Overview: The Galileo® Pre-K Online Educational Management System applies procedures based in Item Response Theory to information gained through observational assessment to estimate a measure of child learning called the Developmental Level (DL) score. The DL score indicates a child's position on a developmental path and provides specific information about which capabilities the child has learned and which capabilities the child is ready to learn. ATI conducts annual research that can be used to predict the DL score for children at various ages. Conducting this research on a regular basis ensures that these predictions are sensitive to changes in child populations, curricula, and learning standards. Early childhood providers can use the up-to-date information provided by this research to evaluate whether children are progressing appropriately over time relative to their peers.

Design and Sample: The current study evaluated child DL scores throughout the 2014-15 program year. The data in this study were collected as part of the ongoing multi-method observational assessments conducted by early childhood programs using the Galileo G3 scales for children ages 0 to 8 months, 8 to 18 months, 18 to 24 months, 2 to 3 years, and 3 through 5 years (used for children up to 6 years old). For the scales for children 0 months to 3 years, child DL scores were evaluated for five assessment scales in each age range targeting various developmental domains (i.e., *Approaches to Learning*; *Cognitive Development and General Knowledge*; *Language, Communication, Reading, and Writing*; *Physical Development and Health*; and *Social and Emotional Development*) as well as a *School Readiness Scale* for each age range consisting of a variety of critical school readiness capabilities drawn from the assessment scales. Observations were conducted in 44 early childhood programs in 16 states nationwide. On average, five observations were conducted for each child for each scale throughout the 2014-15 program year. The sample for each scale contained, on average, 6,223 observations representing 1,063 children. For the scales for children 3 through 5 years, child DL scores were evaluated for 12 assessment scales targeting various developmental domains (i.e., *Approaches to Learning*, *Creative Arts*, *Early Math*, *English Language Acquisition*, *Language*, *Literacy*, *Logic and Reasoning*, *Nature and Science*, *Physical Development and Health*, *Social and Emotional Development*, *Social Studies, Technology*) as well as a *School Readiness Scale* consisting of 88 critical school readiness capabilities drawn from the assessment scales. Observations were conducted in 108 early childhood programs in 28 states nationwide. On average, seven observations were conducted for each child for each scale throughout the 2014-15 program year. The sample for each scale contained, on average, 262,830 observations representing 36,005 children.

Predicted DL Scores for Children of Various Ages: Linear regression analyses were conducted for each scale to evaluate the relationship between child DL score and child age (in months). Each analysis resulted in a regression equation that best describes, for a given scale, the change in DL score as child age increases. The regression equation can be used to generate a predicted DL score for any given age within the age range of the scale. Tables 1-5 present, for each scale in the various age ranges, the predicted DL score for children of various ages as well as the minimum and maximum DL score for each scale. As would be expected, the predicted DL score increases as child age increases. It is also worth noting that the predicted DL score for the minimum age for the scale is above the minimum possible DL score for the scale and the predicted DL score for the maximum age for the scale is below the maximum possible DL score. In this way, each scale supports the assessment of children with varying levels of learning, including those whose learning is below or above the predicted learning for their age.

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Predicted DL Scores for Children Birth through 5 Years
Based on 2014-15 Assessment Data
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TABLE 1
Predicted DL scores for children of various ages for Galileo® G3 assessment scales for 0-8 months

Predicted DL Scores: Galileo G3 Scales for 0-8 Months					
Developmental Domain	Minimum Possible DL Score	Predicted DL Score			Maximum Possible DL Score
		0 Months	4 Months	8 Months	
Approaches to Learning	182	204	250	296	390
Cognitive Development and General Knowledge	186	225	258	292	417
Language, Communication, Reading, & Writing	181	220	258	295	408
Physical Development and Health	197	251	285	319	413
Social and Emotional Development	181	232	262	293	421
Galileo School Readiness	218	239	276	312	433

TABLE 2
Predicted DL scores for children of various ages for Galileo G3 assessment scales for 8-18 months

Predicted DL Scores: Galileo G3 Scales for 8-18 Months					
Developmental Domain	Minimum Possible DL Score	Predicted DL Score			Maximum Possible DL Score
		8 Months	13 Months	18 Months	
Approaches to Learning	232	295	325	356	437
Cognitive Development and General Knowledge	198	285	317	348	476
Language, Communication, Reading & Writing	211	277	314	350	454
Physical Development and Health	225	301	330	359	439
Social and Emotional Development	211	299	326	353	476
Galileo School Readiness	268	318	345	372	455

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TABLE 3
Predicted DL scores for children of various ages for Galileo® G3 assessment scales for 18-24 months

Developmental Domain	Minimum Possible DL Score	Predicted DL Score			Maximum Possible DL Score
		18 Months	**21 Months**	**24 Months**	
Approaches to Learning	306	389	409	428	520
Cognitive Development and General Knowledge	301	390	408	426	561
Language, Communication, Reading and Writing	289	366	388	410	567
Physical Development and Health	258	355	374	393	516
Social and Emotional Development	266	354	372	391	532
Galileo School Readiness	302	372	388	405	528

TABLE 4
Predicted DL scores for children of various ages for Galileo G3 assessment scales for 2-3 years

Developmental Domain	Minimum Possible DL Score	Predicted DL Score			Maximum Possible DL Score
		24 Months	**30 Months**	**36 Months**	
Approaches to Learning	339	426	454	483	558
Cognitive Development and General Knowledge	331	415	443	470	590
Language, Communication, Reading and Writing	338	416	447	478	591
Physical Development and Health	303	398	431	465	562
Social and Emotional Development	327	417	441	466	580
Galileo School Readiness	354	423	451	478	581

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TABLE 5
Predicted DL scores for children of various ages for Galileo® G3 assessment scales for 3 through 5 years

Predicted DL Score for Age: Galileo G3 Scales for 3 through 5 Years*						
Developmental Domain	Minimum Possible DL Score	Predicted DL Score				Maximum Possible DL Score
		36 Months	48 Months	60 Months	72 Months	
Approaches to Learning	382	473	513	553	593	641
Creative Arts	403	489	539	589	640	703
Early Math	390	447	491	536	581	677
English Language Acquisition	405	473	501	529	557	619
Language	348	426	472	517	563	631
Literacy	378	433	481	530	578	686
Logic and Reasoning	425	502	542	582	623	688
Nature and Science	363	425	472	519	566	689
Physical Development & Health	363	457	491	526	561	650
Social and Emotional Development	357	433	472	511	550	627
Social Studies	402	474	512	551	589	681
Technology	322	460	503	547	590	682
Galileo School Readiness	348	435	485	535	585	701

Note: The G3 scales for 3 through 5 years can be used for children up to 6 years old.

Conclusion: The study described in this research brief evaluated DL scores for a large nationwide sample of children assessed throughout the 2014-15 program year using the Galileo G3 scales for children ages 0 to 8 months, 8 to 18 months, 18 to 24 months, 2 to 3 years, and 3 through 5 years. The regression analyses conducted as part of this study established predicted DL scores for children of various ages for Galileo scales in a wide variety of developmental domains. Early childhood providers can use the information provided by this study to evaluate whether a child's DL score is below, at, or above the predicted DL score for their age. Since the child's DL score provides specific information about which capabilities the child is ready to learn, providers can then offer additional learning opportunities as needed to enrich learning for children at all levels.

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