The Work of Children:

Creativity, Play, and the Development of

Skillful Decision-Making in Elementary Education

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Abstract

Play in early childhood is essential for the development of cognition; it is an activity which involves little risk, and therefore allows children to safely test and explore possibilities. In play, children deliberately make obstacles and surprises for themselves which prompt divergent thinking and the generation of creative solutions. The skills developed through risk-free play help children develop probabilistic thinking and associated decision-making skills which can be applied to non-playful contexts. Suggestions for practice in early childhood environments include the provision of resources for stimulating play, introduction of play-based learning, and enriching adult guidance in play.

Keywords: *play, creativity, decision education, early childhood*

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Introduction

Vivian Gussin Paley, teacher-researcher and MacArthur Fellow, often describes the play of children in her writing and research (Paley, 1986; Paley, 2009). Her work includes transcriptions of dialogue between young children and champions their storytelling as essential, describing the role of the teacher as primarily one who listens, questions, and wonders about the inner world of the child:

> "We are, all of us, the actors trying to find the meaning of the scenes in which we find ourselves. The scripts are not yet fully written, so we must listen with curiosity and great care to the main characters who are, of course, the children" (Paley, 1986, p. 131).

Paley's curiosity about the play of children led her to insightful conclusions about the nature of playfulness, and elevated play to a level of importance and necessity. The study of children's play makes evident the many benefits and areas of inquiry still unexplored.

One relevant area of play research is within the realm of Decision Education, or the teaching and learning of the skills necessary for judgment and decision formation (Alliance for Decision Education, 2023). Decision Education includes four Learning Domains within K-12 education: thinking probabilistically, valuing and applying rationality, structuring decisions, and recognizing and resisting cognitive biases (Alliance for Decision Education, 2023). These domains include sub-skills that expand upon the key theme of skillful decision-making. Children learn to make judgements using prior information, or schema, they construct from past experiences (Anderson, 1984). These experiences are often acquired during playful exploration,

in which children test the laws of physics, engage socially with peers, and solve problems of their own creation (Brown, 2010). In play, children deliberately make obstacles and surprises for themselves which prompt the generation of novel solutions (Bateson, Bateson, & Martin, 2013). They have opportunities to experiment in a risk-free environment, learning decision-making skills that can be applied in non-playful contexts. The opportunities generated through play help children to develop probabilistic thinking, creativity, divergent problem-solving ability, and associated decision-making skills.

Play and Probabilistic Thinking

Defining *play* poses a unique challenge, as its appearance is as diverse as the children involved. Janet Moyles (2014) likens the study of play to "trying to seize bubbles, for every time there appears to be something to hold on to, its ephemeral nature disallows it being grasped" (p. 16). However, researchers have identified apparent themes that transcend individual differences in activity. Garvey (1990) and Brown (2010) suggest that play has four essential elements; first, it must be pleasurable and enjoyable, and have no extrinsic goals. It must be spontaneous and voluntary, and require active participation on the part of the player (Brown, 2010; Garvey, 1990). Play poses benefits across every domain of child development; it facilitates the healthy development of synaptic transmissions, fine and gross motor skills, language, and social-emotional competencies (Anderson-McNamee & Bailey, 2010). A longitudinal study of twenty-six early childhood classrooms suggested that children who scored well on an assessment of mature play, or play involving extended make-believe, also performed better in self-regulation, literacy, and numeracy (Germeroth et al., 2019).

The benefits of play extend to the development of skillful decision making in young children, specifically in the area of probabilistic thinking. A child who thinks probabilistically

can predict future outcomes based on current understanding, numeracy, and the risks and expected values of decisions (Alliance for Decision Education, 2023). These competencies begin with a willingness to identify areas of uncertainty, and to seek additional data to better evaluate possibilities (Alliance for Decision Education, 2023).

Children are quite skilled at seeking additional information; any individual who has spent time with a young child knows that the word "why" is among the most common of their questions. Play is a child's primary opportunity to seek answers, and activities that are initiated for pleasure often yield cognitive benefits. A child repeatedly dropping a rattle is learning that it always falls to the ground; drumming on pots and pans leads to the discovery that the force exerted on an object is proportional to the volume of noise produced (Hirsh-Pasek, Golinkoff, & Eyer, 2004). These experiments are scientific in nature as they acknowledge uncertainty and seek to illuminate it with new understandings. The child who has learned through play that a rattle will fall to the ground can now predict what will happen when a bowl slides too close to the edge of a table and make a decision in response; this probabilistic thinking extends through every area relevant to the knowledge gained in play.

Even in the first year of life, infants demonstrate inferencing skills regarding objects encountered in play (Hirsh-Pasek, Golinkoff, & Eyer, 2004). A study of 9- to 16-month-old infants revealed that when given the opportunity to play with a toy, infants expected that interactions with similar toys would produce similar outcomes (Baldwin, Markman, & Melartin, 1993). Infants were encouraged to play with a horn that produced sound upon squeezing a bulb. After removing the sound-making horn, the children were given horns with different sizes and shapes; the infants immediately squeezed the bulbs of the new horns, and tried especially hard to squeeze the horns that had been deliberately manipulated not to produce sound (Baldwin,

Markman, & Melartin, 1993). Their behavior indicates that they had made an inductive inference about properties of similar objects and could predict the use of an object with which they had not interacted. Previous experiences had informed their predictions about future outcomes.

Young children are learning to function in a world with information that is often incomplete and imperfect; they must make informed predictions based upon what is currently known (Alliance for Decision Education, 2023). Play allows children to gain additional understandings and support their probabilistic thinking by increasing their background knowledge, supporting future inferences and predictions (Anderson-McNamee & Bailey, 2010; Baldwin, Markman, & Melartin, 1993).

Creativity and Innovation in Play

Play in young children is related to the development and nurturing of creativity. Bateson, Bateson, and Martin (2013) distinguish creativity from innovation; the former is the generation of novel ideas or activities, generally by recombining existing ideas or applying them in different contexts, whereas innovation requires that those ideas have practical application and are widely accepted by others. Play provides ample opportunities for both creativity and innovation, as children are presented with novel materials and often limited formal guidance (Bateson, Bateson, & Martin, 2013). Upon the formulation of new ideas, children engaged in social play may share their discoveries with others. While innovation is arguably more widespread than the distribution of ideas among small groups of children, social play may serve as the impetus for creativity that drives innovation later in life.

Creativity is multifaceted and is built upon a “creative potential,” or the inherent and unseen ability in an individual to produce original work (Besançon, Lubart, & Barbot, 2013). Creative potential is derived from aspects of motivation, personality, resources, and cognition

involved in producing creative work; this unique combination of qualities produces a range of high to low potentials for creativity (Lubart, Zenasni, & Barbot, 2013). A significant factor in creative potential yielding achievement is the provision of repeated opportunities to engage in creative work (Barbot, Besançon, & Lubart, 2015).

Teachers and caregivers can promote skillful decision-making and judgment formation in young children by encouraging play that involves problem-solving, open-ended materials, and imagination. In an influential study by Sylva, Bruner, and Genova (1976), children in the intervention group were given the opportunity to play with a stick-like tool. When later asked to acquire a piece of chalk on the ground some distance away without leaving their seats, children who had been first permitted to play with the stick tools were overwhelmingly successful; children in the control group who did not play with the sticks first showed high incidence of failure or acquiescence (Sylva, Bruner, & Genova, 1976). Play is closely associated with the development of creative problem-solving, and children benefit from environments that permit discovery, exploration, and play (Mayesky, 2009). In play, children deliberately make obstacles and surprises for themselves; creative decision-making emerges as students consider multiple options and select one they believe will yield success or an optimal experience (Bateson, Bateson, & Martin, 2013; Csikszentmihalyi, 2015; Hirsh-Pasek, Golinkoff, & Eyer, 2004).

In making adept decisions, children are more likely to consider multiple options when their creative potential is nurtured. Given the opportunity to let the mind playfully roam, they may discover new patterns, critically assess novelties, and experiment with approaches to solving problems (Csikszentmihalyi, 2015). Csikszentmihalyi (2015) asserts that “creative individuals do not rush to define the nature of problems; they look at the situation from various angles first and leave the formulation undetermined for a long time. They consider different causes and

reasons" (p. 367). This kind of self-direction is a facet of Decision Education, as it provides children with opportunities to build their own decision-making process and consider unique alternatives; the quality of a decision is related to the alternative options considered (The Decision Education Foundation, 2023). It also encourages the development of sound reasoning, as students can logically defend choices and explain why certain alternatives were ultimately rejected (The Decision Education Foundation, 2023). Play enhances creative thinking, and creative thinking yields more informed decisions; children encouraged to play are better situated to engage with the world as informed, rational individuals.

Implications for Practice

To enhance skillful decision-making and creativity through play, teachers and caregivers can take actionable steps to support young children. Additional research is also necessary to further illuminate the benefits of play, the development of creative potential, and the enactment of Decision Education in K-12 environments. The following suggestions for practice include existing methodologies for education that emphasize play and decision-making, and generalized practices to apply to any learning environment.

Educational Models

The Montessori Method. Recognizing the benefits, many educational models attempt to utilize children's play for academic purposes. Maria Montessori created Montessori education in consideration of the discovery and development that occurs through play. Specifically during pre-kindergarten, creative thinking emerges when children are presented with novel challenges and materials, and opportunities to classify objects, seek causal relationships, and identify contradictions (Xamidovna, 2021). Montessori's method of education suggests that the teacher's role is to design an environment to promote child-directed discovery of foundational academic

knowledge and skills (Besançon & Lubart, 2008). Montessori designed sets of objects intended for manipulation, which in the early years are often imitations of real-life tools; activities may involve pouring different materials, using tongs or tweezers, cleaning, gardening, or other practical skills to be practiced individually or in small groups during a 3-hour 'work cycle' (Marshall, 2017). This self-directed play, with an intentional environment created by the teacher, is intended to provide foundational academic skills.

Besançon & Lubart (2008) conducted a longitudinal study to identify relationships between models of education and aspects of creativity. Participants were seven to twelve years old and were drawn from a Montessori school and two "conventional" schools. Among other assessments, they were administered divergent thinking tasks requiring them to devise uses for a cardboard box, make more interesting a plain elephant toy, and use pairs of parallel lines to create numerous drawings (Besançon & Lubart, 2008). Children educated in Montessori classrooms scored higher on tests of creative thinking than children educated in conventional classrooms. While the authors describe the limitations to the study's scope and do not make significant attempts to identify specific differences between the learning experiences that could contribute to their findings, differences in performance were observed (Besançon & Lubart, 2008; Marshall, 2017).

Play-Based Learning. Play-Based Learning is less formally defined than Montessori education, but still involves the intentional use of play in educational experiences. Free play, which is self-directed by children, is most utilized to facilitate the development of social skills, self-regulation, and conflict resolution (Danniels & Pyle, 2018). Children given the opportunity to play socially or individually can engage in decision-making and creative problem-solving that promotes cognitive development (Hirsh-Pasek, Golinkoff, & Eyer, 2004). However, one

distinction between free-play and Play-Based Learning is the intentionally selected materials and a teacher-selected goal for the play activity (Danniels & Pyle, 2018).

Guided-play involves the teacher or adult more directly and is more immediately applicable to academic learning; free-play alone may not be sufficient for more complex academic learning to occur, and therefore teachers must lead pre-designed games or incorporate learning targets into existing activities (Danniels & Pyle, 2018). Teachers can intentionally introduce and scaffold play to lead children toward the academic objectives, and ask prompting questions to guide their thinking (Miller, 2020; Pyle & Bigelow, 2015). For example, a mathematics educator may guide students' learning of number sense, money, and social competencies by creating a classroom "store" and scaffolding an intentional play experience (Taylor & Boyer, 2020). Play-Based Learning builds upon children's desire to play and creates learning opportunities which are more formally guided.

General Practices for Learning Environments

In any learning environment, teachers and caregivers can support children's creativity and skillful decision-making by providing resources for stimulating play (Hirsh-Pasek, Golinkoff, & Eyer, 2004). Play is most often creative and fruitful when it is unstructured and spontaneous on the part of the child, as it sparks imagination and divergent thinking (Ackermann, Garuntlrtt, & Weckstrom, 2009). Providing open-ended or recycled items allows children to take risks and grow in confidence; there is no right or wrong way to use materials, a condition which lends itself to curiosity, divergent thinking, and originality (Johnson et al., 2019).

One example can be seen in the development of "makerspaces," in which children may work individually or collaboratively to create a product of their invention (Mersand, 2021). The

environment can prompt connections across curricular areas, combinations which encourage creativity and subsequent innovation (Martinez & Stager, 2019). Makerspaces often include aspects of art, engineering, or technology, but can comprise numerous areas of inquiry (Mersand, 2021). They invite conversation and collaborative efforts, enabling children to exchange ideas and support one other's decision-making. Makerspaces have been shown to promote skills and knowledge that are increasingly important in technologized societies and environments (Marsh et al, 2019).

In each educational method or practice, the agency of children should be paramount; educators and caregivers must first see the importance of children's play as a means of learning and developing, and provide the necessary resources and scaffolding to make play fruitful. Many early education programs tend to prioritize formal academic learning, introducing a competitive and highly structured environment very early in a child's life; the result is often a loss of opportunities for active play and creative expression (Guirguis, 2018). Some classrooms emphasize technological games that are passive and individualized, limiting opportunities for students' social interaction and imaginative engagement (Guirguis, 2018). While such structured learning experiences may intend to facilitate academic growth, they neglect to acknowledge the necessity of child-directed exploration (Guirguis, 2018; Johnson et al, 2019). While play can be a means to an end—that is, academic learning—it is also an end unto itself. Rather than focus solely on how play can prompt academic achievement, Johnson et al (2019) pose the suggestion: "We can [instead] ask how literacy and early math and other learning activities can serve as a means to promote playfulness, imagination and creativity in children" (p. 271).

The True Purpose of Play

The phrase, "play is the work of childhood" has been attributed to numerous sources and theorists in the field of child development (Paley, 2009). While this expression acknowledges the necessity of play and elevates it to the status of importance to which adults attribute work, it does perhaps provide a misleading depiction of why children play at all. Work involves tasks done with intention, to achieve a predetermined purpose. In that sense, play is not the work of a child—play is *play*, something to be enjoyed and cherished. In discussing the benefits of play, we tend to seek ways to justify allowing children to play, as a defense against the more "rigorous" academic work our systems of education prioritize. However when most of us look back on our own childhoods, we do not remember how we learned to think probabilistically, how we developed divergent thinking when presented with novel challenges, how we experimented with the roles of society. We remember having fun.

Stuart Brown's (2010) definition of play includes seven components, the first of which is this: play is inherently purposeless. Play does not have any survival value, it does not help a person acquire food or money, it does not have practical purposes. It is done for its own sake (Brown, 2010). A child at play is a child experiencing joy.

In reviewing the literature, we must also remember this essentiality: that while children's play is beneficial for their development of skills and aptitudes, it is paramount in the development of the self. Where children create problems and explore solutions, they learn that problems they do not create can also be solved. Where children learn to evaluate probabilities and ask questions, they also nurture a spirit of joyful curiosity. In play, children inhabit a world of their own creation, one that explores the things they do not understand about the world at large. Paulo Friere (2000) describes this curiosity as the heart of the creativity that drives us

forward and brings us to life: “Curiosity as a restless questioning, as movement toward the revelation of something hidden…constitutes an integral part of the phenomenon of being alive. There could be no creativity without the curiosity that moves us and sets us impatiently before a world that we did not make, to add to it something of our own making” (p. 37). May we nurture this curiosity in children through the encouragement of joyful and imaginative play.

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