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Affordance of Cognitive Play by Natural and Manufactured Elements and Settings in Preschool Outdoor Learning Environments.

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Existing research demonstrates that characteristics of the physical environment may hinder or develop children's play behavior; in particular, that diverse outdoor environments increase motivation to play, improving children's physical, social, and cognitive development. However, there is a lack of knowledge about how specific outdoor physical environments in preschools stimulate children's play. Cultural changes in lifestyles have increased the number of working parents that now enroll their children in childcare centers, where they spend the majority of their waking hours year round. Thus, providers have an obligation to ensure that childcare environments are high quality settings not only for healthy child development, but also to serve as places for learning through play. Research is required to understand how the physical features of preschools, both indoors and outdoors can support this goal. Existing research suggests that the experience of nature may have a beneficial effect on children's development, but further research is needed to understand how specific natural features and settings within outdoor preschool settings can contribute to children's play, learning, and development. The single case study reported here uses a mixed-method approach aimed at understanding the role of the designed built environment of outdoor preschool settings for supporting cognitive play behavior affordances. The research site is located in the Research Triangle Park region of North Carolina. This study examined three outdoor learning environment zones: a zone close to the classrooms with predominantly manufactured settings, a second zone featuring mixed natural and manufactured settings, and a third zone containing predominantly natural settings. Theories of affordance and behavior setting distinguished the functional properties of these outdoor environments. Independent variables included zones (manufactured, mixed, natural), behavior settings (manufactured, mixed, natural), and elements (manufactured fixed, manufactured loose, natural fixed, and natural loose). Dependent variables included children's cognitive play behaviors (functional, constructive, exploratory, dramatic, and games with rules). Data collection included behavior mapping as the quantitative method. Thirty-six children were coded for their cognitive play behaviors while interacting with elements and behavior settings in each zone. Sixteen rounds of observation were conducted in each zone, resulting in 6801 data points. Qualitative methods included photo preferences, drawings, and interviews; a sub-sample of 22 four-to-five year old children participated in the qualitative portion of the study. In addition, the four preschool classroom teachers of the observed children were interviewed to assess their perceptions and educational understanding of the role of outdoor play in different zones for children's play and development. The findings indicate that the natural zone provided the main opportunities for constructive, exploratory, and dramatic play. Further, mixed zones afforded the most functional, exploratory, and games with rules play. The results imply how natural and mixed settings, such as the trees, hills, or sand areas, provide opportunities for a diverse range of cognitive play. The results suggest that mixed settings have the potential for affording functional play behaviors. Children themselves appreciated the natural and mixed settings for their different cognitive play opportunities. Results suggest that manufactured fixed elements support children's functional and dramatic play behaviors (for example, the complex manufactured structure or the "green tube"). Further, inclusion of manufactured loose and natural loose elements encouraged constructive play (including sand, shovels, and buckets). The combination of methods showed that natural loose elements (sticks, leaves, dirt) motivated children's constructive, exploratory, and dramatic play opportunities. Finally, natural fixed elements created behavior settings that included many natural loose elements, such as sticks, leaves, and seeds, that supported children's exploratory and dramatic play. The primary conclusion of the study is that diverse elements and behavior settings afford varied cognitive play opportunities for children. The study provides valuable information for administrators, landscape designers, and policymakers to guide developing outdoor preschool settings that stimulate children's cognitive play. Limitations of the study include the focusing on a single case, challenges for coding cognitive play behaviors, small sample size, and short memory spans of children. Future research is needed to compare different preschool outdoor learning environments in varied socio-economic contexts that have diverse settings and elements affording cognitive play. Employing a longitudinal research approach and controlling for children's cognitive development can produce a more robust support for this study.