The current study examined the short and long-term associated impact of participation in a school district supported four-year-old kindergarten (4K) program on early literacy skills and reading acquisition. Over 1100 children across five cohort years were included in the study. The early literacy skills of 4K participants and non-participants were assessed during their kindergarten year using the Dynamic Indicators of Basic Early Literacy Skills assessment system. In addition, student performance on the state mandated third grade reading assessment was also analyzed. Children who participated in the 4K program entered kindergarten with stronger fluency of letter names and phonological awareness, as compared to nonparticipants. Comparisons to a comparison group indicated that, during mid-year assessments, 4K participants demonstrated stronger letter name fluency, phonological awareness, and phoneme segmentation fluency. 4K participation was also associated with lower reading risk status, as determined by DIBELS Instructional Recommendations scores. Despite differences in early literacy performance upon kindergarten entry, 4K participants did not differ relative to nonparticipants on the reading portion of the third grade Wisconsin Knowledge and Concepts Exam. Findings are discussed in terms of the relationship between 4K and kindergarten literacy skills, the relationship between 4K and future reading risk status, and the relationship between 4K and third grade reading assessments. Limitations and implications for future research are also discussed.