

# “I Wanna Play in Here!”: An Observational Investigation of Childhood Play in Indoor and Outdoor Exhibits



Kimberly E. Marble, Courtney L. Ball, Janet J. Boseovski, Stuart Marcovitch, Kathleen M. Bettencourt, & Jessica S. Caporaso  
University of North Carolina at Greensboro, United States



## Introduction

- Childhood play contributes greatly to cognitive and social skills (Rivkin, 2000), but there are key differences in the structure, quality, and educational value of indoor versus outdoor play (Bixler, Floyd, & Hammitt, 2002).
- Outdoor play positively impacts children’s physical development and appreciation for nature, while indoor play provides structured activities and technological experiences (Ceglowski, 1997).
- One question that remains is how play-based museum exhibits scaffold these benefits and parent-child interest in educational play.
- We examined parent-child play at one indoor and one outdoor play-based exhibit at a science center.

## Method

- 45 3- to 9-year-olds ( $M = 5.18$  years,  $SD = 22.21$  months, 26 females) and their parents were recruited from either an outdoor agricultural exhibit featuring live animals or an indoor nautical exhibit featuring motion-operated activities (see Figure 1).
- Dyads spent as much time as desired at the exhibit ( $M = 20.16$  minutes) while researchers observed from a distance.
- One researcher recorded the frequency and duration of dyadic engagement with each exhibit area, and the second recorded play behaviors.
- Three trained assistants familiar with both exhibits reliably classified each exhibit area according to *Design, Play Type, Play Structure, and Skills Cultivated* (see Table 1).

Figure 1. Exhibit and/or dyad photos



**Indoor and outdoor science museum exhibits share similar designs but promote different types of play-based learning. Outdoor exhibits may encourage more opportunities for parent-child engagement during museum visits.**

## Discussion

- These findings suggest that indoor and outdoor play exhibits share similar designs but promote different play structures and skills. Consistent with reported trends (Clements, 2004), indoor engagement with technology-based play was more frequent than outdoor, active play.
- However, these findings suggest that outdoor exhibits may encourage more social play than indoor exhibits and therefore provide valuable opportunities for joint parent-child engagement in play-based-learning.
- It will be important to understand how to harness the distinct benefits of outdoor play-based learning (e.g., Dowdell, Gray, & Malone, 2011) as well as those benefits associated with typical indoor experiences (i.e., technology use, see Oliemat, Ihmeideh, & Alkhaldeh, 2018) to motivate learning in science museums and other educational settings.

**References:**  
 Bixler, R. D., Floyd, M. F., & Hammitt, W. E. (2002). Environmental socialization: Quantitative tests of the childhood play hypothesis. *Environment and behavior*, 34(6), 795-818.  
 Ceglowski, D. (1997). Understanding and building upon children’s perceptions of play activities in early childhood programs. *Early Childhood Education Journal*, 25(2), 107-112.  
 Clements, R. (2004). An investigation of the status of outdoor play. *Contemporary issues in early childhood*, 5(1), 68-80.  
 Dowdell, K., Gray, T., & Malone, K. (2011). Nature and its influence on children’s outdoor play. *Journal of Outdoor and Environmental Education*, 15(2), 24-35.  
 Oliemat, E., Ihmeideh, F., & Alkhaldeh, M. (2018). The use of touch-screen tablets in early childhood: Children’s knowledge, skills, and attitudes towards tablet technology. *Children and Youth Services Review*, 88, 591-597.  
 Rivkin, M. S. (2000). Outdoor experiences for young children. Available at: [www.vtaide.com/png/ERIC/Outdoor-XP.htm](http://www.vtaide.com/png/ERIC/Outdoor-XP.htm)

## Results

A series of between-subject ANOVAs were conducted with Exhibit (Indoor, Outdoor) and each of the Area Classification dimensions to determine the exhibit characteristics associated with dyadic engagement. **Full results are presented in Table 2 (handout).**

- **Exhibit:** Dyads interacted with more indoor than outdoor exhibit areas,  $F(1, 61) = 12.46, p < .001, \eta^2_p = .17$ .
- **Design Content:** Across Exhibits, technology-based areas were visited significantly more frequently than artificial replicas, live animals, or learning stations,  $F(4, 61) = 3.74, p < .01, \eta^2_p = .20$ .
- **Play Type:** Across Exhibits, interactive or observational play areas were significantly more engaging than instructional or imaginative areas,  $F(5, 59) = 5.23, p < .001, \eta^2_p = .31$ .
- **Exhibit X Play Structure:** Parent directed play ( $M = 9.28, SD = 2.27$ ), over parent guided ( $M = 3.17, SD = 1.75$ ) or child free play ( $M = 6.92, SD = .72$ ), was associated with more dyadic engagement in the outdoor but not indoor exhibit,  $F(1, 47) = 10.73, p < .01, \eta^2_p = .19$ .
- **Skills Cultivated:** Across Exhibits, areas that cultivated sensory skills, ( $M = 11.07, SD = 1.74$ ) were more popular than those involving imagination ( $M = 6.55, SD = .78$ ) or motor skills ( $M = 5.75, SD = 1.71$ ).

Table 1. Exhibit area classification categories.

Classification category	Coding scheme and descriptions
<b>Q1. Exhibit Area Design and Content</b>	Code assigned based on focal or central features of the exhibit area: (1) Technology: Computer, tablet, or electronic exhibit features like switches, lights, and recorded sounds (2) Artificial Replica: Manufactured objects or structures that simulate places and things in the real world (3) Living Organisms/Nature: Animals, plants, or their habitats (4) Playground Equipment: Interactive playsets such as swings or slides designed for kids’ recreation and amusement (5) Functional Station: fully functional manufactured learning stations that simulate structures/machines found in the real world and demonstrate causal relations (i.e., physics and associations between actions and outcomes or cause and effect)
<b>Q2. Play Type</b>	Code assigned based on primary function, features, or focus of play. Coders could rank up to three play types: (1) Instructional (Informative): Conveying factual or scientific knowledge/understanding (2) Observational: Passively viewing or watching activities, objects, organisms, or places (e.g., habitat) (3) Interactive: Actively engaging with objects, organisms, or structures (without meaningfully changing or constructing something new) (4) Constructive (Building or Creating): Working with available materials to construct or create something (5) Imaginative/Narrative: Seeing, pretending, describing, or using objects or structures in unique or novel ways; introducing and interacting with events, people, or places that are not present or do not exist (6) Active (Physical or Motor): Physical activities such as running, climbing, jumping, sliding, riding, brushing, weaving, etc.
<b>Q3. Play Structure</b>	Code assigned based on format of initiation and implementation of play. Coders were asked to indicate the play structure and the actor who initiated the play. Definitions of the play initiation codes varied slightly based on the logic of each play structure: Play Structure: (1) Free Play (Unstructured): Child voluntarily or spontaneously chooses what, how, and with whom they want to play. Lack of rules or clearly identified structure and aims of activity allows child autonomy freely to plan and carry out, change, or stop chosen activity. • Play Initiation: (1) Child: Acting independently or through peer initiation of play (2) Parent: For free play, this initiation type refers to dyadic collaboration or the parent-child dyad mutually contributing to play Play Structure: (2) Guided Play: Child cannot choose how to engage in activity (i.e., clear rules, procedure, or guidelines) but the structure is loose, providing child autonomy to make decisions and shape activity somewhat. Adults may guide activity through modeling behavior, suggestions, or corrections/explanations. • Play Initiation: (1) Child Guided (2) Parent Guided (3) Ambassador Guided Play Structure: (3) Directed Play: Child cannot choose whether or how to engage in activity but learns through adult instruction, reading, or discussion. • Play Initiation: (2) Parent Directed (3) Ambassador Directed
<b>Q4. Skills Involved or Cultivated</b>	Code assigned based on primary or focal child abilities/processes involved in or cultivated by play. Coders could rank up to three skills: (1) Problem Solving: Determining how to use or make something work or finding solutions to actual or hypothetical problems (2) Story Telling, Role Playing, and Creative Thinking: Seeing, pretending, or using objects or structures in unique or novel ways; creating and interacting with events, people, or places that are not present or do not exist (3) Scientific or Conceptual Knowledge/Understanding: Investigating the properties of objects or living organisms, how to use simple tools or objects to accomplish a task, or scientific processes (4) Tactile or Sensory Experiences: Exploring the texture/feel, taste, sound, smell, or sight of objects or living organisms (5) Motor or Coordination: Engaging in physical gestures, movements, activities, or coordination (i.e., fine motor skills)