

Appendix 11B

Item Parameters from the PIRLS 2021 Digital and ePIRLS Item Calibrations

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a _i)	Location (b _i)	Guessing (c _i)	Step 1 (t _{i1})	Step 2 (t _{i2})	Step 3 (t _{i3})
	2016	2021						
Items Released in 2016								
R11F01M	0.020	–	1.267 (0.080)	-0.811 (0.066)	0.109 (0.014)			
R11F02M	0.012	–	0.720 (0.051)	-1.029 (0.102)	0.219 (0.029)			
R11F03M	0.013	–	1.053 (0.067)	-0.811 (0.088)	0.157 (0.020)			
R11F04M	0.009	–	1.363 (0.053)	-0.963 (0.078)	0.174 (0.019)			
R11F05M	0.017	–	0.972 (0.064)	-0.478 (0.142)	0.191 (0.028)			
R11F06C	0.016	–	0.765 (0.056)	-0.298 (0.090)				
R11F07C	0.024	–	0.465 (0.035)	0.137 (0.082)		-1.094 (0.146)	1.094 (0.146)	
R11F08C	0.029	–	1.043 (0.041)	-0.547 (0.077)				
R11F09C	0.012	–	1.002 (0.062)	-0.817 (0.087)		0.099 (0.038)	-0.099 (0.038)	
R11F10C	0.010	–	0.797 (0.068)	-1.713 (0.176)				
R11F11M	0.013	–	0.650 (0.066)	-0.085 (0.114)	0.185 (0.024)			
R11F12C	0.019	–	0.643 (0.032)	0.346 (0.068)		-0.397 (0.094)	0.397 (0.094)	
R11F13M	0.011	–	1.028 (0.068)	-0.520 (0.101)	0.199 (0.036)			
R11L01M	0.023	–	0.616 (0.053)	-2.155 (0.171)	0.181 (0.020)			
R11L02M	0.019	–	0.678 (0.055)	0.293 (0.106)	0.189 (0.028)			
R11L03C	0.015	–	0.647 (0.042)	-0.674 (0.093)				
R11L04C	0.042	–	0.724 (0.039)	0.124 (0.065)		1.937 (0.110)	-1.151 (0.105)	-0.787 (0.064)
R11L05M	0.018	–	1.093 (0.073)	0.249 (0.080)	0.189 (0.020)			
R11L06C	0.017	–	0.632 (0.041)	0.080 (0.089)				
R11L07M	0.024	–	0.726 (0.070)	0.314 (0.094)	0.158 (0.016)			
R11L08C	0.022	–	0.819 (0.043)	0.267 (0.072)		0.847 (0.056)	-0.847 (0.056)	
R11L09M	0.009	–	0.999 (0.066)	-1.121 (0.129)	0.209 (0.028)			
R11L10C	0.024	–	0.693 (0.038)	0.409 (0.095)		0.393 (0.074)	-0.393 (0.074)	
R11L11M	0.014	–	0.919 (0.051)	-0.508 (0.099)	0.187 (0.024)			
R11L12C	0.018	–	0.714 (0.053)	0.181 (0.091)		1.050 (0.091)	-1.050 (0.091)	
R41H01M	0.009	–	0.844 (0.082)	-1.242 (0.359)	0.457 (0.169)			
R41H02M	0.011	–	1.047 (0.047)	-0.931 (0.086)	0.192 (0.036)			

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
R41H03C	0.012	—	1.167 (0.069)	-0.016 (0.056)				
R41H04C	0.024	—	0.664 (0.058)	1.379 (0.158)				
R41H05M	0.009	—	0.911 (0.093)	-0.056 (0.095)	0.277 (0.029)			
R41H06C	0.011	—	0.699 (0.040)	-0.591 (0.089)		0.093 (0.050)	-0.093 (0.050)	
R41H07M	0.027	—	0.832 (0.058)	0.585 (0.093)	0.127 (0.012)			
R41H08C	0.026	—	0.690 (0.042)	1.229 (0.102)				
R41H09M	0.017	—	0.691 (0.063)	-0.013 (0.099)	0.169 (0.030)			
R41H10M	0.013	—	1.247 (0.048)	-0.432 (0.067)	0.222 (0.027)			
R41H11M	0.007	—	1.274 (0.052)	-0.865 (0.085)	0.259 (0.048)			
R41H12M	0.010	—	1.250 (0.051)	-0.293 (0.076)	0.324 (0.022)			
R41H13C	0.017	—	0.519 (0.031)	0.520 (0.073)		0.154 (0.124)	0.163 (0.114)	-0.317 (0.074)
R41H14C	0.031	—	0.898 (0.053)	-0.051 (0.072)				
R41H15C	0.015	—	1.225 (0.045)	-0.654 (0.078)				
R41H16C	0.022	—	0.937 (0.053)	0.382 (0.083)				
R41T01M	0.006	—	1.080 (0.047)	-1.270 (0.092)	0.229 (0.032)			
R41T02C	0.016	—	0.699 (0.047)	-0.827 (0.092)		0.380 (0.039)	-0.380 (0.039)	
R41T03C	0.011	—	0.972 (0.035)	-0.187 (0.065)		0.079 (0.022)	-0.079 (0.022)	
R41T04C	0.008	—	1.112 (0.046)	-0.327 (0.074)				
R41T05M	0.025	—	0.774 (0.077)	0.164 (0.143)	0.254 (0.052)			
R41T06C	0.010	—	1.346 (0.060)	-0.955 (0.084)				
R41T07C	0.020	—	0.759 (0.032)	0.415 (0.065)		-0.217 (0.044)	0.217 (0.044)	
R41T08C	0.014	—	1.130 (0.041)	-0.313 (0.077)				
R41T09M	0.021	—	1.301 (0.069)	0.211 (0.065)	0.149 (0.019)			
R41T10C	0.006	—	1.247 (0.048)	-0.569 (0.075)				
R41T11C	0.019	—	0.734 (0.035)	0.288 (0.061)		-0.392 (0.067)	0.309 (0.048)	0.083 (0.057)
R41T12M	0.010	—	0.937 (0.059)	-0.537 (0.152)	0.271 (0.091)			
R41T13M	0.012	—	1.118 (0.055)	0.194 (0.067)	0.113 (0.009)			
R41T14C	0.019	—	0.455 (0.035)	-0.194 (0.119)				
R41T15M	0.013	—	0.879 (0.050)	0.039 (0.085)	0.207 (0.028)			
R41T16M	0.018	—	1.148 (0.069)	-0.399 (0.078)	0.210 (0.028)			
Items Common in 2016 and 2021								
RP21K01	0.015	0.020	0.468 (0.036)	-1.035 (0.107)		0.239 (0.050)	-0.239 (0.050)	
RP21K02	0.027	0.023	0.772 (0.046)	-0.924 (0.101)				
RP21K03	0.021	0.010	0.892 (0.061)	-0.273 (0.089)	0.159 (0.026)			
RP21K05	0.018	0.020	1.039 (0.048)	-0.051 (0.090)				

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
RP21K06	0.011	0.019	1.406 (0.087)	-0.252 (0.084)	0.267 (0.021)			
RP21K07	0.026	0.026	0.781 (0.044)	-0.125 (0.084)		0.227 (0.032)	-0.227 (0.032)	
RP21K08	0.023	0.018	0.973 (0.071)	0.085 (0.090)	0.154 (0.030)			
RP21K09	0.013	0.018	1.249 (0.067)	-0.308 (0.092)	0.202 (0.021)			
RP21K10	0.013	0.021	0.690 (0.037)	0.421 (0.058)		-0.286 (0.088)	0.286 (0.088)	
RP21K11	0.015	0.013	1.025 (0.092)	-0.197 (0.084)	0.169 (0.027)			
RP21K12	0.021	0.023	0.591 (0.032)	-0.468 (0.078)		0.854 (0.068)	-0.269 (0.052)	-0.585 (0.047)
RP21Y01	0.016	0.012	1.098 (0.060)	-0.062 (0.079)	0.220 (0.024)			
RP21Y02	0.013	0.007	1.577 (0.065)	-0.485 (0.077)	0.237 (0.024)			
RP21Y03	0.044	0.031	0.635 (0.053)	0.252 (0.094)				
RP21Y04	0.016	0.015	1.197 (0.075)	-0.198 (0.072)	0.168 (0.022)			
RP21Y05	0.009	0.014	1.610 (0.076)	-0.145 (0.075)	0.210 (0.017)			
RP21Y06	0.017	0.011	1.540 (0.063)	-0.174 (0.061)	0.188 (0.018)			
RP21Y07	0.028	0.018	0.854 (0.064)	-1.117 (0.090)	0.131 (0.020)			
RP21Y08	0.024	0.007	1.487 (0.050)	-0.396 (0.078)	0.228 (0.029)			
RP21Y09	0.017	0.013	1.013 (0.045)	-0.804 (0.083)		0.220 (0.024)	-0.220 (0.024)	
RP21Y10	0.033	0.026	0.669 (0.033)	0.306 (0.072)				
RP21Y11	0.012	0.017	1.312 (0.073)	-0.235 (0.071)	0.276 (0.020)			
RP21Y12	0.016	0.014	0.701 (0.030)	-0.164 (0.071)		-1.134 (0.123)	1.134 (0.123)	
RP21Y13	0.030	0.016	0.762 (0.033)	0.054 (0.075)		0.973 (0.074)	-0.474 (0.081)	-0.499 (0.049)
RP21Y14	0.023	0.020	0.551 (0.028)	0.057 (0.070)		-0.556 (0.094)	0.556 (0.094)	
RP31M01	0.011	0.014	1.420 (0.082)	-1.160 (0.105)	0.168 (0.027)			
RP31M02	0.007	0.009	1.224 (0.054)	-1.292 (0.108)				
RP31M03	0.011	0.009	1.204 (0.059)	-0.363 (0.070)	0.203 (0.031)			
RP31M04	0.019	0.019	0.577 (0.053)	0.021 (0.107)				
RP31M05	0.019	0.025	1.293 (0.109)	-0.156 (0.073)	0.388 (0.026)			
RP31M06	0.018	0.023	1.097 (0.074)	-0.024 (0.097)	0.256 (0.020)			
RP31M07	0.024	0.010	1.457 (0.082)	-0.591 (0.070)	0.185 (0.020)			
RP31M08	0.015	0.013	1.350 (0.050)	-0.806 (0.085)	0.187 (0.032)			
RP31M09	0.037	0.032	0.682 (0.038)	-0.486 (0.072)		1.423 (0.095)	-1.423 (0.095)	
RP31M10	0.044	0.041	0.570 (0.055)	0.027 (0.128)				
RP31M11	0.028	0.012	0.863 (0.065)	-1.021 (0.133)	0.205 (0.040)			
RP31M12	0.019	0.020	1.153 (0.055)	-0.242 (0.076)	0.127 (0.017)			
RP31M13	0.010	0.011	1.882 (0.062)	-1.004 (0.088)	0.190 (0.021)			
RP31M14	0.026	0.017	2.003 (0.073)	-0.554 (0.074)	0.160 (0.013)			

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Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
RP31M15	0.018	0.019	1.248 (0.085)	-0.357 (0.084)	0.196 (0.016)			
RP31M16	0.026	0.029	1.207 (0.048)	-0.289 (0.069)				
RP31M17	0.021	0.020	0.581 (0.032)	-0.381 (0.073)		0.361 (0.058)	0.100 (0.036)	-0.460 (0.044)
RP31W01	0.037	0.038	0.796 (0.038)	-0.768 (0.076)		0.240 (0.038)	-0.240 (0.038)	
RP31W02	0.019	0.027	0.781 (0.033)	0.005 (0.065)		-0.090 (0.037)	0.090 (0.037)	
RP31W03	0.020	0.010	1.326 (0.105)	-0.267 (0.086)	0.154 (0.026)			
RP31W04	0.022	0.013	0.864 (0.052)	-0.937 (0.090)				
RP31W05	0.024	0.010	1.185 (0.071)	0.166 (0.079)	0.247 (0.021)			
RP31W06	0.021	0.011	0.771 (0.043)	-1.204 (0.137)	0.174 (0.029)			
RP31W07	0.020	0.019	0.932 (0.039)	0.258 (0.082)		0.017 (0.031)	0.115 (0.028)	-0.132 (0.029)
RP31W08	0.006	0.011	1.279 (0.062)	-0.432 (0.090)	0.243 (0.026)			
RP31W09	0.026	0.026	0.859 (0.106)	0.161 (0.089)	0.136 (0.024)			
RP31W10	0.012	0.016	1.285 (0.071)	0.064 (0.073)	0.166 (0.015)			
RP31W11	0.020	0.019	1.384 (0.053)	0.224 (0.075)				
RP31W12	0.025	0.011	1.462 (0.064)	0.395 (0.076)	0.200 (0.012)			
RP31W13	0.030	0.021	0.794 (0.036)	0.456 (0.075)				
RP41B01	0.008	0.014	0.752 (0.056)	-2.512 (0.187)				
RP41B02	0.016	0.013	1.076 (0.059)	-2.172 (0.121)	0.158 (0.024)			
RP41B03	0.018	0.017	0.747 (0.063)	-2.558 (0.199)	0.169 (0.028)			
RP41B04	0.014	0.011	0.807 (0.041)	-1.258 (0.098)				
RP41B05	0.014	0.007	0.995 (0.046)	-1.473 (0.092)	0.164 (0.028)			
RP41B06	0.018	0.022	0.551 (0.050)	-2.046 (0.242)	0.176 (0.031)			
RP41B07	0.019	0.013	0.801 (0.049)	-1.266 (0.123)				
RP41B08	0.017	0.007	0.848 (0.053)	-1.625 (0.137)				
RP41B09	0.013	0.005	1.017 (0.045)	-1.167 (0.099)				
RP41B10	0.010	0.018	0.657 (0.046)	-0.641 (0.146)	0.188 (0.030)			
RP41B11	0.016	0.007	1.029 (0.064)	-1.332 (0.149)	0.215 (0.043)			
RP41B12	0.012	0.010	0.848 (0.063)	-2.125 (0.148)	0.188 (0.039)			
RP41B13	0.025	0.036	0.506 (0.034)	-1.346 (0.131)		0.837 (0.071)	-0.837 (0.071)	
RP41B14	0.024	0.019	1.043 (0.060)	-0.900 (0.090)	0.139 (0.018)			
RP41B15	0.027	0.028	0.357 (0.028)	0.083 (0.108)				
RP41B16	0.023	0.022	0.431 (0.027)	-0.413 (0.088)		0.146 (0.051)	-0.146 (0.051)	
RP41B17	0.022	0.021	0.722 (0.037)	-0.653 (0.082)		0.893 (0.064)	-0.893 (0.064)	
RP41E01	0.017	0.013	0.726 (0.067)	-3.385 (0.184)				
RP41E02	0.023	0.021	0.801 (0.055)	-1.926 (0.187)				

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

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	2016	2021						
RP41E03	0.015	0.024	1.297 (0.064)	-0.902 (0.091)	0.257 (0.039)			
RP41E04	0.006	0.010	1.070 (0.058)	-0.679 (0.091)	0.211 (0.026)			
RP41E05	0.010	0.009	1.261 (0.053)	-1.653 (0.093)	0.179 (0.039)			
RP41E06	0.012	0.023	1.063 (0.073)	-2.422 (0.184)	0.274 (0.072)			
RP41E07	0.024	0.021	0.516 (0.024)	-1.060 (0.096)		0.104 (0.063)	-0.104 (0.063)	
RP41E08	0.017	0.009	0.972 (0.064)	-1.128 (0.140)	0.181 (0.034)			
RP41E09	0.024	0.020	0.580 (0.116)	0.268 (0.276)	0.360 (0.067)			
RP41E10	0.025	0.018	0.822 (0.064)	-3.252 (0.186)				
RP41E11	0.019	0.006	1.365 (0.063)	-0.970 (0.098)	0.237 (0.026)			
RP41E12	0.021	0.012	1.113 (0.060)	-2.616 (0.163)				
RP41E13	0.023	0.015	0.521 (0.037)	-0.514 (0.101)				
RP41E14	0.030	0.029	0.461 (0.029)	-0.227 (0.106)		1.024 (0.078)	-1.024 (0.078)	
RP41E15	0.014	0.012	0.770 (0.035)	-2.592 (0.126)				
RP41E16	0.024	0.012	0.786 (0.038)	-1.127 (0.102)				
RP41E17	0.012	0.011	1.125 (0.067)	-0.720 (0.086)	0.148 (0.019)			
RP41I01	0.016	0.008	0.945 (0.050)	-1.570 (0.124)				
RP41I02	0.037	0.014	0.975 (0.075)	0.274 (0.090)	0.153 (0.018)			
RP41I03	0.024	0.026	0.543 (0.025)	-0.042 (0.071)		0.410 (0.031)	-0.410 (0.031)	
RP41I04	0.025	0.031	0.709 (0.027)	0.119 (0.068)		0.472 (0.043)	-0.472 (0.043)	
RP41I05	0.025	0.016	1.087 (0.064)	-0.175 (0.090)	0.199 (0.036)			
RP41I06	0.028	0.015	1.220 (0.073)	0.230 (0.100)	0.230 (0.027)			
RP41I07	0.017	0.011	0.971 (0.035)	0.197 (0.055)		0.039 (0.034)	-0.039 (0.034)	
RP41I08	0.030	0.014	1.585 (0.072)	-0.786 (0.080)	0.230 (0.036)			
RP41I09	0.027	0.008	1.151 (0.059)	-0.318 (0.072)				
RP41I10	0.010	0.022	0.856 (0.078)	-0.217 (0.106)	0.173 (0.031)			
RP41I11	0.022	0.019	0.874 (0.041)	0.165 (0.066)		0.439 (0.038)	-0.439 (0.038)	
RP41I12	0.018	0.015	1.103 (0.051)	-0.030 (0.069)	0.132 (0.018)			
RP41I13	0.018	0.018	0.873 (0.041)	-0.048 (0.081)				
RP41I14	0.015	0.012	0.798 (0.051)	0.612 (0.060)				
RP41I15	0.024	0.007	0.870 (0.045)	0.119 (0.073)				
RP41O01	0.010	0.011	0.980 (0.046)	-1.183 (0.101)	0.220 (0.032)			
RP41O02	0.010	0.009	0.937 (0.058)	-1.010 (0.077)				
RP41O03	0.034	0.028	0.923 (0.056)	0.641 (0.087)				
RP41O04	0.027	0.033	0.547 (0.049)	0.919 (0.103)		-0.049 (0.073)	0.049 (0.073)	
RP41O05	0.026	0.030	0.608 (0.032)	-0.034 (0.093)		-0.211 (0.073)	0.211 (0.073)	

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Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
RP41O06	0.005	0.012	1.422 (0.061)	-0.492 (0.085)	0.266 (0.022)			
RP41O07	0.030	0.031	0.613 (0.035)	-1.291 (0.098)		0.215 (0.039)	-0.215 (0.039)	
RP41O08	0.010	0.024	0.780 (0.049)	-0.328 (0.098)				
RP41O09	0.020	0.035	1.139 (0.049)	-0.371 (0.067)				
RP41O10	0.022	0.021	0.797 (0.035)	0.094 (0.070)		-0.023 (0.039)	0.023 (0.039)	
RP41O11	0.020	0.014	1.374 (0.058)	-0.103 (0.072)	0.260 (0.026)			
RP41O12	0.023	0.013	1.337 (0.065)	-0.525 (0.071)	0.140 (0.018)			
RP41O13	0.018	0.019	0.542 (0.041)	0.120 (0.063)		-1.173 (0.222)	0.908 (0.159)	0.265 (0.096)
Items Introduced in 2021								
* RP31P01	—	0.009	0.855 (0.116)	-0.948 (0.209)	0.238 (0.057)			
* RP31P02	—	0.006	1.018 (0.050)	-1.715 (0.198)	0.201 (0.016)			
* RP31P03	—	0.019	0.795 (0.074)	-1.126 (0.130)		0.504 (0.078)	-0.504 (0.078)	
* RP31P04	—	0.010	0.936 (0.044)	-2.300 (0.189)				
* RP31P05	—	0.018	1.213 (0.070)	-1.413 (0.178)	0.197 (0.027)			
* RP31P06	—	0.015	0.646 (0.095)	-2.714 (0.308)				
* RP31P07	—	0.027	0.743 (0.070)	-0.901 (0.116)				
* RP31P08	—	0.020	1.055 (0.099)	-1.574 (0.228)	0.201 (0.029)			
* RP31P09	—	0.020	1.213 (0.062)	-1.621 (0.135)	0.221 (0.026)			
* RP31P10	—	0.011	1.087 (0.042)	-1.631 (0.128)	0.197 (0.015)			
* RP31P11	—	0.016	0.755 (0.065)	-1.264 (0.145)		-0.261 (0.141)	0.261 (0.141)	
* RP31P12	—	0.031	0.577 (0.118)	-0.664 (0.244)				
* RP31P13	—	0.014	1.111 (0.053)	-1.307 (0.125)				
* RP31P14	—	0.012	1.030 (0.047)	-0.872 (0.092)				
* RP31U01	—	0.006	0.729 (0.060)	-2.691 (0.205)				
* RP31U02	—	0.011	0.886 (0.060)	-2.516 (0.150)	0.257 (0.017)			
* RP31U03	—	0.009	0.964 (0.060)	-1.708 (0.138)	0.202 (0.020)			
* RP31U04	—	0.018	0.625 (0.102)	-1.700 (0.304)				
* RP31U05	—	0.017	0.930 (0.066)	-1.661 (0.162)	0.206 (0.035)			
* RP31U06	—	0.014	1.033 (0.066)	-1.645 (0.137)	0.186 (0.021)			
* RP31U07	—	0.014	1.079 (0.067)	-0.626 (0.103)	0.179 (0.020)			
* RP31U08	—	0.010	1.003 (0.095)	-0.791 (0.146)	0.191 (0.022)			
* RP31U09	—	0.008	1.059 (0.045)	-1.690 (0.100)	0.221 (0.025)			
* RP31U10	—	0.018	0.734 (0.092)	-0.753 (0.167)				
* RP31U11	—	0.016	0.725 (0.052)	-1.723 (0.098)		0.204 (0.119)	-0.204 (0.119)	
* RP31U12	—	0.018	1.058 (0.064)	-1.628 (0.145)				

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
* RP31U13	—	0.021	1.147 (0.047)	-1.796 (0.096)	0.173 (0.013)			
* RP31U14	—	0.049	0.538 (0.100)	0.053 (0.171)				
* RP41H01	—	0.008	0.864 (0.043)	-2.665 (0.165)				
* RP41H02	—	0.017	1.065 (0.051)	-1.714 (0.108)	0.201 (0.018)			
* RP41H03	—	0.026	0.701 (0.089)	-0.353 (0.177)	0.198 (0.028)			
* RP41H04	—	0.020	0.744 (0.083)	-2.049 (0.177)	0.219 (0.019)			
* RP41H05	—	0.021	0.974 (0.093)	-2.413 (0.319)	0.271 (0.025)			
* RP41H06	—	0.014	0.869 (0.110)	-2.330 (0.248)				
* RP41H07	—	0.013	1.138 (0.053)	-1.193 (0.099)	0.204 (0.024)			
* RP41H08	—	0.008	1.056 (0.063)	-1.044 (0.129)	0.169 (0.015)			
* RP41H09	—	0.019	1.035 (0.055)	-1.682 (0.113)	0.206 (0.022)			
* RP41H10	—	0.009	0.976 (0.062)	-1.099 (0.103)	0.212 (0.031)			
* RP41H11	—	0.011	0.693 (0.072)	-1.857 (0.196)				
* RP41H12	—	0.022	0.969 (0.064)	-1.286 (0.123)				
* RP41H13	—	0.008	1.123 (0.051)	-1.396 (0.110)	0.180 (0.026)			
* RP41H14	—	0.026	0.857 (0.136)	-1.982 (0.142)				
* RP41H15	—	0.014	0.939 (0.057)	-0.728 (0.143)	0.177 (0.024)			
* RP41H16	—	0.011	1.097 (0.046)	-1.080 (0.110)	0.194 (0.020)			
* RP41M01	—	0.017	0.631 (0.148)	-2.724 (0.548)	0.299 (0.046)			
* RP41M02	—	0.014	1.111 (0.052)	-0.445 (0.132)	0.175 (0.028)			
* RP41M03	—	0.015	0.666 (0.056)	-2.347 (0.184)				
* RP41M04	—	0.015	0.861 (0.108)	-1.289 (0.122)				
* RP41M05	—	0.012	0.807 (0.066)	-2.456 (0.198)	0.232 (0.020)			
* RP41M06	—	0.009	0.923 (0.157)	-2.119 (0.628)				
* RP41M07	—	0.007	0.962 (0.062)	-1.321 (0.156)	0.237 (0.030)			
* RP41M08	—	0.022	1.034 (0.067)	-2.391 (0.194)				
* RP41M09	—	0.006	0.961 (0.058)	-1.518 (0.111)	0.216 (0.036)			
* RP41M10	—	0.008	0.715 (0.104)	-1.995 (0.253)		0.184 (0.085)	-0.184 (0.085)	
* RP41M11	—	0.008	1.094 (0.055)	-0.717 (0.116)	0.186 (0.039)			
* RP41M12	—	0.015	0.799 (0.174)	-1.992 (0.316)				
* RP41M13	—	0.022	1.012 (0.086)	-2.411 (0.243)	0.210 (0.036)			
* RP41M14	—	0.020	0.653 (0.039)	-0.849 (0.126)		0.665 (0.144)	0.064 (0.082)	-0.729 (0.093)
* RP41M15	—	0.009	1.043 (0.079)	-1.021 (0.137)	0.215 (0.034)			
* RP41M16	—	0.009	0.888 (0.090)	-1.750 (0.200)				
* RP41M17	—	0.013	1.141 (0.094)	-0.695 (0.120)				

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
* RP41M18	—	0.021	1.141 (0.111)	-0.987 (0.125)	0.152 (0.019)			
RP51C01	—	0.019	0.468 (0.107)	0.259 (0.123)		0.095 (0.086)	-0.095 (0.086)	
RP51C02	—	0.010	0.992 (0.057)	-0.979 (0.096)	0.172 (0.022)			
RP51C03	—	0.020	0.987 (0.057)	0.317 (0.115)				
RP51C04	—	0.008	0.982 (0.062)	-1.350 (0.142)	0.206 (0.030)			
RP51C05	—	0.018	0.993 (0.047)	-0.862 (0.081)		0.368 (0.046)	-0.368 (0.046)	
RP51C06	—	0.024	0.605 (0.066)	0.189 (0.144)		-0.064 (0.158)	0.064 (0.158)	
RP51C07	—	0.011	0.709 (0.090)	-0.677 (0.146)				
RP51C08	—	0.013	0.906 (0.062)	-0.420 (0.121)	0.186 (0.029)			
RP51C09	—	0.023	1.227 (0.062)	-1.218 (0.121)	0.166 (0.016)			
RP51C10	—	0.024	0.848 (0.052)	-0.436 (0.085)		0.651 (0.076)	-0.651 (0.076)	
RP51C11	—	0.017	0.966 (0.063)	-0.478 (0.117)	0.165 (0.018)			
RP51C12	—	0.010	1.197 (0.056)	-0.845 (0.092)	0.196 (0.026)			
RP51C13	—	0.028	0.878 (0.054)	-0.225 (0.096)		0.356 (0.056)	-0.356 (0.056)	
RP51C14	—	0.034	0.947 (0.067)	0.626 (0.087)		0.173 (0.071)	-0.173 (0.071)	
RP51C15	—	0.030	0.780 (0.103)	0.960 (0.144)				
RP51D01	—	0.006	0.940 (0.076)	-1.247 (0.128)				
RP51D02	—	0.023	0.795 (0.078)	-0.071 (0.129)	0.210 (0.037)			
RP51D03	—	0.014	0.902 (0.058)	-0.392 (0.099)				
RP51D04	—	0.011	1.073 (0.100)	-0.543 (0.135)	0.156 (0.018)			
RP51D05	—	0.017	0.898 (0.064)	-0.540 (0.108)	0.186 (0.021)			
RP51D06	—	0.033	0.710 (0.051)	-0.315 (0.091)		0.628 (0.064)	-0.628 (0.064)	
RP51D07	—	0.014	1.031 (0.084)	0.147 (0.096)				
RP51D08	—	0.015	0.967 (0.132)	-0.500 (0.135)	0.160 (0.019)			
RP51D09	—	0.016	0.878 (0.081)	-0.106 (0.174)	0.158 (0.016)			
RP51D10	—	0.020	0.526 (0.051)	0.269 (0.102)		-2.224 (0.325)	2.224 (0.325)	
RP51D11	—	0.025	0.615 (0.052)	-0.073 (0.120)		0.535 (0.079)	-0.535 (0.079)	
RP51D12	—	0.018	0.718 (0.059)	-0.299 (0.109)		0.596 (0.089)	0.265 (0.070)	-0.861 (0.096)
RP51D13	—	0.020	0.761 (0.075)	-0.514 (0.137)				
RP51D14	—	0.018	1.062 (0.083)	-0.142 (0.134)	0.181 (0.025)			
RP51D15	—	0.044	0.781 (0.062)	0.755 (0.165)		0.168 (0.166)	-0.168 (0.166)	
RP51D16	—	0.030	0.885 (0.087)	0.201 (0.157)				
RP51N01	—	0.014	0.955 (0.077)	-1.165 (0.127)				
RP51N02	—	0.029	0.677 (0.054)	-0.134 (0.097)		0.162 (0.057)	-0.162 (0.057)	
RP51N03	—	0.031	1.013 (0.128)	0.570 (0.188)	0.117 (0.009)			

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
RP51N04	—	0.023	0.730 (0.074)	-0.576 (0.125)				
RP51N05	—	0.034	0.790 (0.080)	0.389 (0.122)				
RP51N06	—	0.016	0.779 (0.047)	-0.138 (0.065)		0.033 (0.060)	-0.033 (0.060)	
RP51N07	—	0.021	0.635 (0.066)	-0.663 (0.148)	0.223 (0.030)			
RP51N08	—	0.012	0.943 (0.110)	-0.176 (0.144)	0.189 (0.030)			
RP51N09	—	0.027	0.839 (0.134)	0.454 (0.204)		0.053 (0.140)	-0.053 (0.140)	
RP51N10	—	0.017	1.215 (0.083)	0.379 (0.100)				
RP51N11	—	0.020	1.030 (0.089)	0.127 (0.117)				
RP51N12	—	0.029	0.759 (0.056)	0.358 (0.082)				
RP51N13	—	0.019	0.967 (0.046)	-0.314 (0.076)		0.244 (0.031)	-0.244 (0.031)	
RP51N14	—	0.027	0.951 (0.105)	0.712 (0.129)				
RP51N15	—	0.038	0.818 (0.093)	1.286 (0.165)				
RP51R01	—	0.016	0.762 (0.068)	-1.448 (0.112)	0.176 (0.023)			
RP51R02	—	0.016	0.935 (0.128)	-1.863 (0.363)				
RP51R03	—	0.011	0.735 (0.049)	-3.646 (0.270)				
RP51R04	—	0.023	0.703 (0.056)	-0.599 (0.150)				
RP51R05	—	0.011	0.621 (0.058)	-1.124 (0.140)		-0.303 (0.162)	0.303 (0.162)	
RP51R06	—	0.009	1.032 (0.065)	-1.488 (0.147)	0.241 (0.047)			
RP51R07	—	0.010	0.774 (0.052)	-1.649 (0.170)				
RP51R08	—	0.015	0.812 (0.116)	-1.008 (0.305)	0.331 (0.061)			
RP51R09	—	0.013	1.082 (0.062)	-0.577 (0.109)	0.201 (0.038)			
RP51R10	—	0.018	0.940 (0.073)	-0.365 (0.141)	0.132 (0.017)			
RP51R11	—	0.010	0.801 (0.107)	-1.011 (0.186)	0.226 (0.024)			
RP51R13	—	0.028	0.482 (0.089)	-0.571 (0.244)				
RP51R14	—	0.016	0.696 (0.094)	-1.619 (0.142)	0.220 (0.033)			
RP51R15	—	0.015	1.130 (0.069)	-1.048 (0.113)				
RP51R16	—	0.042	0.656 (0.100)	-0.620 (0.234)				
RP51R17	—	0.019	0.724 (0.085)	-0.758 (0.125)		0.602 (0.061)	-0.602 (0.061)	
RP51T01	—	0.018	0.884 (0.088)	-2.366 (0.224)				
RP51T02	—	0.028	0.822 (0.060)	0.320 (0.111)	0.187 (0.028)			
RP51T03	—	0.015	0.760 (0.080)	-1.117 (0.146)	0.208 (0.021)			
RP51T04	—	0.024	0.748 (0.057)	-0.621 (0.184)				
RP51T05	—	0.014	0.567 (0.086)	-0.371 (0.106)		-0.120 (0.090)	0.120 (0.090)	
RP51T06	—	0.018	1.227 (0.060)	-0.913 (0.082)	0.174 (0.017)			
RP51T07	—	0.013	1.199 (0.051)	-0.752 (0.085)	0.173 (0.028)			

Paper item parameters estimated from PIRLS 2021 digital calibration. Used to link the paper and digital assessments.

Item	RMSD		Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
	2016	2021						
RP51T08	—	0.012	1.065 (0.049)	-1.428 (0.105)	0.202 (0.020)			
RP51T09	—	0.028	0.805 (0.065)	-0.559 (0.138)	0.209 (0.023)			
RP51T10	—	0.020	1.009 (0.059)	-0.464 (0.077)				
RP51T11	—	0.021	0.770 (0.065)	-0.923 (0.088)		-0.691 (0.122)	0.691 (0.122)	
RP51T12	—	0.033	0.804 (0.115)	-0.662 (0.149)				
RP51T13	—	0.036	0.826 (0.060)	0.268 (0.087)		0.720 (0.111)	-0.720 (0.111)	
RP51T14	—	0.016	1.037 (0.049)	-0.207 (0.066)				
RP51T15	—	0.037	0.758 (0.053)	0.002 (0.080)		0.682 (0.091)	-0.682 (0.091)	
RP51T16	—	0.023	0.809 (0.067)	0.142 (0.093)		0.405 (0.086)	-0.405 (0.086)	
RP51Z01	—	0.019	0.386 (0.133)	-1.118 (0.378)		0.475 (0.152)	-0.475 (0.152)	
RP51Z02	—	0.009	0.679 (0.100)	-1.495 (0.198)				
RP51Z03	—	0.024	1.179 (0.087)	-0.488 (0.123)	0.126 (0.022)			
RP51Z04	—	0.009	1.091 (0.077)	-0.932 (0.102)	0.232 (0.040)			
RP51Z05	—	0.025	0.830 (0.138)	-0.203 (0.136)				
RP51Z06	—	0.007	0.751 (0.086)	-1.802 (0.172)		0.088 (0.100)	-0.088 (0.100)	
RP51Z07	—	0.014	1.120 (0.046)	-1.609 (0.105)				
RP51Z08	—	0.016	1.214 (0.096)	-0.915 (0.172)	0.151 (0.017)			
RP51Z09	—	0.032	0.845 (0.134)	-0.091 (0.153)				
RP51Z10	—	0.007	1.060 (0.045)	-1.080 (0.083)				
RP51Z11	—	0.012	0.880 (0.084)	-1.417 (0.147)				
RP51Z12	—	0.013	0.842 (0.075)	-0.896 (0.116)		0.077 (0.095)	-0.077 (0.095)	
RP51Z13	—	0.024	1.200 (0.089)	-1.237 (0.200)	0.156 (0.014)			
RP51Z14	—	0.022	0.439 (0.038)	-1.152 (0.141)		-0.419 (0.151)	-0.055 (0.126)	0.475 (0.157)
RP51Z15	—	0.022	0.869 (0.067)	-0.529 (0.082)				
Non-Response Indicators								
RPCRINF	0.032	0.015	1.606 (0.200)	0.284 (0.079)	0.520 (0.036)			
RPCRLIT	0.028	0.017	1.434 (0.147)	-0.015 (0.098)	0.527 (0.041)			
RPMCINF	0.007	0.011	1.400 (0.161)	0.173 (0.080)	0.803 (0.011)			
RPMCLIT	0.018	0.012	1.275 (0.128)	-0.281 (0.115)	0.807 (0.014)			
RPCRSI	0.026	0.019	1.760 (0.218)	-0.085 (0.100)	0.575 (0.042)			
RPCRIIE	0.034	0.014	1.518 (0.169)	0.264 (0.073)	0.445 (0.036)			
RPMCRSI	0.022	0.013	1.461 (0.169)	-0.030 (0.093)	0.767 (0.014)			
RPMCIIE	0.004	0.011	1.474 (0.168)	-0.070 (0.094)	0.782 (0.013)			

() Standard errors appear in parentheses.

* Items from passages developed for PIRLS Literacy in 2011 or 2016, but treated as new in 2021.

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
digitalPIRLS Items							
RE21K01	0.016	0.462 (0.037)	-1.533 (0.157)		0.232 (0.090)	-0.232 (0.090)	
RE21K02	0.019	0.728 (0.051)	-0.955 (0.124)				
RE21K03	0.021	0.852 (0.060)	-0.373 (0.115)	0.161 (0.018)			
RE21K05	0.012	1.257 (0.066)	0.081 (0.084)				
RE21K06	0.025	1.312 (0.068)	0.096 (0.080)	0.222 (0.021)			
RE21K07	0.020	0.972 (0.053)	0.015 (0.063)		0.046 (0.051)	-0.046 (0.051)	
RE21K08	0.015	1.015 (0.059)	0.350 (0.092)	0.120 (0.034)			
RE21K09	0.022	1.116 (0.050)	-0.170 (0.088)	0.236 (0.029)			
RE21K10	0.022	0.682 (0.057)	0.713 (0.089)		0.135 (0.126)	-0.135 (0.126)	
RE21K11	0.015	1.011 (0.071)	-0.011 (0.083)	0.153 (0.021)			
RE21K12	0.015	0.583 (0.034)	-0.275 (0.072)		0.426 (0.087)	-0.164 (0.079)	-0.263 (0.077)
RE21Y01	0.021	0.943 (0.071)	-0.072 (0.101)	0.202 (0.019)			
RE21Y02	0.009	1.337 (0.052)	-0.589 (0.070)	0.155 (0.020)			
RE21Y03	0.028	0.611 (0.049)	0.366 (0.112)				
RE21Y04	0.019	1.183 (0.075)	-0.145 (0.087)	0.153 (0.021)			
RE21Y05	0.020	1.403 (0.058)	-0.299 (0.086)	0.163 (0.018)			
RE21Y06	0.020	1.398 (0.067)	-0.311 (0.062)	0.156 (0.019)			
RE21Y07	0.032	0.804 (0.068)	-0.916 (0.143)	0.155 (0.018)			
RE21Y08	0.014	1.127 (0.065)	-0.551 (0.095)	0.204 (0.021)			
RE21Y09	0.019	1.077 (0.050)	-0.633 (0.070)		0.170 (0.041)	-0.170 (0.041)	
RE21Y10	0.031	0.669 (0.053)	0.318 (0.119)				
RE21Y11	0.020	1.238 (0.051)	-0.183 (0.070)	0.193 (0.018)			
RE21Y12	0.024	0.679 (0.033)	-0.236 (0.074)		-0.971 (0.209)	0.971 (0.209)	
RE21Y13	0.021	0.831 (0.041)	0.015 (0.072)		1.081 (0.068)	-0.664 (0.063)	-0.418 (0.063)
RE21Y14	0.021	0.513 (0.034)	-0.049 (0.097)		-0.664 (0.136)	0.664 (0.136)	
RE31M01	0.007	1.173 (0.055)	-1.310 (0.093)	0.180 (0.015)			
RE31M02	0.011	1.126 (0.052)	-1.424 (0.105)				
RE31M03	0.010	0.946 (0.069)	-0.495 (0.106)	0.194 (0.019)			
RE31M04	0.026	0.576 (0.063)	0.063 (0.147)				
RE31M05	0.026	0.985 (0.075)	-0.393 (0.127)	0.347 (0.075)			
RE31M06	0.022	0.833 (0.092)	0.076 (0.176)	0.233 (0.028)			
RE31M07	0.014	1.286 (0.054)	-0.642 (0.117)	0.170 (0.017)			
RE31M08	0.013	1.242 (0.051)	-0.624 (0.080)	0.142 (0.024)			
RE31M09	0.033	0.936 (0.046)	-0.314 (0.063)		1.244 (0.068)	-1.244 (0.068)	

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE31M10	0.045	0.846 (0.064)	-0.077 (0.106)				
RE31M11	0.016	1.069 (0.055)	-0.948 (0.089)	0.150 (0.020)			
RE31M12	0.025	0.908 (0.063)	0.070 (0.070)	0.133 (0.028)			
RE31M13	0.018	1.457 (0.060)	-1.057 (0.089)	0.182 (0.017)			
RE31M14	0.024	1.602 (0.056)	-0.608 (0.068)	0.126 (0.031)			
RE31M15	0.017	1.122 (0.071)	-0.532 (0.099)	0.188 (0.016)			
RE31M16	0.011	1.091 (0.050)	-0.376 (0.077)				
RE31M17	0.022	0.604 (0.042)	-0.351 (0.077)		0.269 (0.072)	0.129 (0.060)	-0.398 (0.059)
RE31P01	0.013	0.995 (0.069)	-0.639 (0.087)	0.164 (0.017)			
RE31P02	0.025	1.117 (0.072)	-1.317 (0.157)	0.223 (0.025)			
RE31P03	0.026	0.720 (0.040)	-1.062 (0.086)		0.442 (0.070)	-0.442 (0.070)	
RE31P04	0.013	1.297 (0.049)	-0.955 (0.072)				
RE31P05	0.012	1.343 (0.064)	-0.792 (0.076)	0.160 (0.019)			
RE31P06	0.013	0.804 (0.063)	-1.181 (0.182)				
RE31P07	0.025	1.045 (0.051)	-0.143 (0.081)				
RE31P08	0.021	1.305 (0.068)	-0.830 (0.104)	0.177 (0.017)			
RE31P09	0.016	1.289 (0.058)	-0.382 (0.079)	0.150 (0.022)			
RE31P10	0.016	1.136 (0.053)	-0.673 (0.079)	0.190 (0.016)			
RE31P11	0.014	0.798 (0.043)	-0.200 (0.081)		-0.822 (0.101)	0.822 (0.101)	
RE31P12	0.028	0.920 (0.062)	-0.187 (0.084)				
RE31P13	0.022	1.382 (0.065)	-0.656 (0.069)				
RE31P14	0.029	0.911 (0.055)	-0.138 (0.073)				
RE31U01	0.030	0.616 (0.064)	-2.177 (0.203)				
RE31U02	0.008	0.928 (0.049)	-1.969 (0.159)	0.251 (0.034)			
RE31U03	0.014	0.911 (0.073)	-0.869 (0.187)	0.224 (0.030)			
RE31U04	0.024	0.731 (0.053)	-0.966 (0.120)				
RE31U05	0.014	1.224 (0.059)	-1.005 (0.071)	0.147 (0.023)			
RE31U06	0.011	1.246 (0.048)	-0.832 (0.085)	0.156 (0.019)			
RE31U07	0.022	0.980 (0.061)	-0.228 (0.088)	0.127 (0.030)			
RE31U08	0.018	1.194 (0.052)	-0.216 (0.066)	0.120 (0.033)			
RE31U09	0.013	1.271 (0.052)	-1.144 (0.085)	0.164 (0.015)			
RE31U10	0.024	0.998 (0.057)	0.069 (0.085)				
RE31U11	0.033	0.819 (0.057)	-0.960 (0.072)		0.206 (0.063)	-0.206 (0.063)	
RE31U12	0.010	1.124 (0.047)	-1.345 (0.082)				
RE31U13	0.018	1.229 (0.053)	-1.698 (0.104)	0.193 (0.013)			

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE31U14	0.048	0.525 (0.050)	0.149 (0.127)				
RE31W01	0.037	0.578 (0.040)	-1.031 (0.100)		0.155 (0.075)	-0.155 (0.075)	
RE31W02	0.015	0.878 (0.053)	0.158 (0.062)		0.070 (0.043)	-0.070 (0.043)	
RE31W03	0.008	1.324 (0.074)	0.120 (0.069)	0.098 (0.044)			
RE31W04	0.010	1.218 (0.058)	-0.514 (0.067)				
RE31W05	0.012	1.129 (0.056)	0.138 (0.083)	0.142 (0.024)			
RE31W06	0.014	0.900 (0.062)	-0.895 (0.096)	0.192 (0.016)			
RE31W07	0.021	0.983 (0.043)	0.478 (0.071)		-0.114 (0.056)	0.165 (0.054)	-0.051 (0.046)
RE31W08	0.019	1.121 (0.054)	-0.269 (0.078)	0.207 (0.021)			
RE31W09	0.026	1.035 (0.095)	0.387 (0.103)	0.142 (0.024)			
RE31W10	0.019	1.155 (0.062)	0.249 (0.081)	0.130 (0.029)			
RE31W11	0.021	1.279 (0.056)	0.341 (0.074)				
RE31W12	0.030	1.159 (0.053)	0.458 (0.083)	0.159 (0.017)			
RE31W13	0.023	0.864 (0.045)	0.564 (0.096)				
RE41B01	0.013	0.790 (0.055)	-2.076 (0.143)				
RE41B02	0.014	1.012 (0.065)	-1.563 (0.156)	0.203 (0.018)			
RE41B03	0.029	0.799 (0.046)	-0.580 (0.078)	0.140 (0.024)			
RE41B04	0.017	1.010 (0.054)	-0.675 (0.085)				
RE41B05	0.014	1.122 (0.046)	-0.877 (0.084)	0.145 (0.024)			
RE41B06	0.025	0.800 (0.068)	-0.785 (0.159)	0.146 (0.022)			
RE41B07	0.021	0.922 (0.056)	-0.097 (0.088)				
RE41B08	0.016	0.924 (0.053)	-1.429 (0.093)				
RE41B09	0.014	1.058 (0.057)	-0.347 (0.076)				
RE41B10	0.019	0.682 (0.070)	-0.703 (0.118)	0.189 (0.015)			
RE41B11	0.020	1.091 (0.059)	-0.927 (0.081)	0.152 (0.020)			
RE41B12	0.009	0.929 (0.070)	-1.462 (0.141)	0.241 (0.033)			
RE41B13	0.037	0.687 (0.043)	-0.552 (0.101)		0.534 (0.053)	-0.534 (0.053)	
RE41B14	0.012	1.179 (0.061)	-0.483 (0.072)	0.139 (0.026)			
RE41B15	0.036	0.421 (0.048)	0.316 (0.170)				
RE41B16	0.031	0.478 (0.042)	0.132 (0.092)		0.127 (0.082)	-0.127 (0.082)	
RE41B17	0.022	0.778 (0.059)	-0.311 (0.087)		0.894 (0.077)	-0.894 (0.077)	
RE41E01	0.017	0.833 (0.064)	-1.771 (0.132)				
RE41E02	0.022	0.897 (0.046)	-0.876 (0.136)				
RE41E03	0.020	1.190 (0.052)	-0.737 (0.083)	0.218 (0.023)			
RE41E04	0.016	1.030 (0.050)	-0.372 (0.088)	0.199 (0.021)			

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE41E05	0.010	1.335 (0.056)	-0.954 (0.069)	0.172 (0.018)			
RE41E06	0.014	1.359 (0.050)	-0.954 (0.067)	0.156 (0.020)			
RE41E07	0.033	0.738 (0.043)	-0.222 (0.070)		-0.143 (0.067)	0.143 (0.067)	
RE41E08	0.018	0.860 (0.054)	0.212 (0.096)	0.164 (0.018)			
RE41E09	0.032	0.632 (0.094)	0.067 (0.191)	0.243 (0.038)			
RE41E10	0.023	1.127 (0.059)	-1.342 (0.096)				
RE41E11	0.010	1.290 (0.065)	-0.758 (0.096)	0.163 (0.019)			
RE41E12	0.014	1.278 (0.045)	-1.469 (0.082)				
RE41E13	0.048	0.584 (0.048)	0.195 (0.089)				
RE41E14	0.036	0.463 (0.048)	0.567 (0.127)		1.033 (0.114)	-1.033 (0.114)	
RE41E15	0.022	1.029 (0.055)	-1.348 (0.081)				
RE41E16	0.016	0.888 (0.046)	-0.576 (0.067)				
RE41E17	0.016	1.170 (0.061)	-0.340 (0.097)	0.138 (0.026)			
RE41H01	0.010	0.664 (0.045)	-2.585 (0.177)				
RE41H02	0.013	0.915 (0.058)	-1.576 (0.118)	0.200 (0.013)			
RE41H03	0.026	0.830 (0.053)	-0.123 (0.123)	0.172 (0.018)			
RE41H04	0.014	0.854 (0.077)	-1.625 (0.539)	0.199 (0.013)			
RE41H05	0.018	1.165 (0.047)	-1.908 (0.121)	0.215 (0.019)			
RE41H06	0.013	1.090 (0.052)	-1.047 (0.095)				
RE41H07	0.007	1.367 (0.054)	-0.582 (0.066)	0.133 (0.028)			
RE41H08	0.010	1.098 (0.063)	-0.662 (0.087)	0.201 (0.020)			
RE41H09	0.015	0.872 (0.071)	-1.206 (0.254)	0.188 (0.012)			
RE41H10	0.010	1.031 (0.067)	-0.464 (0.081)	0.197 (0.019)			
RE41H11	0.015	1.005 (0.044)	-0.470 (0.072)				
RE41H12	0.028	0.893 (0.055)	-1.305 (0.134)				
RE41H13	0.015	1.292 (0.066)	-0.509 (0.103)	0.163 (0.020)			
RE41H14	0.011	1.129 (0.074)	-0.785 (0.088)				
RE41H15	0.021	1.102 (0.062)	-0.193 (0.089)	0.172 (0.016)			
RE41H16	0.008	1.122 (0.049)	-1.093 (0.071)	0.162 (0.016)			
RE41I01	0.010	0.748 (0.054)	-2.492 (0.187)				
RE41I02	0.020	0.922 (0.059)	0.347 (0.121)	0.111 (0.037)			
RE41I03	0.024	0.662 (0.037)	0.005 (0.077)		0.340 (0.053)	-0.340 (0.053)	
RE41I04	0.029	0.663 (0.035)	-0.029 (0.078)		0.426 (0.055)	-0.426 (0.055)	
RE41I05	0.014	1.099 (0.043)	-0.143 (0.092)	0.141 (0.024)			
RE41I06	0.019	1.071 (0.094)	0.115 (0.113)	0.187 (0.014)			

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE41I07	0.020	1.044 (0.050)	0.188 (0.062)		0.049 (0.039)	-0.049 (0.039)	
RE41I08	0.014	1.385 (0.060)	-0.771 (0.074)	0.156 (0.020)			
RE41I09	0.017	1.168 (0.055)	-0.190 (0.069)				
RE41I10	0.014	0.838 (0.059)	-0.137 (0.104)	0.180 (0.017)			
RE41I11	0.020	0.872 (0.059)	0.395 (0.073)		0.496 (0.053)	-0.496 (0.053)	
RE41I12	0.015	1.173 (0.072)	0.116 (0.062)	0.107 (0.039)			
RE41I13	0.019	1.044 (0.052)	-0.126 (0.092)				
RE41I14	0.032	0.836 (0.058)	0.666 (0.114)				
RE41I15	0.013	0.938 (0.056)	0.151 (0.077)				
RE41M01	0.024	0.765 (0.124)	-2.482 (0.594)	0.250 (0.031)			
RE41M02	0.017	0.923 (0.068)	-0.265 (0.106)	0.212 (0.023)			
RE41M03	0.022	0.781 (0.051)	-0.946 (0.088)				
RE41M04	0.018	0.809 (0.078)	-1.260 (0.102)				
RE41M05	0.016	1.178 (0.047)	-1.581 (0.103)	0.213 (0.023)			
RE41M06	0.036	1.070 (0.050)	-1.483 (0.076)				
RE41M07	0.013	0.914 (0.050)	-1.110 (0.116)	0.220 (0.027)			
RE41M08	0.029	1.208 (0.058)	-1.591 (0.091)				
RE41M09	0.020	1.026 (0.058)	-1.007 (0.132)	0.177 (0.015)			
RE41M10	0.023	0.819 (0.048)	-1.576 (0.112)		0.431 (0.071)	-0.431 (0.071)	
RE41M11	0.013	1.099 (0.063)	-0.193 (0.118)	0.174 (0.017)			
RE41M12	0.016	1.005 (0.053)	-1.219 (0.100)				
RE41M13	0.037	1.424 (0.054)	-1.349 (0.078)	0.123 (0.031)			
RE41M14	0.024	0.698 (0.041)	-0.656 (0.084)		0.579 (0.073)	-0.005 (0.074)	-0.574 (0.052)
RE41M15	0.041	0.987 (0.065)	-0.297 (0.107)	0.350 (0.075)			
RE41M16	0.022	1.097 (0.050)	-1.279 (0.085)				
RE41M17	0.006	1.149 (0.070)	-0.537 (0.101)				
RE41M18	0.009	1.031 (0.077)	-1.014 (0.126)	0.192 (0.017)			
RE41O01	0.017	0.951 (0.058)	-1.009 (0.124)	0.201 (0.018)			
RE41O02	0.014	0.927 (0.062)	-1.044 (0.094)				
RE41O03	0.023	0.885 (0.063)	0.685 (0.115)				
RE41O04	0.046	0.598 (0.054)	0.574 (0.086)		-0.151 (0.072)	0.151 (0.072)	
RE41O05	0.021	0.668 (0.049)	-0.054 (0.104)		-0.225 (0.090)	0.225 (0.090)	
RE41O06	0.013	1.313 (0.047)	-0.507 (0.089)	0.170 (0.017)			
RE41O07	0.025	0.784 (0.048)	-0.845 (0.091)		0.497 (0.056)	-0.497 (0.056)	
RE41O08	0.022	0.896 (0.047)	-0.072 (0.087)				

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE41O09	0.027	1.209 (0.054)	-0.246 (0.064)				
RE41O10	0.019	0.926 (0.049)	0.098 (0.063)		0.194 (0.040)	-0.194 (0.040)	
RE41O11	0.012	1.198 (0.054)	0.052 (0.073)	0.131 (0.029)			
RE41O12	0.015	1.345 (0.059)	-0.262 (0.064)	0.098 (0.044)			
RE41O13	0.019	0.643 (0.045)	0.327 (0.060)		-1.183 (0.257)	0.720 (0.187)	0.463 (0.116)
RE51C01	0.025	0.496 (0.038)	0.476 (0.093)		-0.090 (0.100)	0.090 (0.100)	
RE51C02	0.026	0.824 (0.054)	-1.073 (0.143)	0.222 (0.025)			
RE51C03	0.022	1.031 (0.091)	0.552 (0.146)				
RE51C04	0.011	0.979 (0.084)	-1.196 (0.161)	0.170 (0.013)			
RE51C05	0.014	0.873 (0.046)	-0.646 (0.072)		0.190 (0.069)	-0.190 (0.069)	
RE51C06	0.026	0.665 (0.057)	0.321 (0.073)		-0.100 (0.085)	0.100 (0.085)	
RE51C07	0.021	0.838 (0.047)	-0.615 (0.088)				
RE51C08	0.013	1.090 (0.062)	-0.217 (0.078)	0.153 (0.021)			
RE51C09	0.011	1.356 (0.060)	-0.797 (0.076)	0.151 (0.021)			
RE51C10	0.020	0.736 (0.061)	-0.447 (0.086)		0.626 (0.072)	-0.626 (0.072)	
RE51C11	0.015	1.031 (0.049)	-0.059 (0.068)	0.144 (0.024)			
RE51C12	0.012	1.284 (0.071)	-0.393 (0.118)	0.176 (0.016)			
RE51C13	0.019	0.935 (0.069)	-0.024 (0.082)		0.328 (0.054)	-0.328 (0.054)	
RE51C14	0.030	0.953 (0.049)	0.873 (0.058)		0.088 (0.057)	-0.088 (0.057)	
RE51C15	0.025	0.909 (0.119)	0.994 (0.222)				
RE51D01	0.021	0.710 (0.061)	-1.500 (0.121)				
RE51D02	0.025	0.764 (0.072)	0.280 (0.099)	0.217 (0.023)			
RE51D03	0.017	0.858 (0.058)	-0.405 (0.102)				
RE51D04	0.005	1.270 (0.054)	-0.449 (0.090)	0.142 (0.024)			
RE51D05	0.018	0.943 (0.061)	-0.594 (0.073)	0.138 (0.025)			
RE51D06	0.051	0.701 (0.037)	-0.294 (0.066)		0.593 (0.065)	-0.593 (0.065)	
RE51D07	0.010	1.119 (0.095)	0.249 (0.091)				
RE51D08	0.020	1.130 (0.087)	-0.274 (0.074)	0.130 (0.029)			
RE51D09	0.016	1.073 (0.065)	0.186 (0.128)	0.155 (0.020)			
RE51D10	0.017	0.560 (0.041)	0.185 (0.074)		-1.704 (0.233)	1.704 (0.233)	
RE51D11	0.036	0.706 (0.047)	-0.044 (0.072)		0.479 (0.051)	-0.479 (0.051)	
RE51D12	0.013	0.694 (0.037)	-0.357 (0.067)		0.638 (0.077)	0.231 (0.070)	-0.869 (0.081)
RE51D13	0.022	0.858 (0.043)	-0.417 (0.073)				
RE51D14	0.014	1.045 (0.046)	-0.090 (0.099)	0.162 (0.018)			
RE51D15	0.030	0.601 (0.067)	0.920 (0.116)		-0.224 (0.204)	0.224 (0.204)	

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE51D16	0.023	0.941 (0.068)	0.010 (0.103)				
RE51N01	0.013	0.853 (0.055)	-1.333 (0.103)				
RE51N02	0.022	0.637 (0.035)	-0.017 (0.075)		0.048 (0.061)	-0.048 (0.061)	
RE51N03	0.027	0.946 (0.072)	0.785 (0.099)	0.148 (0.021)			
RE51N04	0.028	0.669 (0.048)	-0.729 (0.118)				
RE51N05	0.019	0.865 (0.047)	0.379 (0.109)				
RE51N06	0.016	0.761 (0.040)	-0.091 (0.061)		-0.037 (0.042)	0.037 (0.042)	
RE51N07	0.022	0.602 (0.047)	-0.748 (0.163)	0.195 (0.015)			
RE51N08	0.012	1.023 (0.053)	-0.449 (0.098)	0.178 (0.019)			
RE51N09	0.020	0.881 (0.053)	0.377 (0.076)		0.062 (0.061)	-0.062 (0.061)	
RE51N10	0.020	0.905 (0.062)	0.954 (0.079)				
RE51N11	0.012	1.011 (0.065)	0.167 (0.100)				
RE51N12	0.021	0.704 (0.041)	0.598 (0.099)				
RE51N13	0.015	0.879 (0.050)	-0.386 (0.082)		0.230 (0.033)	-0.230 (0.033)	
RE51N14	0.016	0.988 (0.073)	0.543 (0.080)				
RE51N15	0.032	0.812 (0.085)	1.003 (0.145)				
RE51R01	0.019	0.685 (0.068)	-1.505 (0.235)	0.205 (0.014)			
RE51R02	0.016	0.792 (0.050)	-2.106 (0.134)				
RE51R03	0.011	0.773 (0.038)	-3.612 (0.192)				
RE51R04	0.021	0.774 (0.056)	-0.373 (0.124)				
RE51R05	0.017	0.747 (0.044)	-0.751 (0.079)		-0.323 (0.065)	0.323 (0.065)	
RE51R06	0.017	1.072 (0.062)	-0.843 (0.122)	0.213 (0.026)			
RE51R07	0.017	0.945 (0.052)	-1.087 (0.097)				
RE51R08	0.010	1.021 (0.055)	-0.758 (0.089)	0.221 (0.027)			
RE51R09	0.019	0.967 (0.048)	-0.227 (0.105)	0.162 (0.018)			
RE51R10	0.016	1.160 (0.050)	0.130 (0.102)	0.102 (0.042)			
RE51R11	0.021	0.911 (0.066)	-0.542 (0.118)	0.235 (0.032)			
RE51R13	0.027	0.621 (0.068)	-0.089 (0.118)				
RE51R14	0.026	0.834 (0.077)	-0.804 (0.145)	0.296 (0.063)			
RE51R15	0.008	1.193 (0.045)	-0.629 (0.076)				
RE51R16	0.035	0.616 (0.051)	-0.569 (0.138)				
RE51R17	0.026	0.732 (0.043)	-0.483 (0.088)		0.586 (0.058)	-0.586 (0.058)	
RE51T01	0.017	0.736 (0.067)	-2.587 (0.193)				
RE51T02	0.024	0.755 (0.048)	0.515 (0.114)	0.179 (0.012)			
RE51T03	0.016	0.711 (0.069)	-0.669 (0.105)	0.190 (0.016)			

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
RE51T04	0.020	0.817 (0.053)	-0.757 (0.095)				
RE51T05	0.023	0.675 (0.038)	-0.232 (0.070)		-0.224 (0.056)	0.224 (0.056)	
RE51T06	0.009	1.319 (0.051)	-0.612 (0.071)	0.141 (0.026)			
RE51T07	0.010	1.255 (0.044)	-0.556 (0.062)	0.160 (0.019)			
RE51T08	0.007	1.135 (0.051)	-1.121 (0.089)	0.160 (0.018)			
RE51T09	0.022	0.867 (0.070)	-0.394 (0.141)	0.203 (0.023)			
RE51T10	0.012	1.174 (0.055)	-0.389 (0.077)				
RE51T11	0.021	0.862 (0.054)	-0.658 (0.065)		-0.617 (0.088)	0.617 (0.088)	
RE51T12	0.024	0.787 (0.081)	-0.844 (0.119)				
RE51T13	0.042	0.796 (0.051)	0.231 (0.070)		0.728 (0.075)	-0.728 (0.075)	
RE51T14	0.017	0.984 (0.040)	-0.015 (0.073)				
RE51T15	0.027	0.678 (0.037)	0.097 (0.078)		0.605 (0.071)	-0.605 (0.071)	
RE51T16	0.027	0.799 (0.059)	0.203 (0.091)		0.540 (0.076)	-0.540 (0.076)	
RE51Z01	0.025	0.509 (0.038)	-1.108 (0.110)		0.180 (0.094)	-0.180 (0.094)	
RE51Z02	0.030	0.559 (0.047)	-1.899 (0.195)				
RE51Z03	0.013	1.078 (0.053)	-0.238 (0.076)	0.129 (0.029)			
RE51Z04	0.014	1.021 (0.052)	-0.567 (0.078)	0.169 (0.020)			
RE51Z05	0.014	1.203 (0.059)	0.162 (0.063)				
RE51Z06	0.014	0.667 (0.041)	-1.647 (0.095)		0.047 (0.091)	-0.047 (0.091)	
RE51Z07	0.019	1.454 (0.051)	-0.945 (0.064)				
RE51Z08	0.023	1.472 (0.057)	-0.494 (0.056)	0.113 (0.037)			
RE51Z09	0.043	0.958 (0.049)	0.280 (0.092)				
RE51Z10	0.013	1.218 (0.053)	-0.611 (0.070)				
RE51Z11	0.016	1.321 (0.058)	-0.958 (0.081)				
RE51Z12	0.013	0.941 (0.051)	-0.488 (0.072)		-0.009 (0.056)	0.009 (0.056)	
RE51Z13	0.016	1.175 (0.057)	-0.817 (0.091)	0.167 (0.017)			
RE51Z14	0.020	0.558 (0.042)	-0.688 (0.070)		-0.160 (0.129)	-0.016 (0.116)	0.176 (0.103)
RE51Z15	0.021	0.589 (0.059)	-0.462 (0.135)				
Non-Response Indicators							
RECLIT	0.011	1.626 (0.208)	0.076 (0.078)	0.602 (0.030)			
RECRINF	0.013	1.839 (0.254)	0.381 (0.055)	0.584 (0.024)			
REMCLIT	0.003	1.989 (0.376)	-0.165 (0.143)	0.892 (0.015)			
REMCINF	0.003	2.259 (0.609)	0.151 (0.123)	0.898 (0.012)			
RECRRSI	0.011	2.045 (0.282)	-0.045 (0.081)	0.620 (0.031)			
RECRRIE	0.012	1.636 (0.229)	0.364 (0.060)	0.528 (0.026)			

digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for the digitalPIRLS countries, along with the ePIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
REMCRSI	0.004	2.148 (0.483)	-0.028 (0.126)	0.870 (0.015)			
REMCIE	0.004	2.189 (0.644)	-0.035 (0.166)	0.893 (0.017)			

() Standard errors appear in parentheses.

ePIRLS item parameters estimated from PIRLS 2021 ePIRLS calibration using fixed digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for digitalPIRLS countries, along with digitalPIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
ePIRLS Items							
E041R01	0.006	0.842 (0.075)	0.177 (0.126)	0.187 (0.023)			
E041R02	0.016	0.612 (0.051)	-1.509 (0.147)				
E041R03	0.020	0.558 (0.036)	-0.490 (0.100)		0.343 (0.070)	-0.343 (0.070)	
E041R04	0.013	1.551 (0.176)	0.755 (0.079)	0.152 (0.015)			
E041R05	0.020	0.504 (0.053)	-0.785 (0.144)				
E041R06	0.015	0.675 (0.044)	-1.246 (0.093)				
E041R07	0.020	0.939 (0.054)	0.057 (0.034)		-0.013 (0.027)	0.013 (0.027)	
E041R08	0.009	0.743 (0.048)	0.330 (0.074)				
E041R09	0.011	0.600 (0.045)	-0.171 (0.069)				
E041R10	0.005	1.005 (0.068)	-0.371 (0.090)	0.222 (0.035)			
E041R11	0.010	0.690 (0.043)	0.225 (0.072)		0.259 (0.055)	-0.259 (0.055)	
E041R12	0.006	1.555 (0.138)	-0.239 (0.055)	0.249 (0.027)			
E041R13	0.006	0.790 (0.078)	0.102 (0.090)	0.211 (0.030)			
E041R14	0.006	0.820 (0.044)	-0.275 (0.080)				
E041R15	0.012	1.302 (0.059)	-0.136 (0.031)				
E041R16	0.017	0.804 (0.050)	-0.174 (0.069)				
E041T01	0.006	0.898 (0.178)	0.258 (0.117)	0.270 (0.047)			
E041T02	0.016	0.960 (0.061)	-1.635 (0.107)				
E041T03	0.015	0.681 (0.127)	0.167 (0.096)	0.159 (0.023)			
E041T04	0.014	1.195 (0.088)	-0.875 (0.076)	0.188 (0.025)			
E041T05	0.009	0.898 (0.042)	-0.836 (0.045)		0.252 (0.047)	-0.252 (0.047)	
E041T06	0.011	0.953 (0.072)	-0.245 (0.064)				
E041T08	0.007	0.753 (0.065)	-0.306 (0.071)				
E041T09	0.012	0.976 (0.057)	0.749 (0.068)				
E041T10	0.011	1.103 (0.060)	-0.060 (0.088)				
E041T11	0.018	1.009 (0.061)	-0.612 (0.058)	0.148 (0.019)			
E041T12	0.010	0.608 (0.054)	-1.066 (0.169)	0.214 (0.027)			
E041T13	0.007	1.095 (0.114)	0.057 (0.105)	0.276 (0.039)			
E041T14	0.006	0.676 (0.071)	0.272 (0.080)				
E041T15	0.014	1.834 (0.112)	-0.008 (0.038)	0.120 (0.012)			
E041T16	0.010	1.172 (0.072)	-0.734 (0.077)	0.188 (0.034)			
E041T17	0.010	1.181 (0.090)	-0.163 (0.075)				
E041T18	0.047	0.746 (0.071)	0.414 (0.066)				

ePIRLS item parameters estimated from PIRLS 2021 ePIRLS calibration using fixed digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for digitalPIRLS countries, along with digitalPIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
E041Z01	0.005	0.987 (0.122)	-0.196 (0.133)	0.296 (0.054)			
E041Z02	0.012	0.584 (0.038)	-0.188 (0.085)		-0.081 (0.091)	0.081 (0.091)	
E041Z03	0.009	0.800 (0.072)	0.071 (0.119)	0.197 (0.036)			
E041Z04	0.018	0.906 (0.081)	-1.141 (0.088)				
E041Z05	0.017	0.560 (0.070)	-0.422 (0.142)	0.175 (0.015)			
E041Z06	0.007	1.191 (0.074)	-0.181 (0.042)				
E041Z07	0.011	1.388 (0.120)	-0.078 (0.069)	0.262 (0.033)			
E041Z08	0.005	1.163 (0.137)	-0.009 (0.078)	0.270 (0.037)			
E041Z09	0.007	0.614 (0.048)	0.638 (0.134)				
E041Z10	0.010	1.112 (0.100)	0.012 (0.086)	0.176 (0.023)			
E041Z11	0.010	1.382 (0.099)	-0.807 (0.081)	0.244 (0.037)			
E041Z12	0.010	0.737 (0.047)	-0.585 (0.082)				
E041Z13	0.012	1.416 (0.094)	-0.630 (0.076)	0.184 (0.024)			
E041Z14	0.020	0.811 (0.066)	-0.780 (0.082)		0.326 (0.064)	-0.326 (0.064)	
E041Z15	0.010	1.300 (0.141)	-0.083 (0.075)	0.270 (0.033)			
E041Z16	0.022	0.819 (0.044)	-0.289 (0.051)		0.227 (0.040)	-0.227 (0.040)	
E041Z17	0.011	0.700 (0.065)	-0.005 (0.104)				
E041Z18	0.006	1.149 (0.096)	0.086 (0.078)	0.181 (0.025)			
E041Z19	0.018	1.015 (0.045)	0.349 (0.043)		0.406 (0.032)	-0.406 (0.032)	
E041Z20	0.014	0.893 (0.061)	-0.240 (0.048)		0.331 (0.035)	-0.331 (0.035)	
E051O01	0.009	1.072 (0.087)	0.010 (0.073)	0.178 (0.026)			
E051O02	0.005	1.225 (0.162)	-0.679 (0.210)	0.383 (0.085)			
E051O03	0.008	1.128 (0.269)	-0.051 (0.123)	0.347 (0.060)			
E051O04	0.011	0.698 (0.073)	-0.559 (0.120)	0.176 (0.021)			
E051O05	0.007	1.086 (0.089)	-0.515 (0.077)				
E051O06	0.009	1.035 (0.096)	-0.580 (0.133)	0.244 (0.057)			
E051O07	0.007	0.924 (0.108)	-0.099 (0.118)	0.312 (0.039)			
E051O08	0.018	0.439 (0.036)	-1.053 (0.110)		-1.119 (0.159)	1.119 (0.159)	
E051O09	0.012	1.288 (0.070)	-0.766 (0.045)				
E051O10	0.021	0.633 (0.040)	-0.716 (0.060)		0.259 (0.079)	-0.259 (0.079)	
E051O11	0.010	0.517 (0.049)	0.273 (0.093)				
E051O12	0.022	0.451 (0.030)	0.333 (0.099)		0.681 (0.100)	-0.681 (0.100)	
E051O13	0.016	0.613 (0.052)	-1.018 (0.068)		0.153 (0.055)	-0.153 (0.055)	
E051O14	0.013	0.992 (0.153)	-0.539 (0.124)	0.266 (0.057)			

ePIRLS item parameters estimated from PIRLS 2021 ePIRLS calibration using fixed digitalPIRLS item parameters from the PIRLS 2021 digital calibration. Used to estimate student proficiency for digitalPIRLS countries, along with digitalPIRLS items.

Item	RMSD	Slope (a_i)	Location (b_i)	Guessing (c_i)	Step 1 (t_{i1})	Step 2 (t_{i2})	Step 3 (t_{i3})
E051O15	0.013	1.457 (0.165)	1.001 (0.059)	0.082 (0.010)			
E051O16	0.008	1.588 (0.171)	0.374 (0.068)	0.241 (0.024)			
E051O17	0.007	1.104 (0.073)	0.477 (0.050)				
E051O18	0.020	0.341 (0.034)	0.672 (0.110)		-0.108 (0.090)	0.108 (0.090)	
E051V01	0.010	0.703 (0.150)	0.424 (0.125)	0.213 (0.046)			
E051V02	0.020	1.056 (0.118)	-0.426 (0.105)	0.192 (0.029)			
E051V03	0.012	0.789 (0.090)	0.430 (0.090)				
E051V04	0.012	0.449 (0.034)	0.932 (0.102)		0.542 (0.187)	-0.542 (0.187)	
E051V05	0.005	1.143 (0.146)	-0.187 (0.111)	0.349 (0.051)			
E051V06	0.006	0.983 (0.055)	0.067 (0.051)				
E051V07	0.007	1.145 (0.113)	-0.223 (0.101)	0.202 (0.038)			
E051V08	0.010	1.953 (0.137)	0.147 (0.056)	0.225 (0.021)			
E051V09	0.017	0.667 (0.036)	-0.093 (0.044)		0.161 (0.049)	-0.161 (0.049)	
E051V10	0.007	0.812 (0.066)	0.814 (0.104)				
E051V11	0.013	1.311 (0.087)	-0.185 (0.044)	0.141 (0.018)			
E051V12	0.008	0.547 (0.145)	0.618 (0.149)	0.175 (0.035)			
E051V13	0.018	1.466 (0.081)	-1.590 (0.072)				
E051V14	0.016	0.992 (0.102)	-0.034 (0.088)	0.226 (0.035)			
E051V15	0.016	0.720 (0.045)	0.323 (0.083)		-0.062 (0.041)	0.062 (0.041)	
E051V16	0.012	1.239 (0.075)	-0.013 (0.056)				
E051V17	0.006	0.598 (0.041)	0.683 (0.054)		0.365 (0.042)	-0.365 (0.042)	
E051V18	0.006	1.036 (0.083)	0.431 (0.054)				
E051V19A	0.015	0.708 (0.054)	1.736 (0.134)				
E051V20	0.010	0.910 (0.073)	1.024 (0.073)				
Non-Response Indicators							
E0CRPT1	0.005	1.620 (0.254)	0.373 (0.053)	0.462 (0.035)			
E0CRPT2	0.007	1.838 (0.211)	0.370 (0.049)	0.539 (0.027)			
E0MCPT1	0.005	1.379 (0.326)	0.052 (0.161)	0.747 (0.032)			
E0MCPT2	0.005	0.667 (0.136)	-0.734 (0.482)	0.653 (0.087)			
E0CRRSI	0.004	1.643 (0.219)	-0.102 (0.081)	0.586 (0.036)			
E0CRIIE	0.008	1.618 (0.178)	0.441 (0.046)	0.435 (0.029)			
E0MCRSI	0.007	0.804 (0.147)	-0.296 (0.264)	0.581 (0.061)			
E0MCIIE	0.002	2.787 (0.689)	0.026 (0.092)	0.880 (0.013)			

() Standard errors appear in parentheses.