights the benefits associated with both core content for the national core curriculum and better supporting study skills for children. In the post COVID-19 pandemic era where schools continue facing a diverse range of challenges, we would advocate greater use of Lego® Serious Play® in educational settings to both support the recovery of play development through the various education stages, whilst also helping to develop future employability skills for the workplace.

5. Conclusion

This study contributes to knowledge by (re)framing a creative methodology, Lego® Serious Play®, to better understand the interaction between leisure, education and mental health and wellbeing in managing the school transition process for children, and addressing underlying anxieties (Shipway & Henderson, 2023). There is a relative paucity of studies linked to Lego® Serious Play® amongst children, which reflects an opportunity for educators and academics to adapt, respond and utilise this learning process as an effective pedagogy. Where studies do exist, they are amongst children in higher age groups (McCusker, 2014), and it is hoped that

the findings from this study will contribute towards establishing a platform for future studies amongst young(er) children.

Lego® is an effective platform because children recognise it and instantly have an inkling that something playful will occur. The scaffolding structure afforded by Lego® Serious Play® enables flow, sharing and reflection. This is an invaluable process when trying to understand complex aspects of a pressing issue, in this case anxiety amongst children in relation to their annual school transition process. The facilitated workshops enabled co-creation between teacher and pupil within play sessions. The children were partners in the process. A two-stage (pre and post) process, either side of the annual ‘transfer day’, was also important to help ascertain the perspectives of the children, before then implementing the appropriate remedies and strategies. One quality of Lego® Serious Play® is the ‘unlocking’ which occurs during the process, as eye contact often drops away from other people to the model, and consequently the explanation, story and meaning can cascade uninhibited (Henderson & Shipway, 2022). Framing and (re)framing the context for using Lego® Serious Play® with children is fundamental to the successful application of this creative methodology. Additionally, modification of the Lego® Serious Play® skills build to obtain better clarity on the metaphors developed by the children remains an essential part of the process to glean a clearer understanding of the meanings and stories being told.

The age range of the children, ranging from seven to eleven years of age, was both significant, but also a limitation to the study. One suggestion for future research would be to broaden the age ranges of the children to ascertain the holistic impact of framing, reframing and metaphor reinforcement, to name but a few areas for potential development. Additionally, we would endorse that for pupils aged between twelve and eighteen years of age, there is added

value for Lego® Serious Play® to be more formally integrated within the school curriculum to demonstrate both learning outcomes and therapeutic benefits.

The findings reinforce the perspectives of Shipway and Henderson (2023) that the interaction of children and the Lego® Serious Play® process, as a creative methodology, could be expanded to create new learning spaces within educational settings that help support student learning. The results contribute to knowledge by highlighting the power of Lego® to complement and contrast with the more traditional, conventional learning approaches used within schools, and to effectively unlock the true feelings, values, thoughts and perspectives of children. Using Lego® Serious Play® as a creative methodology, teachers and school staff are then better placed to understand the ‘*authentic voice*’ of the children who became integral partners in this co-created process.

References:

- Ackermann, E., 2001. Piaget’s constructivism, Papert’s constructionism: What’s the difference. *Future of learning group publication*, 5(3), p.438.
- Ajibade, B.O. and Hayes, C., 2022. Using LEGO® Serious Play® Methodology in supporting Nigerian nursing students' sociocultural transitions to UK higher education: A phenomenological research study. *Nurse Education Today*, 119, p.105582.
- Amabile, T., 1996. *Creativity in context* Westview Press. Boulder, Colorado.
- Ariès, P., 1962. *Centuries of Childhood: A Social History of Family Life*. 1960. Trans. Robert Baldick. New York: Vintage.
- Argyris, C. and Schön, D.A., 1997. Organizational learning: A theory of action perspective. *Reis*, (77/78), pp.345-348.

Ashiabi, G.S., 2007. Play in the preschool classroom: Its socioemotional significance and the teacher's role in play. *Early Childhood Education Journal*, 35, pp.199-207.

Bagley, C., and Cancienne. M. B., 2001. "Educational Research and Intertextual Forms of (re) Presentation: The Case for Dancing the Data." *Qualitative Inquiry* 7 (2): 221–237

in product attitude formation", *Journal of Business Research*, Vol. 75, pp. 108-117.

Barnett, L.A., 2007. The nature of playfulness in young adults. *Personality and individual differences*, 43(4), pp.949-958.

Barnett, W.S., Jung, K., Yarosz, D.J., Thomas, J., Hornbeck, A., Stechuk, R. and Burns, S., 2008. Educational effects of the Tools of the Mind curriculum: A randomized trial. *Early childhood research quarterly*, 23(3), pp.299-313.

Barnett, L.A., 2011. How do playful people play? Gendered and racial leisure perspectives, motives, and preferences of college students. *Leisure Sciences*, 33(5), pp.382-401.

Barton, G. and Ryan, M., 2014. Multimodal approaches to reflective teaching and assessment in higher education. *Higher Education Research & Development*, 33(3), pp.409-424.

Baum, F., MacDougall, C. and Smith, D., 2006. Participatory action research. *Journal of epidemiology and community health*, 60(10), p.854.

Bettiga, D., Lamberti, L. and Noci, G., 2017. Do mind and body agree? Unconscious versus conscious arousal in product attitude formation. *Journal of Business Research*, 75, pp.108-117.

Blair, S. and Dröge, J., 2020. How to Facilitate the LEGO® Serious Play® Method Online: New Facilitation Techniques for Shared Models and# Covidsafe Face-to-face. ProMeet, an independent imprint.

Biggs, J., 1996. Enhancing teaching through constructive alignment. *Higher education*, 32(3), pp.347-364.

- Brooker, E., Blaise, M., and Edwards, S., 2014. "Introduction." In *SAGE Handbook of Play and Learning in Early Childhood*, edited by Brooker, E., Blaise, M., and Edwards, S., 1–4. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE.
- Brookfield, S., 2010. Theoretical frameworks for understanding the field. In Kasworm, C., Rose, A., & Ross-Gordon, J., (Eds.), *Handbook of adult and continuing education* (pp. 71–81). Thousand Oaks, CA: SAGE.
- Bulmer, L., 2009. The use of LEGO® Serious Play in the engineering design classroom. *Proceedings of the Canadian Engineering Education Association (CEEA)*.
- Burghardt, G. M., (2011). "Defining and Recognizing Play". In Pellegrini, A.D., (Ed.), 2011. *The Oxford handbook of the development of play*. (pp. 23 – 28) Oxford University Press.
- Bubikova-Moan, J., Næss Hjetland, H. and Wollscheid, S., 2019. ECE teachers' views on play-based learning: A systematic review. *European Early Childhood Education Research Journal*, 27(6), pp.776-800.
- Cetina, K.K., Schatzki, T.R. and Von Savigny, E. eds., 2005. *The practice turn in contemporary theory*. Routledge.
- Conroy, S.A. and O'Leary-Kelly, A.M., 2014. Letting go and moving on: Work-related identity loss and recovery. *Academy of Management Review*, 39(1), pp.67-87.
- Creswell, J.W. and Creswell, J.D., 2017. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Csikszentmihályi, M., 1990. *Flow. The Psychology of Optimal Experience*. HarperPerennial. New York
- Csikszentmihályi, M., 2000. *Beyond boredom and anxiety*. Jossey-bass. San Francisco, CA.
- Dale, E., 1946. Effective learning. From Chapter 1 in *audio-visual methods in teaching*. New York: Dryden Press (Holt, Rinehart, and Winston). Retrieved April, 3, p.2006.

Dann, S., 2018. Facilitating co-creation experience in the classroom with Lego Serious Play. *Australasian Marketing Journal*, 26(2), pp.121-131.

ElKelish, W.W. and Ahmed, R., 2022. Advancing accounting education using LEGO® Serious Play simulation technique. *Accounting education*, 31(2), pp.167-183.

Farné, R., 2005. Pedagogy of play. *Topoi*, 24(2), pp.169-181.

Fisher, C.M. and Amabile, T., 2008. Creativity, improvisation and organizations. In *The Routledge companion to creativity* (pp. 13-24). Routledge.

Fisher, K.R., Hirsh-Pasek, K., Newcombe, N. and Golinkoff, R.M., 2013. Taking shape: Supporting preschoolers' acquisition of geometric knowledge through guided play. *Child development*, 84(6), pp.1872-1878.

Gauntlett, D., 2007. *Creative explorations: New approaches to identities and audiences*. New York, NY: Routledge.

Geithner, S. and Menzel, D., 2016. Effectiveness of learning through experience and reflection in a project management simulation. *Simulation & Gaming*, 47(2), pp.228-256.

Gennings, E., Brown, H.J., Hewlett, D. and Batten, J., 2023. Children and young people's perspectives from UK lockdown: leisure-less experiences. *Leisure Studies*, 42(1), pp.147-155.

Gibbs, T., Durning, S. and Van Der Vleuten, C., 2011. Theories in medical education: Towards creating a union between educational practice and research traditions. *Medical Teacher*, 33(3), pp.183-187.

Gkogkidis, V. and Dacre, N., 2021. Exploratory learning environments for responsible management education using Lego Serious Play. *arXiv preprint arXiv:2104.12539*.

Goffman, E., 2005. *Interaction ritual: Essays in face to face behavior*. AldineTransaction.

Goldstein, L.S., 2007. Embracing pedagogical multiplicity: Examining two teachers' instructional responses to the changing expectations for kindergarten in US public schools. *Journal of Research in Childhood Education*, 21(4), pp.378-399.

Goouch, K., 2008. Understanding playful pedagogies, play narratives and play spaces. *Early Years*, 28(1), pp.93-102.

Grayburn, K., 2020. Mindfulness and LEGO® Serious Play: How can the practice of mindfulness enhance the facilitation of LEGO® Serious Play workshops? Independently published. p.134.

Grob, R., Schlesinger, M., Pace, A., Golinkoff, R.M. and Hirsh-Pasek, K., 2017. Playing with ideas: Evaluating the impact of the ultimate block party, a collective experiential intervention to enrich perceptions of play. *Child Development*, 88(5), pp.1419-1434.

Guitard, P., Ferland, F. and Dutil, É., 2005. Toward a better understanding of playfulness in adults. *OTJR: Occupation, Participation and Health*, 25(1), pp.9-22.

Hayes, C., 2018. Building psychological resilience in the paramedic. *Journal of Paramedic Practice*, 10(4), pp.147-152.

Hayes, C. and Graham, Y., 2020. Understanding the building of professional identities with the LEGO® SERIOUS PLAY® method using situational mapping and analysis. *Higher Education, Skills and Work-Based Learning*, 10(1), pp.99-112.

Harmat, L., Andersen, F.Ø., Ullén, F., Wright, J. and Sadlo, G. eds., 2016. *Flow experience: Empirical research and applications*. Springer.

Handley, K., Sturdy, A., Fincham, R. and Clark, T., 2006. Within and beyond communities of practice: Making sense of learning through participation, identity and practice. *Journal of management studies*, 43(3), pp.641-653.

Henderson, H., and Shipway, R., 2022. Everything is Awesome! Leisure, Lego® Serious Play®, Mental Health and Wellbeing. LSA Falmouth 2022, Falmouth University, Penryn. In: *Leisure Studies Association 12-14 July 2022 Penryn*.

Heracleous, L. and Jacobs, C.D., 2008. Crafting strategy: The role of embodied metaphors. *Long Range Planning*, 41(3), pp.309-325.

- Hyvönen, J., 2014. Creating shared understanding with lego serious play. In Proceedings of the Seminar (Vol. 58314308, pp. 36-42).
- Jacobs, C., and Statler, M., 2005. Strategy creation as serious play. In Floyd, S., Roos, J., Jacobs, C., and Kellermanns, S., (Eds.), *Innovating strategy process* (pp. 47-55). Blackwell.
- James, A.R., 2013. Lego Serious Play: a three-dimensional approach to learning development. *Journal of Learning Development in Higher Education*, (6).
- Jensen, C.N., Seager, T.P. and Cook-Davis, A., 2018. LEGO® SERIOUS PLAY® in multidisciplinary student teams. *International Journal of Management and Applied Research*, 5(4), pp.264-280.
- Karpov, Y.V., 2005. *The neo-Vygotskian approach to child development*. Cambridge University Press.
- Kirkpatrick, D.L., 1975. *Evaluating training programs: Tata McGraw-hill education*.
- Kirkpatrick, D. and Kirkpatrick, J., 2006. *Evaluating training programs: The four levels*. Berrett-Koehler Publishers.
- Kolb, A.Y. and Kolb, D.A., 2010. Learning to play, playing to learn: A case study of a ludic learning space. *Journal of Organizational Change Management*, 23(1), pp.26-50.
- Koeners, M.P. and Francis, J., 2020. The physiology of play: Potential relevance for higher education. *International Journal of Play*, 9(1), pp.143-159.
- Kourti, A., Stavridou, A., Panagouli, E., Psaltopoulou, T., Tsolia, M., Sergentanis, T.N. and Tsitsika, A., 2021. Play behaviors in children during the COVID-19 pandemic: a review of the literature. *Children*, 8(8), p.706.
- Kurkovsky, S., 2015, June. Teaching software engineering with LEGO Serious Play. In *Proceedings of the 2015 ACM Conference on Innovation and Technology in Computer Science Education* (pp. 213-218).

Laurillard, D., 2002. Rethinking university teaching: A conversational framework for the effective use of learning technologies. Routledge. London

Laurillard, D., 2013. Teaching as a design science: Building pedagogical patterns for learning and technology. Routledge. London

LEGO® SERIOUS PLAY®, 2014. Imaginopedia for core process. Enfield, CT: Lego Education.

Lillard, A.S., Lerner, M.D., Hopkins, E.J., Dore, R.A., Smith, E.D. and Palmquist, C.M., 2013. The impact of pretend play on children's development: a review of the evidence. Psychological bulletin, 139(1), p.1.

Lonergan, B. J. F., 1957. Insight. A Study of Human Understanding, New York: Harper and Row.

Magnuson, C.D. and Barnett, L.A., 2013. The playful advantage: How playfulness enhances coping with stress. Leisure Sciences, 35(2), pp.129-144.

Masters, K., 2013. Edgar Dale's Pyramid of Learning in medical education: A literature review. Medical teacher, 35(11), pp.e1584-e1593.

McCusker, S., 2014. Lego®, Serious Play TM: Thinking about teaching and learning. International journal of knowledge, innovation and entrepreneurship, 2(1), pp.27-37.

McCusker, S. and Swan, J.C., 2018. The use of metaphors with LEGO® SERIOUS PLAY® for harmony and innovation. International Journal of Management and Applied Research, 5(4), pp.174-192.

McCusker, S., 2020. Everybody's monkey is important: LEGO® Serious Play® as a methodology for enabling equality of voice within diverse groups. International Journal of Research & Method in Education, 43(2), pp.146-162.

McInnes, K., Howard, J., Miles, G. and Crowley, K., 2011. Differences in practitioners' understanding of play and how this influences pedagogy and children's perceptions of play. *Early Years*, 31(2), pp.121-133.

Medrano, M., Cadenas-Sanchez, C., Oses, M., Arenaza, L., Amasene, M. and Labayen, I., 2021. Changes in lifestyle behaviours during the COVID-19 confinement in Spanish children: A longitudinal analysis from the MUGI project. *Pediatric Obesity*, 16(4), p.e12731.

Miller, E. and Almon, J., 2009. Crisis in the kindergarten: Why children need to play in school. Alliance for Childhood (NJ3a).

Mobley, K. and Fisher, S., 2014. Ditching the desks: Kinesthetic learning in college classrooms. *The Social Studies*, 105(6), pp.301-309.

Moon-Seo, S.K. and Munsell, S.E., 2022. Play as a Medium for Children's Learning from Parents' Perspectives. *Educational Research: Theory and Practice*, 33(2), pp.23-31.

Nerantzi, C., 2018. LEGO® SERIOUS PLAY® as an affective experience in doctoral researchers' support: Tensions and new freedoms. *International Journal of Management and Applied Research*, 5(4), pp.290-303.

Nicolopoulou, A., 2010. The alarming disappearance of play from early childhood education. *Human development*, 53(1), pp.1-4.

Nolan, S., 2010. Physical metaphorical modelling with LEGO as a technology for collaborative personalised learning. In *Technology-supported environments for personalized learning: Methods and case studies* (pp. 364-385). IGI Global.

Nunez, H. C., 2018. Lego SERIOUS PLAY as a participatory research method to involve children in action research projects. In: Berson, I., and Berson, M., (Eds.), *Participatory Methodologies to Elevate Children's Voice and Agency*. USA: Information Age Publishing

O'Sullivan, C. 2011. "Role-playing." In *Research Methods in Education*. 7th edition., Cohen, L., Manion, L., and Morrison, K., (Eds), 510–527. Abingdon, Oxon, UK: Routledge.

- Paley, V.G., 2009. *A child's work: The importance of fantasy play*. University of Chicago Press.
- Papert, S. and Harel, I. eds., 1991. *Constructionism: research reports and essays, 1985-1990*. Ablex publishing corporation.
- Peabody, M.A. and Noyes, S., 2017. Reflective boot camp: Adapting LEGO® SERIOUS PLAY® in higher education. *Reflective Practice*, 18(2), pp.232-243.
- Pawson, R., 2006. Evidence-based policy: a realist perspective. *Evidence-based Policy*, pp.1-208.
- Pawson, R. and Manzano-Santaella, A., 2012. A realist diagnostic workshop. *Evaluation*, 18(2), pp.176-191.
- Pramling Samuelsson, I. and Johansson, E., 2006. Play and learning—inseparable dimensions in preschool practice. *Early child development and care*, 176(1), pp.47-65.
- Piaget, J., 1936. *La naissance de l'intelligence chez l'enfant*. Paris: Delachaux et Niestlé.
- Polanyi, M., 1969. *Knowing and Being*. Routledge, London.
- Pyle, A., and Bigelow, A., 2014. Play in kindergarten: An interview and observational study in three Canadian classrooms. *Early Childhood Education Journal*, 43, 1–9 in *Play-Based Pedagogy and the Fear of Hijacking Play*, *Early Education and Development*, 28:3, 274-289, DOI: 10.1080/10409289.2016.1220771
- Quinn, T., Trinh, S.H. and Passmore, J., 2022. An exploration into using LEGO® SERIOUS PLAY®(LSP) within a positive psychology framework in individual coaching: an interpretative phenomenological analysis (IPA). *Coaching: An International Journal of Theory, Research and Practice*, 15(1), pp.102-116.
- Robert, G., 2013. Participatory action research: using experience-based co-design to improve the quality of healthcare services in Ziebland, S., Coulter, A., Calabrese, J., Locock, L., (Eds.),

Understanding and Using Health Experiences, Oxford University Press (2013), pp. 138-149,
10.1093/acprof:oso/9780199665372.003.0014

Roos, J. and Victor, B., 1999. Towards a new model of strategy-making as serious play. *European Management Journal*, 17(4), pp.348-355.

Roos, J. 2006. Thinking from within. In: Roos, J. (Eds.) *Thinking from Within*, London: Palgrave Macmillan, 1-24.

Rieber, L.P., Smith, L. and Noah, D., 1998. The value of serious play. *Educational technology*, 38(6), pp.29-37.

Sanders, E. and Stappers, P., 2008. Co-creation and the New Landscapes of Design. *CoDesign*, 4, 5–18.

Sawyer, R.K., 2014. *Group creativity: Music, theater, collaboration*. Psychology Press.

Schutz, P.A. and Pekrun, R.E., 2007. *Emotion in education*. Elsevier Academic Press.

Semino, E., Demjén, Z. and Demmen, J., 2018. An integrated approach to metaphor and framing in cognition, discourse, and practice, with an application to metaphors for cancer. *Applied linguistics*, 39(5), pp.625-645.

Schulz, K.P., Geithner, S., Woelfel, C. and Krzywinski, J., 2015. Toolkit-based modelling and serious play as means to foster creativity in innovation processes. *Creativity and innovation management*, 24(2), pp.323-340.

Shipway, R. and Henderson, H., 2023. Everything is Awesome! Exploring the Interaction between Leisure, LEGO® Serious Play (LSP), Education, and Mental Health and Wellbeing. *Leisure Studies*. <https://doi.org/10.1080/02614367.2023.2210784>

Shipway, R. Henderson, H. and Inns, H., 2022. Exploring the use of Lego to support junior school mental health and wellbeing initiatives. *Coastal Learning Partnership: Dorset*

Siraj-Blatchford, I., Muttock, S., Sylva, K., Gilden, R. and Bell, D., 2002. *Researching effective pedagogy in the early years* (Vol. 356). London: Department for Education and Skills.

Smith, P.K., 2009. *Children and play: Understanding children's worlds*. John Wiley & Sons.

Sonnenburg, S. and Primus, D. (2020), "Flow", in Runco, M.A. and Pritzker, S.R. (Eds), *Encyclopedia of Creativity*, 3rd ed., Academic Press, Cambridge, pp. 510-515

Statler, M., Roos, J. and Victor, B., 2009. Ain't misbehavin': Taking play seriously in organizations. *Journal of Change Management*, 9(1), pp.87-107.

Statler, M., Heracleous, L. and Jacobs, C.D., 2011. Serious play as a practice of paradox. *The Journal of Applied Behavioral Science*, 47(2), pp.236-256.

Sutton-Smith, B., 1997. *The Ambiguity of Play* Harvard University Press. Cambridge, MA.

Sundsdal, Einar, and Maria Øksnes. 2015. "Til Forsvar for Barns Spontane lek." *Nordisk Tidsskrift for Pedagogikk og Kritikk* 1 (April). <https://doi.org/10.17585/ntpk.v1.89>. Cited in Bukova-Moan, J., Næss Hjetland, H., & Wollscheid, S., (2019) ECE teachers' views on play-based learning: a systematic review, *European Early Childhood Education Research Journal*, 27(6), pp 776-800

Sylvander, B., 1984. "Rechercher son Clown, se Trouver soi Même." *Art et Thérapie* 12-13: 14–26 cited in Peabody, M., & Noyes, S., 2017 Reflective boot camp: adapting LEGO® SERIOUS PLAY® in higher education, *Reflective Practice*, 18(2), pp 232-243

Taylor, E., 2008. Transformative learning theory. *New Directions for Adult and Continuing Education*, 2008, pp 5–15.

van Oers, B., 2013. Is it play? Towards a reconceptualisation of role play from an activity theory perspective, *European Early Childhood Education Research Journal*, 21(2), pp185-198,

Stephen, C., 2010. Pedagogy: The silent partner in early years learning. *Early Years*, 30(1): pp 15–28.

van Oers, B. and Duijkers, D., 2013. Teaching in a play-based curriculum: Theory, practice and evidence of developmental education for young children. *Journal of Curriculum Studies*, 45(4), pp 511-534.

- Walsh, G., Sproule, L., McGuinness, C., Trew, K., Rafferty, H. and Sheehy, N. 2006. An appropriate curriculum for 4–5-year-old children in Northern Ireland: Comparing play-based and formal approaches. *Early Years*, 26(2), pp 201–22
- Wallerstedt, C. and Pramling, N., 2012. Learning to play in a goal-directed practice. *Early years*, 32(1), pp.5-15.
- Warburton, T., Brown, J. and Sandars, J., 2022. The use of LEGO® SERIOUS PLAY® within nurse education: A scoping review. *Nurse Education Today*, 118, p.105528.
- Weisberg, D.S., Hirsh-Pasek, K. and Golinkoff, R.M., 2013. Guided play: Where curricular goals meet a playful pedagogy. *Mind, Brain, and Education*, 7(2), pp.104-112.
- Wengel, Y., McIntosh, A. and Cockburn-Wooten, C., 2021. A critical consideration of LEGO® SERIOUS PLAY® methodology for tourism studies. *Tourism Geographies*, 23(1-2), pp.162-184.
- Wood, E., 2009 “Conceptualizing a Pedagogy of Play: International Perspectives From Theory, Policy and Practice.” In *From Children to Red Hatters: Diverse Images and Issues of Play*. vol. 8, edited by D. Kushner, 166–190. Lanham, MD: University Press of America Inc.