

**Ignite by Hatch™
Technical Report**

Executive Summary

Ignite by Hatch™ is an adaptive, digital learning solution for preschool, pre-kindergarten, and kindergarten that accelerates whole child development across 7 domains of learning with emphasis on social and emotional learning, mathematics, and literacy. In 30 minutes of independent play per week, children make meaningful progress toward their school readiness goals providing teachers and administrators with real-time, objective, and actionable data. This study examined a population of 3- and 4-year-old Ignite users with a goal of proving Ignite is valid and reliable, and that outcomes are significant, for all children, across the United States.

Description of the Sample

The analyses outlined in this report were conducted using the population of 3 and 4-year-old children who used the Ignite games during the 2020-2021 academic year (n = 29,417). For each domain specific analysis, all 3 and 4-year-old children who attempted at least one game within a given domain were retained. This process resulted in the following domain-specific sample sizes: Social Studies (n = 29,386), Science (n = 25,339), Social Emotional (n = 22,709), Language n = (25,122), Physical (n = 24,703), Mathematics (n = 24,531), and Literacy (n = 23,757).

The sample was split almost evenly between boys (49.5%) and girls (50.5%). Three-year-olds comprised 36.8% of the sample and four-year-olds comprised 63.2% of the sample. The racial / ethnic composition of the sample was as follows: white (non-Hispanic) – 43.9%, black (non-Hispanic) – 25.7%, Asian – 1.4%, Native American – 3.0%, Hispanic – 26.0%. Geographically, the sample was comprised of children from across the entire customer base and was national across the United States.

Results

Each game within Ignite belongs to an overall developmental domain and skills-based subdomain and meets the developmental needs of children at specific skill levels. These skill levels (Beginning, Emerging, Intermediate, Accomplishing, and Proficient) form an intended developmental pathway. Children make progress through games of increasing difficulty and complexity to the focal skills as they complete the games. The skills they acquire in this process build upon each other. The purpose of this study was to examine how children perform in the gaming environment to determine if there is evidence that the game difficulty level progresses as intended. We gathered evidence in two ways. First, we assumed that 4-year-old children should perform better than 3-year-old children across all games given their expected higher developmental level. To test this assumption, we compared initial pass rates of the age groups across all games. Second, we assumed that initial pass rates would be highest for Beginning games, and then would decline as game difficulty level increased in turn for Emerging, Intermediate, Accomplishing, and finally Proficient games. To test this assumption, we compared the initial pass rates and game difficulty levels across the skill levels within each domain.

The results of this study demonstrated strong validity evidence for the Ignite learning games by supporting both assumptions. First, four-year-old children outperformed three-year-old children for almost all the games. This strong pattern emerged for 187 of the 192 games evaluated. The only exceptions to this pattern were seven games that were either very difficult (0.0% initial pass rate) or very easy (initial pass rate greater than 93.0%). Second, a wide range of game difficulty levels from easy to difficult emerged for all seven developmental domains. This finding demonstrates that the children can be challenged and continue to grow, develop, and learn at all skill levels. Third, a very well-defined and sequenced developmental pathway from Beginning to Proficient games with matching initial passing rates and game difficulty levels emerged for three of the

domains: science, social and emotional learning, and physical. Across these three domains only one game had a mismatch between the intended skill level and actual level of performance by the children. For the remaining four domains—social studies, language, mathematics, and literacy—developmental pathways emerged that closely matched the intended skill of the games with a small number of exceptions. For approximately 90% of the games, 130 of the 146 games evaluated within these domains, the results demonstrated a close match between the intended skill level and the initial passing rates and game difficulty levels.

Conclusion: Ignite Delivers Positive Results for Children

The results of this study validate Ignite as a developmentally appropriate learning tool with difficulty aligned to a child's age. When implemented with fidelity, Ignite allows children to interact with engaging learning experiences independently and enables teachers to continuously monitor development utilizing data to inform personalized instruction for all children. Ignite is valid and reliable for 3-, 4-, and 5-year-olds and for all demographics of children. Hatch is committed to ongoing and rigorous validation research and will continue to release technical reports to support the efficacy of Ignite by Hatch.