



**Science in Support of Play:  
The Case for Play-Based Preschool Programs**

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The growing emphasis on standards, assessment, and accountability in preschool education has led to an unfortunate trend in classroom practice—the resurgence of highly didactic academic programs for three and four year olds. Although the direct training of preschoolers is not new (Bereiter & Engelmann, 1961), it has become particularly prevalent since the passage of the No Child Left Behind Act in 2002. Among the casualties of this move toward what Sutton-Smith (1999) calls, “cognitive child labor,” is children’s play. The main concern about the disappearance of classroom play is the impact it will have on emotional areas of development. What is childhood without play? How will children gain mastery over troublesome events or make sense of puzzling situations in their lives without play opportunities? However, the focus of this paper is on how removing play from preschool will actually undermine the intended outcomes of achievement-oriented programs—that is, the acquisition of literacy, numeracy, self-regulation, and other cognitive competencies. Play is necessary for success in school, I will argue. An extensive body of research supports this claim.

**Early Research on Play-Based Curriculum Models**

Long ago, classic behaviorist researchers posited a “cultural-deficit model” of early development that lingers to this day (Becker, Engelmann, & Camine, 1981; Bereiter &

Engelmann, 1961; Bushell, 1970). The theory holds that children from families of low socioeconomic status suffer major deficits in language and other areas, due to environmental deprivation. The solution? These authors proposed a variety curriculum models to teach these lagging skills to young children directly. If adults present language and other abilities in an organized, step-by-step manner, the thinking goes, children will learn. Play in these models was relegated to a relatively low status—usually being used as a reward for positive behavior, after learning periods had occurred. Preliminary studies of some of these play-less approaches produced encouraging results (Becker & Gersten, 1982; Meyer, Gersten, & Gutkin, 1983), though effects were found to be relatively short-lived, usually disappearing by grade 3 or 4 (Stipek, Feiler, Daniels, & Milburn, 1995). In addition, a reexamination of some data on direct instruction revealed that many individual preschool children did not enjoy such academic benefits, even in the short run (Betancourt & Zeiler, 1971).

Decades of research, following these early studies, indicates that preschool models with substantial play components lead to academic outcomes that are at least equivalent and, in most cases, greater than those of direct instructional models. The most well-known of these studies was a longitudinal investigation of High Scope, a play-based preschool curriculum. Children attending a High Scope classroom for a single year were found to have higher levels of academic and social competence in later childhood and adolescence than those not attending preschool (Schweinhart & Weikart, 1996). At age 40, they showed higher earnings, higher employment rates, fewer incarcerations, and higher educational attainment (Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005).

Would non-play programs have resulted in these same outcomes? Shorter-term studies suggest otherwise. Countless investigations have shown that preschool classrooms categorized as

“non-didactic,” “play-based,” “developmentally appropriate,” or “child-initiated” lead to greater academic outcomes in elementary and middle school than those considered “didactic” or “teacher-directed” (Burts, Hart, Charlesworth, & DeWolf, 1993; Frede & Barnett, 1992; Marcon, 1993, 1999, 2000, 2002; Miller & Bizzell, 1984; Miller & Dyer, 1975). These studies have revealed other benefits for children attending play-based preschools, when compared with those of highly academic ones: lower retention rates and placement in special education in elementary school, greater success in transitioning from the early to middle grades, and a higher level of involvement in extracurricular activities in middle school (Marcon, 2000, 2001). One study found that children attending non-didactic preschools experienced lower levels of classroom stress than those in teacher-directed programs (Burts, Hart, Charlesworth, Fleege, Mosley, & Thomasson, 1992).

Boys living in poverty have been found to receive particular academic and social benefit from play-based, non-didactic programs. Miller and Bizell (1984) found that low SES boys who attended such preschools received higher scores on measures of math and reading in middle school than boys receiving more direct instruction. Burts et al. (1992) report that boys—particularly those of low socioeconomic status--show higher levels of stress in didactic programs than girls. These authors speculate that boys, who have generally slower rates of development, face greater difficulties in learning and social adjustment in programs where quiet, verbal instruction is the norm. This supposition is supported by research indicating that children with special needs who are relatively low-performing at pretest do less well in direct instructional programs than those who are higher functioning (Miller & Bizzel, 1984; Mills, Dale, Cole, & Jenkins, 1995).

Do these studies of program models verify that play is crucial to the success of preschool programs? Not fully; there are many other features of non-didactic programs that could explain such outcomes. However, this research does demonstrate that models with substantial play components can have a positive and lasting impact on later academic performance. These findings should give pause to educators and policy makers contemplating a shift to direct instructional models solely to meet academic standards.

### **Research on Play and Academic Performance**

Numerous studies have explored the impact of play, itself, on young children's development. More and more of these investigations are documenting the impact of play on specific academic competencies. Research suggests that play influences school achievement in three ways—through direct, indirect, and adult-mediated effects.

#### ***Direct Effects of Play***

Some studies have shown that play includes thinking and social interaction that lead directly to academic learning. For example, the frequency and complexity of block play in preschool was found to be associated with mathematical performance in high school, including higher scores on the math subtest of the SATs (Wolfgang, Standard, & Jones, 2001). Although this was correlational research, with its many limitations, these authors posit a causal interpretation: early play with blocks, which includes concrete experience with Euclidean space, directly enhances later mathematical thinking.

Researchers report that other kinds of play—particularly make believe—include rich opportunities to use language and literacy. Several studies have demonstrated that play inspires children to use more frequent and complex oral language. In play, children tend to speak longer, more syntactically complex sentences and use more words (Cohen & Uhry, 2007; [Fekonja](#),

Umek, & Marjanovič, Kranjc, 2005). One explanation for these findings is that, in make-believe, children use their most mature, adult-like utterances to carry out grown up roles. Another possibility is that children must give more detail, more elaborate explanations, and include less egocentric communication when they talk to peers, who are less likely to understand their play ideas. Adults are very good at interpreting even shreds of child language; peers have more trouble understanding these and often say so: “I don’t know what you’re talking about!”

An important finding of some studies is that this relationship between play and elaborate language is most pronounced for children with special needs. Studies have found that children with developmental and language delays, perceptual impairments, and even autism speak more often and in more complex utterances when playing (Brown, Richards, & Bortoli, 2001; Craig-Unkefer & Kaiser, 2002; DeKroon & Kyte, 2002; Ingersoll & Schreibman, 2006; Neeley, Neeley, Justen, & Tipton-Sumner, 2001; Schepis, 2003). Children who are learning a second language also benefit from play in this way. In one study, Mexican-American 4-year-olds, who were learning English, were found to use more elaborate language, in both English and Spanish, when engaged in free play (Riojas-Cortez, 2000).

Does this increase in language complexity during play lead to language learning? There is evidence to suggest this is so. In one study, the quality of children’s play in the first year of a Head Start program was found to predict scores on formal language assessments in the second year (Mendez, J., & Fogel, L. 2002). In another investigation, pretend play ability was found to be one of the best predictors of language competence in later childhood (Lewis, Boucher, Lupton, & Watson, 2000).

Research also suggests that play prepares young children for reading and writing in elementary school. Several classic literacy play studies have shown that children incorporate

writing into their play (Enz & Christie, 1997; Neuman & Roskos, 1991, 1992, 1993, 1997; Vukelich, 1991, 1994). In these studies, preschool aged children were provided with literacy props—books, writing implements, and environmental print—within a pretend play area. Over time, they were found to engage in much literacy activity and to acquire a better understanding of print.

Later studies have shown that play—even without literacy play props—enhances children’s competence in reading and writing. One researcher found that pretend play experiences led to increases in children’s *phonemic awareness*—an ability to differentiate speech sounds (Constantine, 2001). Phonemic awareness in preschool is one of the best indicators we have about how well a child will learn to read. It is not surprising, then, that early play abilities are related to reading scores many years later (Hanline, Milton, & Phelps, 2009).

Studies have also linked games in preschool play to academic achievement. Board games were discovered to enhance counting ability in low SES preschool children—particularly if the pathways of the board game were straight, rather than circular (Ramani & Siegler, 2008a, 2008b). Games and problem-solving experiences on the computer have also been linked to later math abilities (Clements & Samara, 2002).

Taken as a whole, these studies provide persuasive evidence that play, in and of itself—without special adult instruction, materials, or academic interventions—promotes later school achievement.

### ***Indirect Effects***

There is also research evidence that play has an indirect effect on children’s later academic achievement by fostering several critical underlying cognitive processes that support

learning. In play, children acquire the ability to use objects or actions to stand for things which aren't present (Taylor, Cartwright, & Carlson, 1993; Fenson, 1986; Trawick-Smith, 1990). A block becomes a toy broom, a child becomes a firefighter, a wolf, or a mother. The type of thinking children use in this playful transformation of the real into the imaginary is of the same kind that they need to associate words and numbers with ideas--symbolic thought. This relationship between play and achievement is an indirect one: play enhances symbolic thought which aids academic learning. Research confirms these relationships: the ability to perform symbolic play transformations in preschool is related to both measures of basic symbolic thinking and later achievement in reading and math in the elementary years (Hanline, Milton, & Phelps, 2008).

Another indirect play effect is related to self-regulation—the ability to control ones actions and thinking (Verbruggen & Logan, 2009). Preschoolers who play more often or in more complex ways score higher on various measures of self-regulation (Elias & Berk, 2001; Fantuzzo, Sekino, & Cohen, 2004; Leong & Bodrova, 1998; Lindsey & Colwell, 2003; McCabe, Rebello-Britto, Hernandez, & Brooks-Gunn, 2004; Verbruggen & Logan, 2009). Those who attend preschool models that emphasize play have also been found to score higher on these measures (Copple, 2002; Barnett, Jung, Yarosz, Thomas, & Hornbeck, 2008). Several explanations of these findings have been proposed. In play, children practice regulating their own behavior in many different ways. They choose what they will play and for how long. They make decisions about which play impulses they will follow (e.g., suddenly interjecting a threatening tornado into a play theme), and which ones to inhibit (e.g., emitting a too-loud cheer upon winning a board game). They focus their attention on a particular play interest and resist the distractions of other children playing loudly nearby. A sign that children are regulating their

thinking and behavior in play is that they often talk to themselves. Confronted with play tasks that require special concentration or effort, they often speak aloud about their own thinking and action (Berk, 2001; Berk, Mann, & Ogan, 2006; Patrick & Abravanel, 2000).

Another way that play promotes self-regulation is that it helps children to learn about how their minds work. If they can figure out what it means to *remember*, *pay attention*, or *concentrate*, they can better control these processes (Carlson, Mandell, & Williams, 2004). As children play, they spend a great deal of time reflecting on their own thinking and that of others. When playing a guessing game, for example, a child might think, “What are other players *thinking* about right now?” In a game of “Simon Says” a child might consider whether players are *paying attention*, so she can trick them into moving when she hasn’t said, “Simon Says.” In pretend play, a child might announce, “Let’s say you don’t *know* that the baby’s sick” or “Let’s pretend I *forget* to feed the puppy.” In each case the child is thinking about how the brain works. This ability to understand internal mental processes is called a *theory of the mind*. Knowledge of thinking, attention, and remembering helps children guide these processes in learning situations. Research shows that children’s play interactions with peers help them acquire a theory of the mind (Lillard, 2007; Perner, Ruffman, & Leekham, 1994). These self-regulatory benefits of play are another indirect effect. Play enhances self-regulation; research shows that self-regulation is related to academic achievement (Ponitz, McClelland, Matthews, & Frederick, 2009).

### ***Adult-Mediated Effects***

A final way that play promotes achievement is by bringing teachers and children together in interactions that support learning. For decades, researchers have demonstrated that adult intervention in children’s activities can promote specific play abilities, which, in turn, enhance social, cognitive, and language development (Bennet, Wood, & Rodgers, 1997; Connelly &



Doyle, 1984; Smilansky & Shefatya, 1990; Thorp, Stahmer, & Schreibman, 1995). Recent work suggests that sensitive, experienced, and educated teachers and parents naturally interact with children at play in ways that enhance various aspects of learning (Bodrova & Leong, 2006; Lantz, Nelson, & Loftin, 2004; Roach, Barratt, Miller, and Leavitt, 1998; Schuler & Wolfberg, 2000; Tallmadge & Barkley, 1983; Trawick-Smith, 1994, 1998; Trawick-Smith & Tzurgot, in press; Winsler, Diaz, McCarthy, Atencio, & Chabay, 1999). Experimental studies have shown that teachers and parents of children with special needs can learn to interact with children in these ways; such training has positive effects on children's later school achievement and social adjustment (File, 1994; Girolametto, Hoaken, & Weitzman, 2000; Kohler, Anthony, Steighner, & Hoyson, 2001; Kok, Kong, & Bernard-Opitz, 2002; Skellinger & Hill, 1994; Wilcox-Herzog & Kontos, 1998; Wolock, 1990); Wolfberg & Schuler, 1993; Young, 1997).

In nearly all of these studies, one particular kind of adult interaction was found to have the greatest impact on child outcomes—scaffolding. This is an approach in which adults tailor their involvement in play to the needs of individual children in particular situations and at particular periods in development (Bodrova & Leong, 2006; Trawick-Smith, 1994, 1998; Vygotsky, 1976). If children of a certain developmental level and in a certain play context are able to play independently and in useful and meaningful ways, no intervention should be attempted, from this view. If children cannot play at all or are seriously limited in their play by challenging conditions or some insurmountable environmental obstacle a more direct method of intervention might be warranted. A situation in which adults can most effectively enhance development, from this perspective, is when children are in Vygotsky's (1976) *zone of proximal development*—a time when children can play independently, with just a little indirect guidance from an adult: a question, a hint, or a subtle prompt.

Could non-play interactions between adults and children in preschools lead to the same positive results? Studies have shown that adult interactions with young children in play are more conversational, include more questions to individual children, invite more child verbalizations, involve more decontextualized speech, and show greater adult attentiveness, than interactions in whole or small group instruction (Dickinson, 1991; Kontos, 1998; Williams, 1994; Yifat & Zadunaisky-Ehrlich, 2008). One benefit of play-based programs, then, is that they heighten the quality of adult interactions to support learning.

### **Conclusion**

Research findings on play and play-based preschools have remained consistent over many decades: The frequency and complexity of play in the early years predict later school achievement. Given this preponderance of scientific evidence supporting play, why are some school districts and centers implementing highly didactic preschool programs? Several social and political influences may explain this trend. First, there is understandable alarm about the growing achievement gap between children of low income and higher income families. The logical (though faulty) assumption is that children who are not learning should be taught directly, efficiently, and sequentially, even in the early years. Direct instruction advocates have argued that this is the best way to provide children living in poverty with the learning experiences that middle class children have enjoyed in their homes (Bereiter & Engelmann, 1966). Interestingly, what middle class children experience within their families is just the opposite--spontaneous, informal, conversational, authentic, literacy-rich, and *playful* interaction (Pungello et al., 2009; Tudge et al., 2001). As demonstrated in studies cited in this review, children of low SES, particularly boys, are likely to fare better in such playful settings (Burts et al., 1992; Frede & Barnett, 1992; Miller and Bizell, 1984).

A second explanation for the trend toward direct instruction in preschool can be found within the early childhood education profession, itself. Over the years, well-designed play programs have been confused with *laissez faire* teaching. Many child care and preschool programs—touted as highly play-oriented—have lacked thoughtful planning, implementation, and assessment. A sit-back-and-watch-development-occur approach is still prevalent. When such classrooms fail to produce results, administrators and policy makers blame play. For play to have its greatest impact, it must be situated within a theory-grounded, carefully planned, and assessment-based classroom.

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