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Benefits of the Kitcamp Play System on Child Development

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30 January 2016

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Introduction

The act of play, in general, has been empirically shown to be vital to an individual's healthy development. Although in common language, the term 'play' can carry a connotation that suggests a frivolous or useless activity, most developmental theorists agree that play is how children 'work' (Hirsh-Pasek, Golinkoff, Berk, & Singer, 2009; Shaffer & Kipp, 2010). **In fact, recent research from neuroscience, evolutionary psychology and animal behaviour has suggested that not only is play important beyond childhood into adolescence, but also that the absence of play can have disastrous results such as the lack of understanding social rules and ADHD** (Panksepp, 2007; Panksepp & Scott, 2012), and in other species, even a lack of survival skills (Brown & Vaughn, 2009).

This report will present a description of children's characteristics and abilities, with a focus on the ages of 3-8 years, in the areas of cognitive, social, emotional and physical development. These areas will be discussed in separate sections, though there is considerable overlap in these areas of development.

For the younger age group (3-5 years), these areas are also key to the seven areas of learning and development that make up the **Early Years Foundation Stage Framework** (hyper link) which include the three prime areas of communication and language, physical development, personal, social and emotional development, as well as the four specific areas of literacy, mathematics, understanding the world and expressive arts and design. Links to how the Kitcamp panels can enhance these areas of development will be made with a focus on the benefits of play that feature elements of the Kitcamp materials, particularly the aspects related to constructive play, sociodramatic play, child-led play and the neutral nature of the materials to allow for spontaneous and creative play. In the United Kingdom, academically, children in the older group are expected to meet expectations in areas of Key Stage 1 of the National Curriculum, including tasks and assessments in the areas of reading, writing, speaking and listening, maths and science. This report will present empirical support to demonstrate how the Kitcamp system can encourage skills in these academic areas, as well as the other vital developmental areas mentioned above.

Below is an overview of typical development for children during the ages of 3 to 8 years. Following this overview is a discussion of how the Kitcamp materials and system might relate to different aspects of specific areas of development.

A Descriptive Overview

3- to 5-year-olds

The ages between 3 to 5 years is a remarkable time of development for children. Physically, typically developing children will have mastered many motor skills, such as walking and grasping, and are now able to use their new skills to further explore their environments. Neurologically, this age is a time of great plasticity, which means that children's minds are very flexible, and they are able to rapidly gain new skills in areas such as language, cognitive abilities and self and social awareness, all of which are encouraged by a wide variety of the stimulating experiences they now encounter. During these ages, children are expanding their social circle, using the relationships and bonds they've developed with family to start to experience more peer interactions and friendships. Children are also developing their emotional intelligence as well by forming a self-concept, being able to regulate their emotions more and understanding the thoughts and feelings of others. Key focuses of this age range include the importance of play and the development of independence.

5- to 8-year-olds

Between the ages of 5 and 8 years, children experience some remarkable transitions. During these ages, children often begin formal education as well as participating in activities with more organised rules and procedures, leading to an expansion of their social worlds, their understanding of the greater world and systems, access to more knowledge and skills and opportunities for personal development. In addition to gaining new knowledge and skills, children during this age range also show an awareness and understanding of having this knowledge and skills and are better able to adapt their behaviours to suit contexts and within relationships, and are generally becoming more flexible cognitively. Children during these ages start to use more psychological, rather than superficial, concepts to define themselves as well as on which to base friendships. Key focuses of this age range include the mastery of skills and the development of self-esteem.

Key Areas of Development

Cognitive Development

Benefits for cognitive development supported and enhanced by the Kitcamp panels include:

- The nature of the materials allows for and encourages child-led activities, which will help children with skills such as creating, and then attaining, goals, handling multiple aspects of a problem, and being able to focus their attention on necessary tasks.
- The Kitcamp play system provides an engaging play opportunity that would support children's developing creativity and problem solving skills.
- Due to the nature of the panels, Kitcamp incorporates constructive play, which has been found to relate to and influence spatial and number understanding, leading to further abilities and interest in mathematics and science.
- By providing flexible structures to allow for a variety of imaginative settings conducive to role-play scenarios, the Kitcamp materials also encourage sociodramatic play, which has been found to relate to and influence children's abilities to think of others' thoughts and emotions, understand their own thoughts and emotions, and also help their language and communication abilities.

The idea that children's cognitive development is not only enhanced by, but depends on, their active exploration of the environment supports the benefits of the Kitcamp materials. **When children play, they don't just learn at a specific level for a specific task or action with play materials, but at a global level with problem solving, rule understanding and conceptual development.** Piaget's (1932, 1951, 1952) theory suggests that it's this active exploration with the environment, which is a very child-driven approach, that enables children to develop more complex cognitive schemas. More recent research in the area of cognitive development supports these early theoretical assertions. **By having to work out problems for themselves, children are also learning to better manage cognitive tasks and develop cognitive strategies to help them manage capacity demands.** As opportunity for child-led, non-structured play has been shown to be important in the development of executive functioning, the explorative and flexible nature of the Kitcamp panels suit this need well.

The type and quality of play is important in the development of executive functioning. As previous interventions have been more externally-directed with adults providing support and guidance to help children develop their executive functioning, Barker et al (2014) investigated interventions of encouraging self-directed executive functioning, which develops later than externally-directed executive functioning, and is more cognitively demanding, but is critical for the long term development of independent control. By studying the relationship between a child's amount of child-led, less structured activities and a variety of cognitive tasks, Barker and colleagues found that children (6-7 years old) who spent more time in self-directed, less structured activities showed more self-directed control. **As opportunity for child-led, non-structured play has been shown to be important in the development of executive functioning, the explorative and flexible nature of the Kitcamp panels suit this need well.** Although not correlated to the task used to measure cognitive executive functioning, Hoffman & Russ (2012) found that in a sample of girls (5- 10

years of age), abilities in pretend play (as measured by the Affect in Play Scale) were correlated with measures of self-regulation, divergent thinking, and storytelling ability.

Due to the neutral materials of the Kitcamp panel, the numerous possibilities of construction, and the ability of the panels to form the setting of a variety of dramatic play settings, **the nature of the Kitcamp materials have the possibility of engaging children in both constructive play, as they use the panels to construct their own play structures, as well as sociodramatic or symbolic play, as they use these play structures as settings for forts, symbolic houses, schools, pirate ships or any other imaginative backdrop for play.** With this flexibility, children who show a preference for constructive play would have more opportunity to work with others to construct their structure in a social setting and then use the setting for sociodramatic play. Children who have a preference for sociodramatic play would benefit from the constructive elements of the task needed to set their scenes. Parents have also reported a preference for active, physical play, play that involves creativity and pretence, and puzzles or games (Lehrer & Petrakos, 2011), all of which can be incorporated into the Kitcamp activities.

As well as being popular with children and parents, construction play has been found to be related to cognitive ability (Johnson, Ershler, & Lawton, 1982) and beneficial to the development of a wide range of cognitive abilities including spatial understanding, working memory and problem solving (Richardson, Jones, Croker, & Brown, 2011). By manipulating objects both physically and mentally in constructive play, young children have the opportunity to develop spatial skills that have been found to be related to school readiness as well as vital to preparing children for educational and career trajectories in STEM fields due to the relationship between later mathematics and science performance (Verdine, Golinkoff, Hirsh-Pasek, & Newcombe, 2014).

The individual differences in ability with construction play, such as building with blocks or LEGO, has been found to be associated with early numerical understanding as well as later mathematical ability (Kersh, Casey, & Young, 2008), even predicting performance as late as mathematical achievement at the US middle school and high school (adolescence) level (Wolfgang, Stannard, & Jones, 2001). This relationship has been found to be mediated by the influence of building activities on the development of spatial ability (Oostermeijer, Boonen, & Jolles, 2014) and visuospatial memory (Nath & Szucs, 2014). Common to constructive play and cognitive abilities such as in maths and science are basic aspects of physical knowledge such as classification, seriation, number, spatial relationships and temporal relationships, and these underlying areas of knowledge are key to development in logico-mathematical abilities (Kamii, Mihakawa, & Kato, 2004).

Fantasy play, which includes pretending objects are symbolic and may involve acting out things from every day life, may include solitary play, whereas sociodramatic play is a form of fantasy play that consists of pairs or groups of children engaging in a shared, complex narrative to fulfil the goal of a story, and can include children taking on roles of characters and discussion among the children regarding the rules and goals of the play story. These characteristics of fantasy and sociodramatic play encourage children's linguistic skills in that to successfully participate, they must be able to communicate their roles and vision of the setting to other children (or play leaders) involved. Also, incorporating fantasy roles in play, with characters that must work together for a common scene, will encourage children's

‘theory of mind’ abilities, which include their ability to think about their own thoughts and beliefs as well as those of other people.

By having a play leader, teacher or parent helping to guide children through use of the materials, Vygotsky’s (1934/1987) theory of providing a transfer of cultural knowledge and developing an appropriate amount of support relative to the child’s abilities. In fact, researchers who have studied the link between the use of constructive play and cognitive abilities encourage toy manufacturers to help instruct parents or educators on how to help scaffold and guide children’s play with building materials (Verdine et al., 2014). **The Kitcamp materials are such that as children mature, they are able to grow with the materials being able to take on more of the building and use of the structures independently.**

Social and Emotional Development

Benefits for social and emotional development supported and enhanced by the Kitcamp panels include:

- The opportunity to solve challenging problems through using the Kitcamp materials will encourage the development of healthy self-esteem and self-efficacy, as well as to strengthen aspects of their developing self-identity.
- Allowing children to construct settings to allow for private reflection, or for sociodramatic play in which children can work through emotions, the materials provide a number of advantages for children's emotional development.
- Allowing for a context for children to develop an understanding of social rules and how to negotiate social relationships, which will encourage healthy peer relationships and friendships

As children will be involved in a lot of the planning of both the construction and the play scenarios, with the level of help being appropriately altered, the Kitcamp materials provide a task that is challenging, but also allows children to realise that they must take responsibilities for their efforts, to develop a healthy sense of self-esteem and self-efficacy. Research by Carol Dweck (2006) has shown that in addition to being able to develop and then achieve their own goals, **a key to children's healthy development regarding how they approach difficult problems is to also allow them to encounter challenging problems with which they may struggle at first, in order to teach them that success can come from perseverance and effort, rather than a natural, fixed ability. The neutral and flexible nature of the Kitcamp materials allow the level of difficulty of the play experience to be adapted appropriately to the child's level.**

Like other settings for sociodramatic or fantasy play, the Kitcamp materials would allow for a context in which children can explore a variety of roles and practice aspects of their developing identities and selves. **This type of flexible play, both through sociodramatic play and constructive play, gives the child an opportunity to develop the 'creative self', where they can experience what is called in positive psychology "flow"** (Csikszentmihalyi, 1990) **and allow for creativity to become part of a child's self-concept** (Russ, 2014). Through interactions with others in this setting, children can also experience more general roles such as the important ability to become both a leader and a cooperative member of a team.

Canning (2013, p. 1043) states that **"the physical factors associated with creativity such as a flexible environment and reusable resources coupled with human factors such as social interactions and communication children engage in with their peers contribute to the sustainability of creativity"**. In her qualitative study, where nursery children were observed playing with natural, outdoor den building materials in a child-led but practitioner supported setting, Canning found that the children engaged in this type of play demonstrated creative thinking and social problem solving. In her article, she explain how **children's creativity is enhanced by having flexible and reusable play materials, as well as how these play materials are beneficial for both creating their own space as well as being an opportunity for developing strategies and negotiation in social play. T**he benefits seen with the natural den building materials at this nursery can be easily applied to potential benefits of the Kitcamp materials, which also contain the elements of the materials being

flexible, reusable and conducive to social play. The children in Canning's study attended a rural nursery with access to a large, secure woodland area. **As many children would not have a similar natural environment accessible to them, or considering the weather may not be conducive to outdoor play, the Kitcamp materials provide an excellent opportunity for children in many different settings to still receive the same opportunities and benefits of these types of play materials as the children in the study.**

The type of play encouraged by the Kitcamp materials would also aid in strengthening emotion regulation. The relationship between complex sociodramatic play and good emotion regulation has been reported in a number of studies (e.g., Eisenberg, 1998, 2003; Fantuzzo, Sekino, & Cohen, 2004; Lemche et al., 2003). The cognitive aspects that develop through solving 'problems', whether deciding how to put together the structure, or who will play what role in a make-believe story with the Kitcamp materials as a setting, are key in children's ability to remain focussed on a task, plan ahead to achieve goals, and control other emotions that could affect the play situation such as frustration. Being able to create a setting with the Kitcamp materials would allow children to both create a private den for themselves, or act out events that they may be working out emotionally (Bretherton, 1989), both which would have positive effects on their emotions. **Research has also linked the engagement in quality fantasy play with emotional literacy, including being able to describe emotions and understand emotions of others** (Seja & Russ, 1999), and demonstrations of empathy toward peers (Niec & Russ, 2002).

A study by Lindsey and Colwell (2013) examined how fantasy play, sociodramatic play, exercise play and 'rough and tumble' play were related to children's 'affective social competence' (AFC), which includes abilities such as emotion regulation, emotional expression and understanding the emotions of others. In their exploratory, longitudinal study, starting when children were around 4-5 years of age, they found that fantasy play, particularly sociodramatic play, predicts children's AFC in all areas of emotional development, as well as that physical play also plays a role in emotional expression and emotion regulation, though gender differences were indicated as well. **The fact that the Kitcamp materials not only encourages sociodramatic play, but physical play as well, such as in building the structures, manipulating accessories and then interacting with the structures such as with climbing, provides more opportunity for children to develop these aspects of emotion development.**

In developing their understanding of the social world, play provides a key context in which to explore social rules and relationships. Zen'Kovskii (2013, p. 45) stated, **"Play is…an indispensable means for penetrating into social life"**. Through make believe play, children become more sensitive to external pressures such as social rules (Berk, Mann, & Ogan, 2006). Pretend play encourages what Vygotsky called 'private speech' which is a 'self-talk' that helps internalise steps and rules, including social rules (Krafft & Berk, 1998). Children must also fight impulses to conform to these rules (related to their self control and emotion regulation already discussed). Time spent in complex sociodramatic play has been found to be related to socially responsible behaviours such as cleaning up after play time (Elias & Berk, 2002). As mentioned above, **negotiating actions in physical space also encourages self-awareness regarding social rules. Rules become even more important to children in the 5-8 year old range** when they are in formal education, playing more sophisticated

games that are either created by themselves or others, and becoming more active in other activities that require an understanding of rules such as organised sport.

The type of play observed by children using the Kitcamp materials indicates a setting that allows children to explore and internalise these social rules; some activities children might engage with in using the materials in a cooperative way with other children (or adults) are include: planning and then building the structure, deciding which accessories to use and how to use them, what the structure and accessories symbolise regarding the play setting and deciding roles or characters to enact a scene, as well as their own actions interacting with the materials. Physical play, which includes coordinated gross motor movements, may not usually be thought of as 'social', but the social aspect is built in, as it creates a need for children to negotiate their movements and actions in a space shared with others (Lindsey & Colwell, 2013), but also provides an opportunity for them to connect the physical with the emotional (Smith, 2010) and to learn more about emotional expressions, such as when emotional reactions are 'play' or when they are 'real' (Pellegrini & Smith, 1998).

Physical Development

Benefits for physical development supported and enhanced by the Kitcamp panels include:

- Opportunity for children to exercise both gross motor and fine motor skills
- For children who are attracted to constructive play, the large panels provide more opportunity for physical activity than smaller play materials such as blocks or Lego.
- Play materials, including accessories from the home or school or supplied, that encourage motor and perceptual coordination or different sensory experiences (note: this would be beneficial for typically developing children, but also those with special needs)
- An enriching environment in which to stimulate brain development

In addition to the many opportunities for development of cognitive, social and emotional abilities which play provides, the act of play also provides an opportunity for children to develop their gross and fine motor skills and their neuromuscular and hand-eye coordination. These skills are vital for functioning in everyday life beyond play experiences. In using the Kitcamp materials, children would be able to develop their gross motor skills through building the structures and then climbing on and through the panels and develop fine motor skills through manipulation of connecting the panels as well as through using the accessories to enhance their structure. Children will be able to engage with the physical world and become aware of how their own physical actions and manipulations can construct a play environment, such as by attaching sheets to construct awnings or sails, or balancing and steadying poles or brooms to create additional aspects of the structure.

The neutral and versatile nature of the Kitcamp system lends itself to providing benefits beyond traditional playground equipment. In Fjortoft's (2001) study of 5-7 year old children in Norway, it was found that a group of children who were given access to a natural, outdoor area showed an improvement in motor ability, particularly with balance and coordination, compared to children who were given access to a traditional school playground. One of the reasons the author theorises that the natural environment is so successful is due to the variety and creativity the setting allowed. As mentioned earlier in regards to the Canning (2013) study of the children in rural Wales who built dens, **the Kitcamp materials provide a good substitute for outdoor, natural play spaces,** because in addition to the advantages any large play equipment would provide, they allow for children to create their own playscape, creating a need for more physical manipulation and physical awareness, rather than to use what is already constructed for them. The versatility that the Kitcamp system provides, allowing children to find and incorporate household items, as well as any natural items, gives Kitcamp some of the same benefits of outdoor, natural play.

In addition to encouraging healthy motor development, the play involved with the Kitcamp materials also encourages physical activity. With childhood obesity becoming a greater concern for developing and developed countries, with an estimated 42 million children under 5 considered overweight (WHO, 2010, as cited in Lanigan, 2011), the encouragement of physical activity through play is vital to children's health. Research has found that parental involvement in play can increase and improve physical activity (Beets et al, 2007). T**he Kitcamp materials provide an engaging alternative to more sedentary play, such as**

gaming on tablets or gaming devices, especially for children attracted to constructive play, as the manipulation of smaller materials, such as involved with Lego or model building, does not incorporate as much physical activity.

Another area of physical changes influenced by play, and which would be enhanced by interacting with the Kitcamp materials is neurological, or brain, development. In infancy, and in fact in the first 5 years, a child's brain changes dramatically both in size, growing from 350 to 400 grams at birth to about 1,250 grams by 5 years of age, and with the number and connectivity of brain cells, or neurons (Keil, 2014). Research with animal subjects has found that a deprivation of a stimulating environment can have a profound influence on neural development (Elkind, 2001, as cited in Shaffer & Kipp, 2010), and when the environment is enhanced with stimulation of both objects and other animals, the neural connections are enhanced (Greenough & Black, 1992; Rosenzweig, 1984, as cited in Shaffer & Kipp, 2010). The effects of how play experiences such as the Kitcamp materials can affect brain development would be seen in the behavioural changes regarding cognitive, social and emotional abilities as previously described. Research in developmental neuropsychology shows that early childhood is a vital time for neural development, and so there is a great need for play materials that enhance these areas of functioning.

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