Math Follow-Up Study

September 2020 Progress Update

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&

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HEISING - SIMONS
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Acknowledgements

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Official Analysis Sample

- There were 771 students in our database from the Pre-K study.
- We re-consented 519 students in 5th grade.

- **Timepoints from the Middle School Follow-Up Study (funded by IES & HSF):**
  - Year 1 (5th grade): 517 students assessed
  - Year 2 (6th grade): 513 students assessed
  - Year 3 (7th grade): 503 students assessed
  - Year 4 (8th grade): 496 students assessed
    - *Note.* 4 students have partial data at this timepoint.
  - Year 5 (9th grade): 486 students assessed
    - *Note.* 1 student has partial data at this timepoint, and we dropped all data for 1 student who was ill during testing. So, 484 students have complete data at this timepoint, and 1 additional student has partial data.
- **Timepoints from the Current Study (funded by NSF):**
  - Year 1 (10th grade): 457 students assessed
    - *Note.* 457 students were assessed, but we dropped data for 2 students with changes in guardianship. So, 455 students have data at this timepoint.
  - Year 2 (11th grade): 357 students assessed either fully or partially
    - *Note*. 357 students were assessed, but we kept 353 students in our analytical sample for this timepoint. Data were dropped for 4 students because:
      - Student indicated that he/she had a guardianship change, and we were unable to obtain a consent form from the new guardian (2 students).
      - Significant technology issues/disruptions (1 student).
      - Student's glasses were broken, and she expressed difficulty reading the questions (1 student).
    - *Note.* Due the COVID-19 pandemic, we began conducting virtual assessments in late spring. A breakdown of the assessment data collected this year is included below.

Session Type	N	% (of Assessed Sample)
In-Person Assessment[1]	238	67.4
Virtual Assessment	115	32.6
Full Virtual Assessment	37	10.5
Modified Virtual Assessment[2]	42	11.9
Completed Survey & Partial Interview Only[3]	36	10.2

Note[1]. One student completed some measures in school and some measures virtually. He is included in the "in-person" group because the majority of his assessment session took place at school.

Note[2]. A modified virtual assessment occurred when technology (e.g., Chromebook, cell phone, etc.) prevented the student from taking control of the screen via Zoom and entering their own answers. The experimenter entered answers for students. Also, the student interview sorting task could not occur.

Note[3]. Due to assessor error, TIMSS Science and Interview data for 1 student were accidentally deleted.

Data Collection Timeline

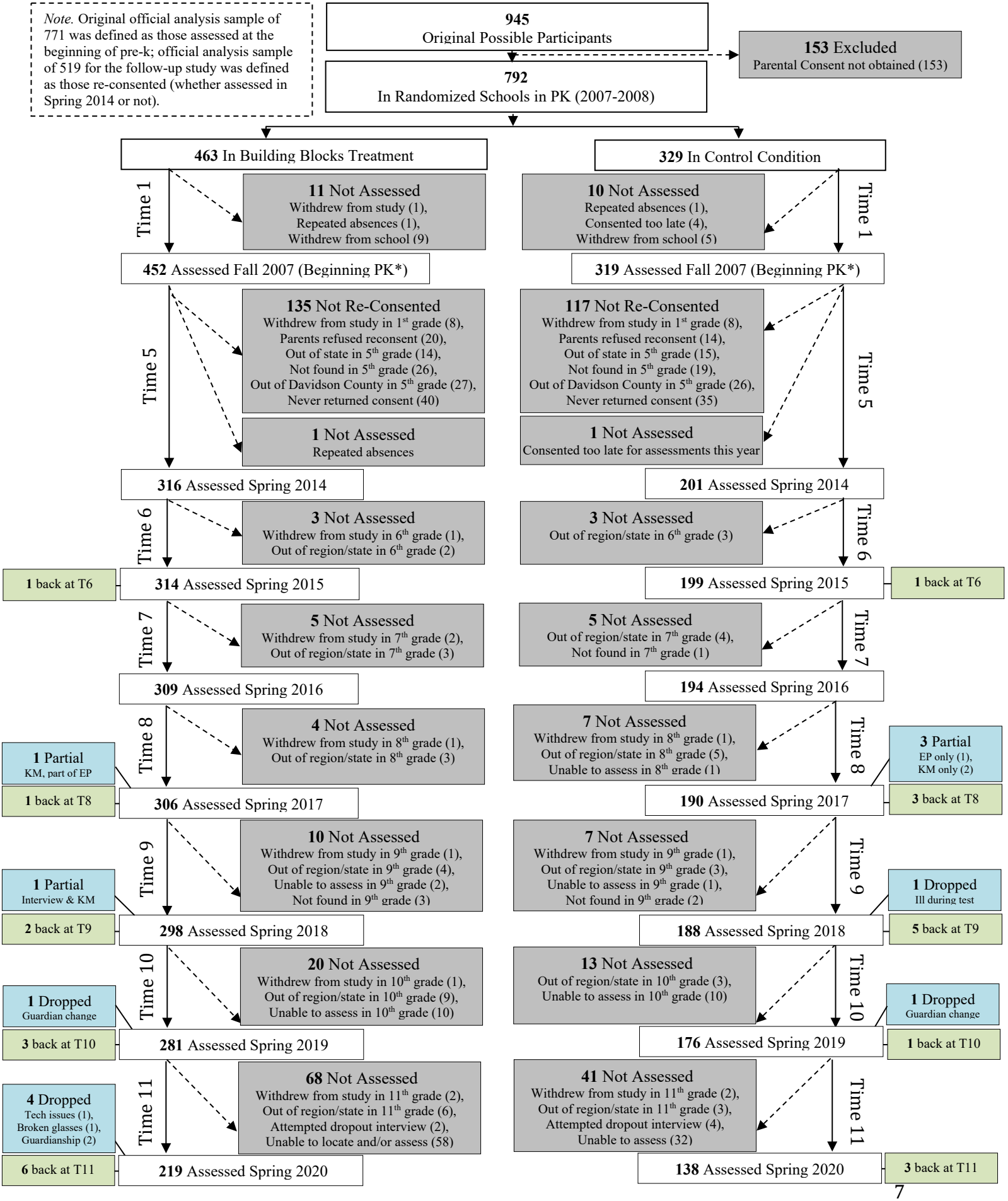
The following chart provides an overview of the student direct assessment data collection timepoints for the original study ("Scaling Up TRIAD"), as well as the two follow-up studies.

OVERVIEW OF STUDENT DIRECT ASSESMENT DATA COLLECTION				
Project Title	**Funding Source**	**School Year**	**Grade Level***	**Data Collection Timepoints**
Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and Technologies	Institute of Education Sciences	2007-2008	Pre-K	Fall Pre-K
				Spring Pre-K
		2008-2009	Kindergarten	Spring K*
		2009-2010	1st	Spring 1st Grade*
"Between Study Years"	*N/A*	*2010-2011*	*2nd*	*N/A*
		2011-2012	*3rd*	*N/A*
		2012-2013	*4th*	*N/A*
Contributions to Mathematics Competency of At-Risk Students: The Impact of Executive Function, Approximate Number System and Early Mathematics Skills	Heising-Simons Foundation & Institute of Education Sciences	2013-2014	5th	Spring 5th Grade*
		2014-2015	6th	Spring 6th Grade*
		2015-2016	7th	Spring 7th Grade*
		2016-2017	8th	Spring 8th Grade*
		2017-2018	9th	Spring 9th Grade*
A Longitudinal Study Predicting Postsecondary STEM Readiness Among Low-Income Minority Students	National Science Foundation	2018-2019	10th	Spring 10th Grade*
		2019-2020	11th	Spring 11th Grade*
		2020-2021	12th	Spring 12th Grade*

*Grade level if not retained.

Consort Chart: From the Original Study through the Follow-Up Studies

Note. Original official analysis sample of 771 was defined as those assessed at the beginning of pre-k; official analysis sample of 519 for the follow-up study was defined as those re-consented (whether assessed in Spring 2014 or not).



Demographic Information (Assessed Sample for Grade 11)

Age at Time of Testing (Years)	N	Min	Max	Mean	SD
Entire Assessed Sample	353	16.33	18.58	16.98	0.34
In-Person Assessment	238	16.33	17.42	16.89	0.30
Full Virtual Assessment	37	16.67	17.58	17.10	0.31
Modified Virtual Assessment	42	16.58	17.58	17.15	0.31
Completed Survey & Partial Interview Only	36	16.67	18.58	17.25	0.36

Student Demographics (Assessed Sample for Grade 11 vs. Overall Study Sample)

	Assessed Sample (N=353)		Overall Sample (N=519)	
	Freq	Pct	Freq	Pct
Ethnicity				
Black	278	78.8	410	79.0
White	25	7.1	45	8.7
Hispanic	35	9.9	42	8.1
Other	15	4.2	22	4.2
Gender				
Male	150	42.5	227	43.7
Female	203	57.5	292	56.3
Pre-K ELL Designation[1]				
ELL	38	10.8	47	9.1
Not ELL	314	89.0	471	90.8

Note[1]. 1 student is missing a pre-k ELL designation.

Note. Assessed students were spread across 50 schools. Most were located in Davidson County, but we also assessed any student who had moved to a contiguous county (1 in Cheatham, 7 in Clarksville-Montgomery, 3 in Robertson, 16 in Rutherford, 4 in Sumner, 1 in Williamson, and 4 in Wilson). In addition, 4 students attended a private school, and 4 were homeschooled.

Student Demographics by Grade 11 Session Type

	In-Person Assessment (N = 238)		Full Virtual Assessment (N = 37)		Modified Virtual Assessment (N = 42)		Completed Survey & Partial Interview Only (N = 36)		Not Assessed in Grade 11 (N = 166)	
	Freq	**Pct**	**Freq**	**Pct**	**Freq**	**Pct**	**Freq**	**Pct**	**Freq**	**Pct**
Ethnicity										
Black	194	81.5	26	70.3	33	78.6	25	69.4	132	79.5
White	15	6.3	4	10.8	5	11.9	1	2.8	20	12.0
Hispanic	22	9.2	6	16.2	1	2.4	6	16.7	7	4.2
Other	7	2.9	1	2.7	3	7.1	4	11.1	7	4.2
Gender										
Male	105	44.1	13	35.1	14	33.3	18	50.0	77	46.4
Female	133	55.9	24	64.9	28	66.7	18	50.0	89	53.6
Pre-K ELL Designation[1]										
ELL	21	8.8	7	18.9	4	9.5	6	16.7	9	5.4
Not ELL	216	90.8	30	81.1	38	90.5	30	83.3	157	94.6
Number of Current Schools	19	-	19	-	24	-	18	-	-	-

Note[1]. 1 student is missing a pre-k ELL designation.

Socioeconomic Information

Socioeconomic Information from the Early Math Study

Students participating in our study are from a historically marginalized group. Participants in the early study (pre-k to 1st grade) were in classrooms that were recruited from pre-k and Head Start centers that had income cutoffs for enrollment.

A composite SES variable was created from parents' responses to a questionnaire that included items such as (1) the highest level of education completed by the survey respondent, (2) the highest level of education completed by the respondent's spouse/partner, and (3) the total household income over the past year. The data were centered with a mean of 0 for the original, full sample.

SES Composite Score	N	Min	Max	Mean	SD
Entire Assessed Sample	352	-2.72	4.64	0.11	1.70
In-Person Assessment	237	-2.72	4.64	0.05	1.63
Full Virtual Assessment	37	-2.35	4.64	0.70	1.87
Modified Virtual Assessment	42	-2.35	3.66	-0.14	1.80
Completed Survey & Partial Interview Only	36	-2.35	4.64	0.15	1.82

Note. 1 student is missing a pre-k SES composite score.

Socioeconomic Information from the Math Follow-Up Study

Participants in the follow-up studies remained in low-income households. Most students who were re-consented in 5th grade qualified for Free or Reduced-Price Lunch.

We collected updated data about parental education and household income via a phone survey conducted in the 2018-2019 school year, when most students were in 10th grade.

- Of the 519 students in the full sample, we were able to complete interviews with 408 parents (78.6% of the original sample, N=519). In addition, we have partial data on 8 parents (1.5% of the original sample, N=519).

We fully dropped interview data for 5 participants for the following reasons:

- **Language Barriers (N=2).** The respondent was a non-native English speaker, and we did not have a bilingual staff member who could conduct the interview in the parent's native language (e.g., Somali).
- **Mostly Incomplete Interview Data (N=3).** A few parents started the interview but only completed a few questions. We dropped cases where the majority of the interview data was missing.

Of this year's assessed sample (N = 353), we have valid parent interview data on 297 students (84.1% of the assessed sample). We were unable to reach 53 of the participants who were assessed this year. Also, 3 of the completed parent interviews were dropped (2 due to language barriers, and 1 due to mostly incomplete interview data).

SES Data for the Entire Assessed Sample (N = 297)

Highest Education of Student's Caregiver	Female Caregiver		Male Caregiver	
	Freq	Pct	Freq	Pct
Less than high school	48	16.2	30	10.1
High school diploma/GED	158	53.2	110	37.0
Associate's degree	46	15.5	15	5.1
Bachelor's degree	19	6.4	24	8.1
Graduate degree	20	6.7	1	0.3
Don't Know	2	0.7	30	10.1
Not Applicable	4	1.3	87	29.3

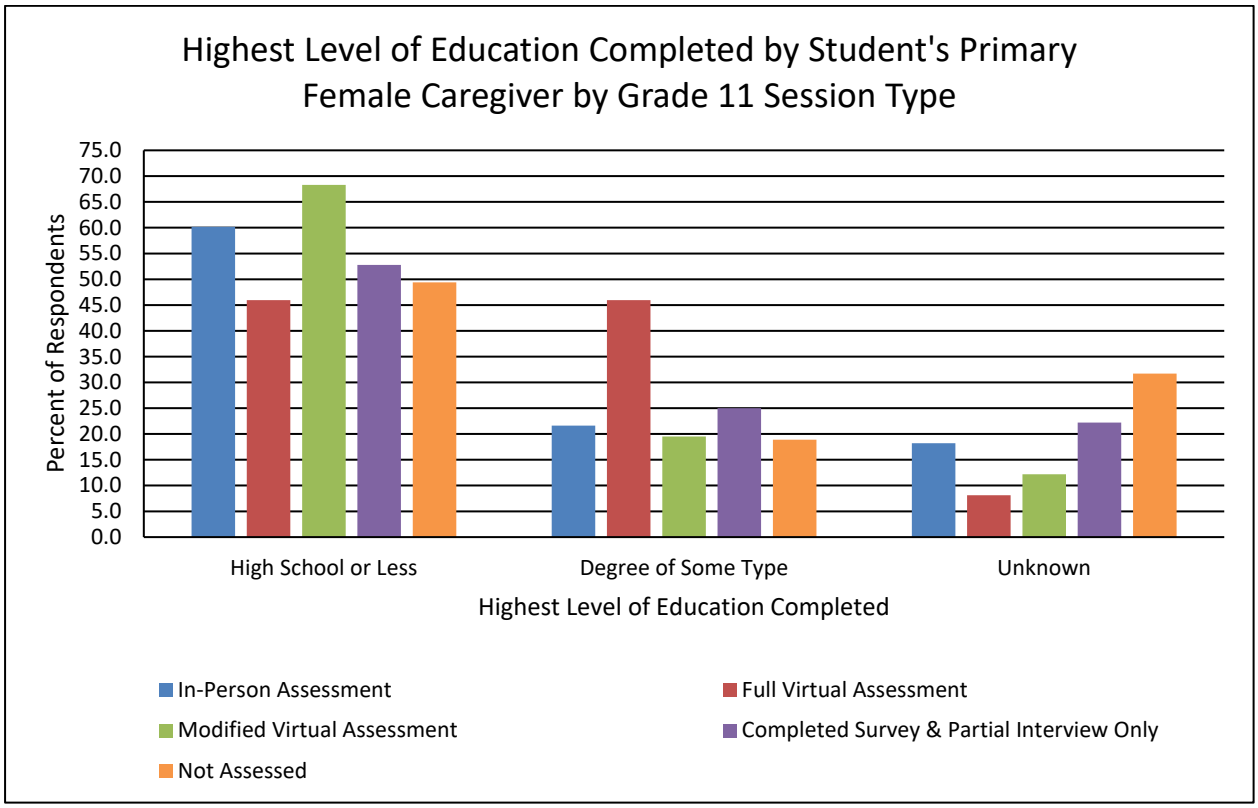
Number of Adults and Children in the Student's Home	N Adults[1]		N Children[2]	
	Freq	Pct	Freq	Pct
1	122	41.1	75	25.3
2	112	37.7	102	34.3
3	46	15.5	51	17.2
4	13	4.4	39	13.1
5 or more	2	0.7	29	9.8
Missing	2	0.7	1	0.3

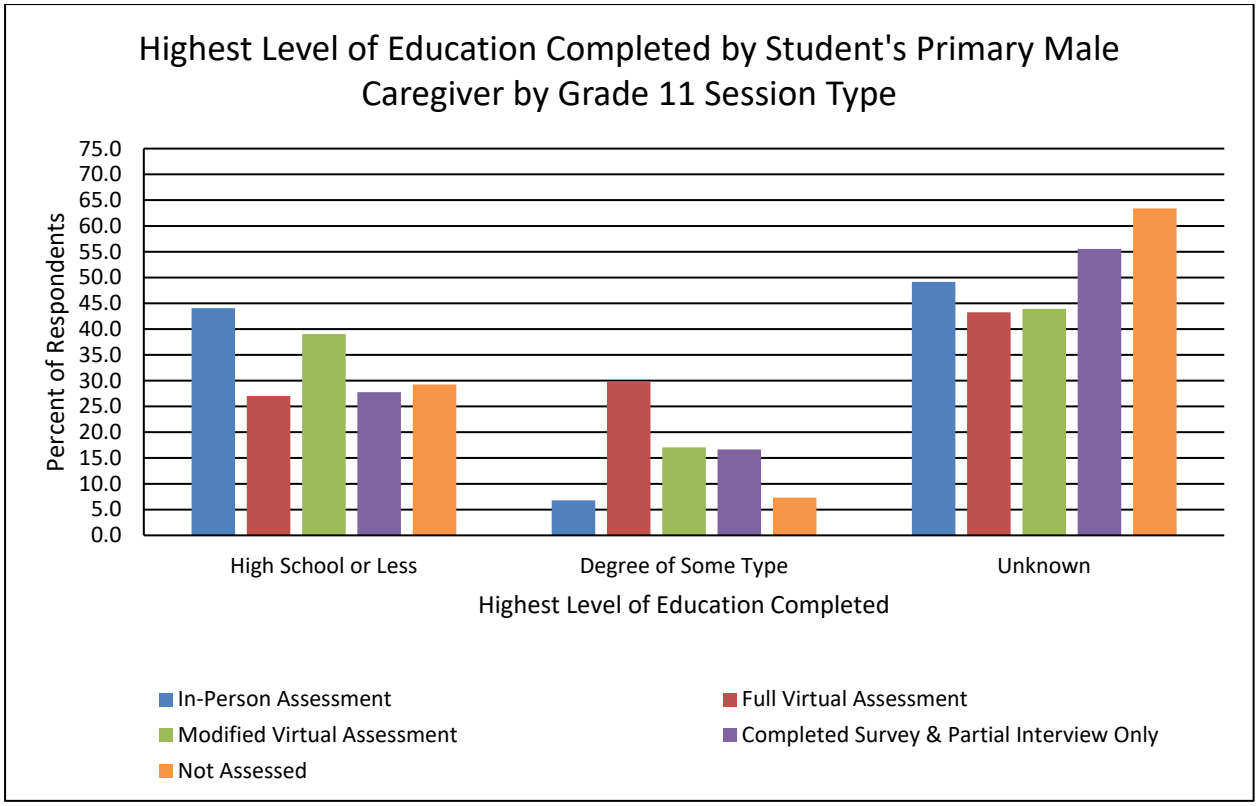
Note[1]. 2 parents refused to answer question #3 (# of adults in student's household).

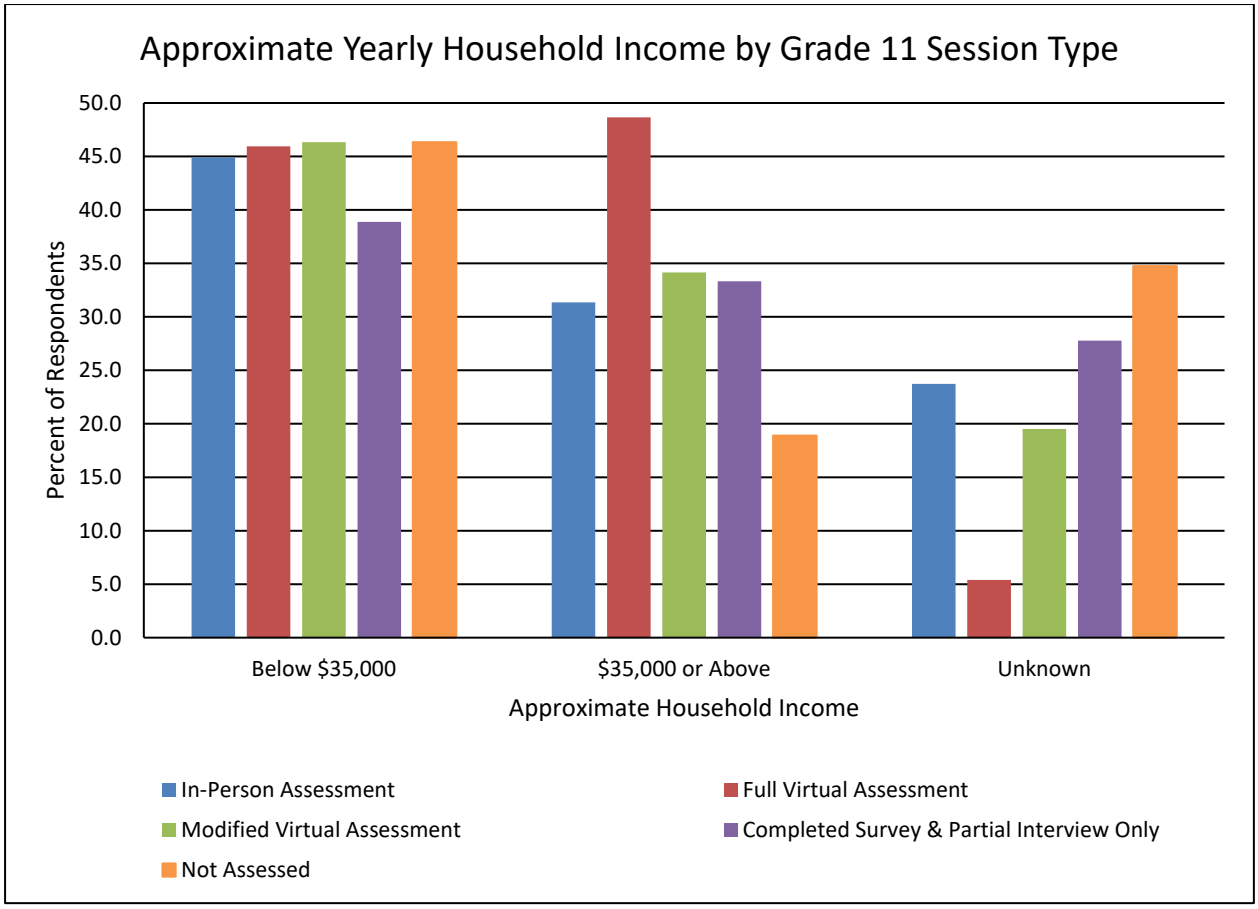
Note[2]. 1 parent chose not to answer question #4 (# of children in student's household).

Approximate Yearly Household Income Level	Freq	Pct
Less than $20,000	84	28.3
$20,000 - $34,999	72	24.2
$35,000 - $49,999	65	21.9
$50,000 - $64,999	24	8.1
$65,000 - $79,999	10	3.4
Over $80,000	19	6.4
Don't know	12	4.0
Prefer not to answer	11	3.7

Education Level of Students' Caregivers by Grade 11 Session Type






Approximate Yearly Household Income by Grade 11 Session Type
Percent of Respondents
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Below $35,000
$35,000 or Above
Unknown
Approximate Household Income
In-Person Assessment
Full Virtual Assessment
Modified Virtual Assessment
Completed Survey & Partial Interview Only
Not Assessed

Student Outcomes: CMAT

The following table includes information about all of the students who completed the CMAT subtests this year. This includes the students who were assessed in-person, as well as those who were able to complete the measures virtually.

Note. Of the students who completed the CMAT subtests this year, data were dropped for 3 students on Problem-Solving, 2 students on Algebra, and 1 student on Geometry because the criteria for basal or ceiling were not met.

	Entire Assessed Sample[1]			In-Person Assessment			Full Virtual Assessment			Modified Virtual Assessment		
CMAT Subtest/Score	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**
CMAT: Problem Solving												
Age-Based Standard Score	314	7.91	2.94	235	8.01	2.78	37	8.84	3.25	42	6.50	3.12
Age-Equivalent Score	314	13.21	3.18	235	13.24	3.06	37	14.52	3.47	42	11.95	3.17
Grade Equivalent Score	314	8.11	3.12	235	8.13	3.00	37	9.38	3.39	42	6.86	3.12
CMAT: Algebra												
Age-Based Standard Score	315	6.92	3.43	237	6.81	3.17	36	8.42	4.21	42	6.24	3.81
Age-Equivalent Score	315	13.17	3.17	237	13.07	3.05	36	14.58	3.59	42	12.53	3.16
Grade Equivalent Score	315	8.04	3.06	237	7.96	2.96	36	9.34	3.40	42	7.42	3.08
CMAT: Geometry												
Age-Based Standard Score	316	6.38	3.25	237	6.24	2.98	37	8.38	4.23	42	5.40	3.09
Age-Equivalent Score	316	13.06	2.79	237	12.93	2.67	37	14.74	3.23	42	12.35	2.53
Grade Equivalent Score	316	7.91	2.64	237	7.79	2.53	37	9.48	3.02	42	7.23	2.41

[1] Does not include those students who only provided survey data (N=36)

CMAT Scores across Years

Students completed three CMAT subtests (Problem Solving, Algebra, and Geometry) in the spring of 10th and 11th grades. The table below shows the scores over time for those 306 students who have complete CMAT data at both timepoints. This includes students who were assessed in-person and virtually this year.

CMAT Subtest/Score	N	Min	Max	Mean	Median	SD	Actual - Expected Mean
CMAT: Problem Solving							
Age-Based Standard Score (Year 10)	306	1.00	15.00	7.67	7.00	2.98	-2.33
Age-Based Standard Score (Year 11)	306	1.00	16.00	7.87	8.00	2.91	-2.13
Age Equivalent Score (Year 10)	306	6.75	18.00	12.87	11.50	3.24	-3.03
Age Equivalent Score (Year 11)	306	6.25	18.00	13.19	12.50	3.17	-3.71
Grade Equivalent Score (Year 10)	306	1.70	12.70	7.78	6.40	3.19	-2.92
Grade Equivalent Score (Year 11)	306	1.20	12.70	8.08	7.40	3.11	-3.62
CMAT: Algebra							
Age-Based Standard Score (Year 10)	306	1.00	17.00	7.12	7.00	3.22	-2.88
Age-Based Standard Score (Year 11)	306	1.00	17.00	6.92	7.00	3.43	-3.08
Age Equivalent Score (Year 10)	306	8.25	18.25	13.10	13.00	3.12	-2.80
Age Equivalent Score (Year 11)	306	8.25	18.25	13.18	13.00	3.16	-3.72
Grade Equivalent Score (Year 10)	306	3.20	12.70	7.98	8.00	3.02	-2.72
Grade Equivalent Score (Year 11)	306	3.20	12.70	8.05	8.00	3.05	-3.65
CMAT: Geometry							
Age-Based Standard Score (Year 10)	306	1.00	16.00	6.99	6.00	2.85	-3.01
Age-Based Standard Score (Year 11)	306	1.00	16.00	6.40	6.00	3.27	-3.60
Age Equivalent Score (Year 10)	306	8.25	18.25	12.75	12.50	2.58	-3.15
Age Equivalent Score (Year 11)	306	8.75	18.25	13.08	12.50	2.79	-3.82
Grade Equivalent Score (Year 10)	306	3.20	12.70	7.62	7.40	2.45	-3.08
Grade Equivalent Score (Year 11)	306	3.70	12.70	7.93	7.40	2.65	-3.77

Note. The average age of the students at 10th grade testing was 15.9 years. The average age of the students at 11th grade testing was 16.9 years.

Note. The average grade level of the students at 10th grade testing was 10.7. The average grade level of the students at 11th grade testing was 11.7. The grade level average for 11th grade uses the full intended school year (vs. the date that MNPS closed due to COVID-19).

CMAT Scores across Years by Grade 11 Session Type

The table below shows students' CMAT scores over time when broken apart by their grade 11 session type.

- For the "In-Person Assessment", "Full Virtual Assessment", and "Modified Virtual Assessment" groups, only students with complete data at both timepoints (10th and 11th grade) were included (N = 306).
- Students in the "Completed Survey & Partial Interview Only" group did not complete the CMAT subtests this year. We included 10th grade CMAT data for all students in this category who were assessed last year (N = 36).
- Likewise, we included 10th grade CMAT data for all students who were assessed last year but who were not assessed this year (N = 107).

	In-Person Assessment			Full Virtual Assessment			Modified Virtual Assessment			Completed Survey & Partial Interview Only			Not Assessed in Grade 11		
CMAT Subtest/Score	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**
CMAT: Problem Solving															
Age-Based Standard Score (Year 10)	228	7.64	2.77	36	8.50	3.61	42	7.10	3.43	36	7.64	2.97	107	7.46	3.07
Age-Based Standard Score (Year 11)	228	7.97	2.73	36	8.83	3.30	42	6.50	3.12	--	--	--	--	--	--
Age Equivalent Score (Year 10)	228	12.78	3.08	36	13.97	3.64	42	12.46	3.62	36	13.22	3.42	107	12.83	3.39
Age Equivalent Score (Year 11)	228	13.21	3.04	36	14.51	3.52	42	11.95	3.17	--	--	--	--	--	--
CMAT: Algebra															
Age-Based Standard Score (Year 10)	228	7.05	3.16	36	8.39	3.54	42	6.40	3.05	36	7.06	3.05	107	6.52	3.42
Age-Based Standard Score (Year 11)	228	6.82	3.16	36	8.42	4.21	42	6.24	3.81	--	--	--	--	--	--
Age Equivalent Score (Year 10)	228	13.01	3.01	36	14.47	3.45	42	12.42	3.14	36	12.94	2.95	107	12.56	3.36
Age Equivalent Score (Year 11)	228	13.08	3.04	36	14.58	3.59	42	12.53	3.16	--	--	--	--	--	--
CMAT: Geometry															
Age-Based Standard Score (Year 10)	228	6.83	2.56	36	8.86	3.86	42	6.24	2.76	36	6.58	2.93	107	7.09	2.94
Age-Based Standard Score (Year 11)	228	6.26	3.00	36	8.44	4.27	42	5.40	3.09	--	--	--	--	--	--
Age Equivalent Score (Year 10)	228	12.59	2.43	36	14.34	3.18	42	12.20	2.38	36	12.63	2.54	107	12.83	2.66
Age Equivalent Score (Year 11)	228	12.94	2.67	36	14.77	3.26	42	12.35	2.53	--	--	--	--	--	--

Student Outcomes: Woodcock-Johnson Subtests

The following table includes information about all of the students who completed the Woodcock-Johnson subtests this year (N = 317). This includes the students who were assessed in-person, as well as those who were able to complete the measures virtually.

Quantitative Concepts Score	N	Min	Max	Mean	Median	SD
Entire Assessed Sample[1]						
W-Score	317	458.00	563.00	517.33	517.00	15.10
Standard Score	317	31.00	122.00	83.78	83.00	13.26
In-Person Assessment						
W-Score	238	461.00	563.00	517.62	517.00	14.27
Standard Score	238	33.00	122.00	84.08	84.00	12.51
Full Virtual Assessment						
W-Score	37	479.00	552.00	522.92	521.00	15.84
Standard Score	37	50.00	113.00	88.46	87.00	13.92
Modified Virtual Assessment						
W-Score	42	458.00	549.00	510.79	509.00	16.98
Standard Score	42	31.00	111.00	77.93	76.00	14.99

[1] Does not include those students who only provided survey data (N=36)

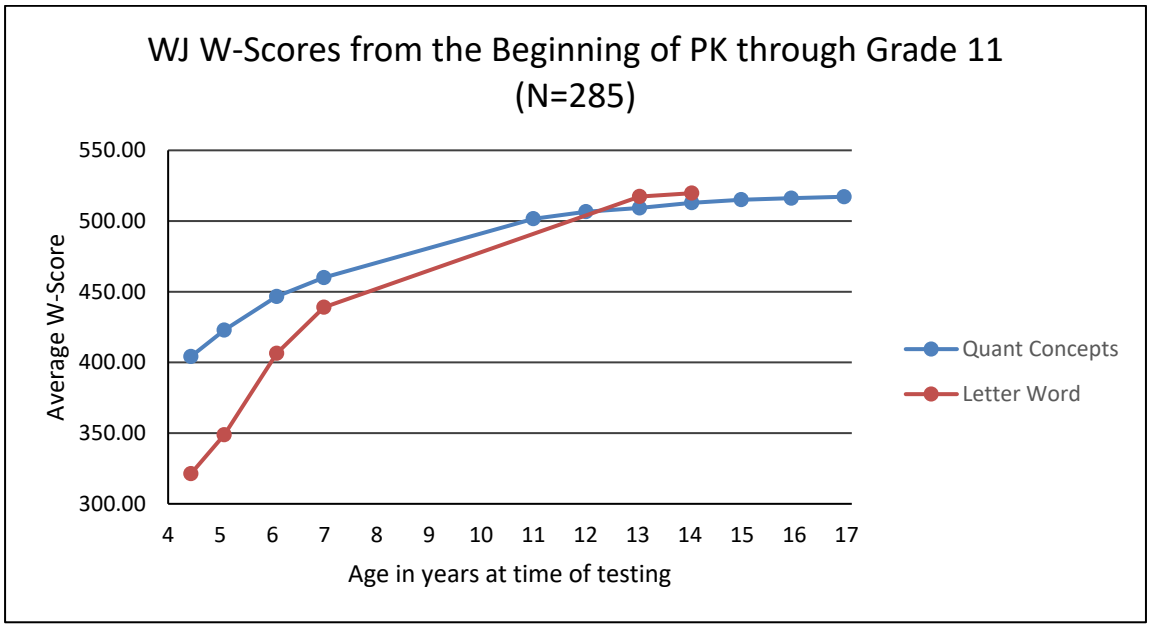
Comparing Students' 10th and 11th Grade Woodcock-Johnson Scores

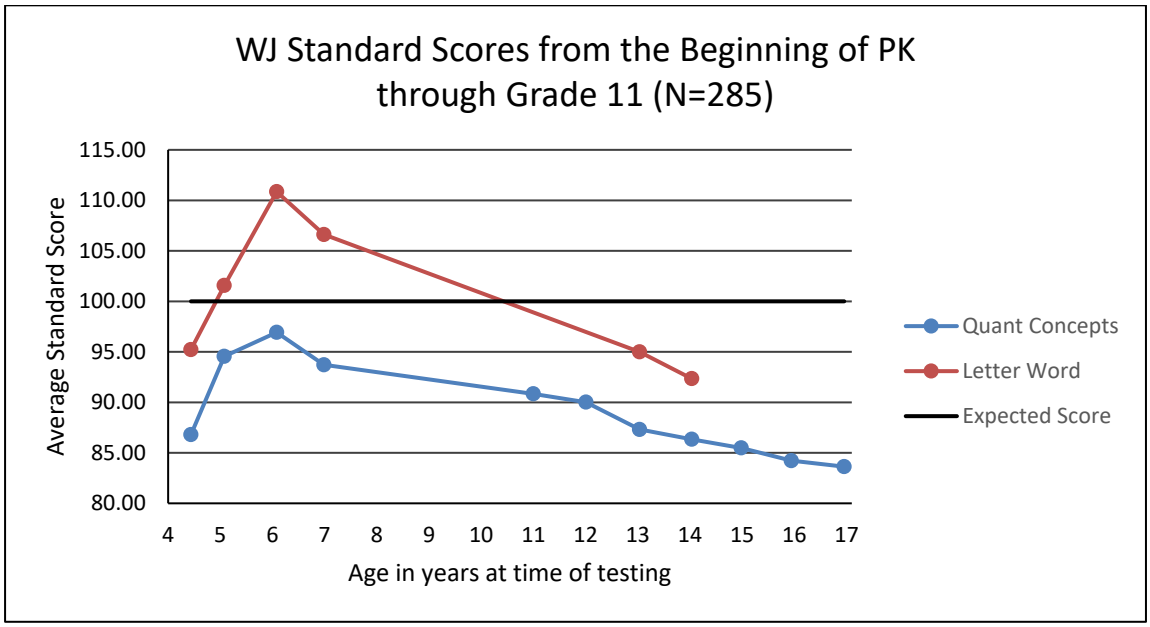
The following table looks at the change in students' Woodcock-Johnson scores from 10th to 11th grade. Only students with complete data at both timepoints are included (N = 311).

Quantitative Concepts Score	N	Min	Max	Mean	Median	SD
Entire Assessed Sample						
W-Score (Year 10)	311	458.00	560.00	516.37	515.00	14.57
W-Score (Year 11)	311	458.00	563.00	517.37	517.00	15.10
Standard Score (Year 10)	311	32.00	121.00	84.42	83.00	12.92
Standard Score (Year 11)	311	31.00	122.00	83.80	83.00	13.25
In-Person Assessment						
W-Score (Year 10)	232	458.00	560.00	516.16	515.00	14.12
W-Score (Year 11)	232	461.00	563.00	517.68	517.00	14.24
Standard Score (Year 10)	232	32.00	121.00	84.28	83.00	12.47
Standard Score (Year 11)	232	33.00	122.00	84.12	84.00	12.48
Full Virtual Assessment						
W-Score (Year 10)	37	492.00	549.00	522.38	524.00	14.76
W-Score (Year 11)	37	479.00	552.00	522.92	521.00	15.84
Standard Score (Year 10)	37	61.00	112.00	89.62	90.00	13.27
Standard Score (Year 11)	37	50.00	113.00	88.46	87.00	13.92
Modified Virtual Assessment						
W-Score (Year 10)	42	470.00	549.00	512.21	510.00	15.52
W-Score (Year 11)	42	458.00	549.00	510.79	509.00	16.98
Standard Score (Year 10)	42	43.00	113.00	80.60	79.00	13.85
Standard Score (Year 11)	42	31.00	111.00	77.93	46.00	14.99

Woodcock-Johnson Scores across Years

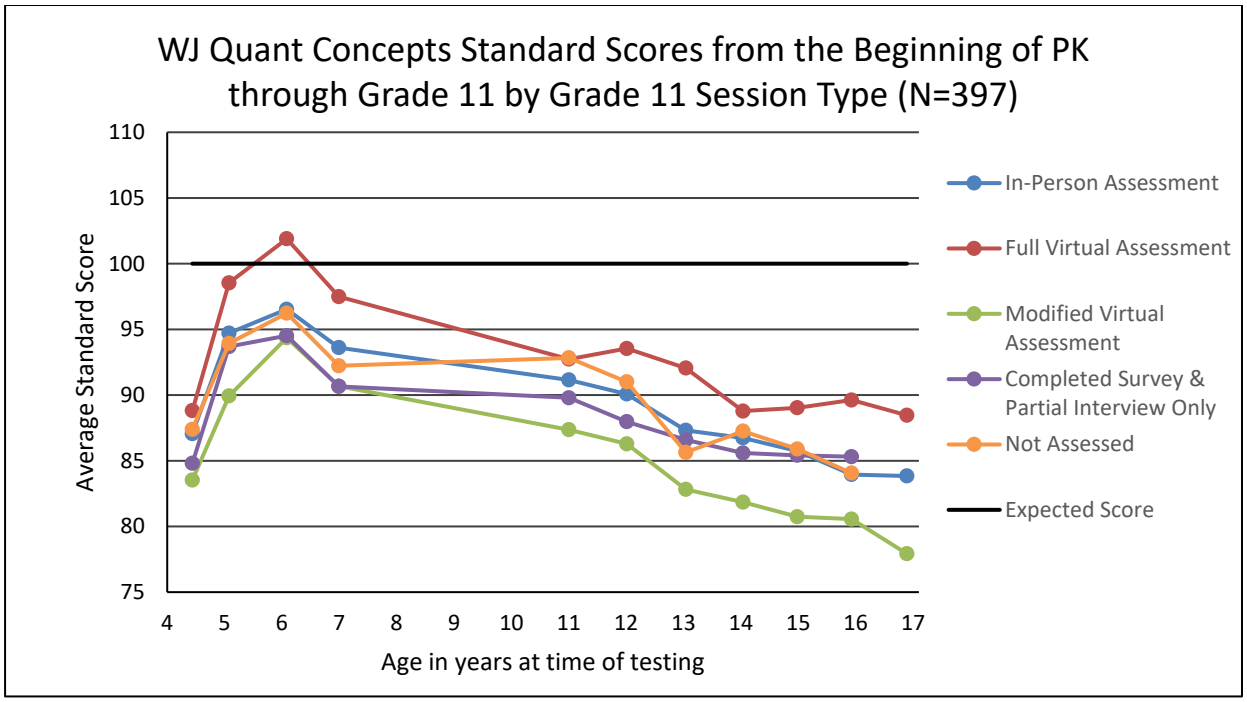
- From the original study through this year, there were 11 testing timepoints. They were: fall of PK, spring of PK, spring of K, spring of 1st grade, and spring of 5th, 6th, 7th, 8th, 9th, 10th, and 11th grades.
- Letter-Word Identification was only given in fall of PK, spring of PK, spring of K, spring of 1st grade, and spring of 7th and 8th grades.
- The graphs below show the scores over time for those 285 students who were tested at all possible timepoints.

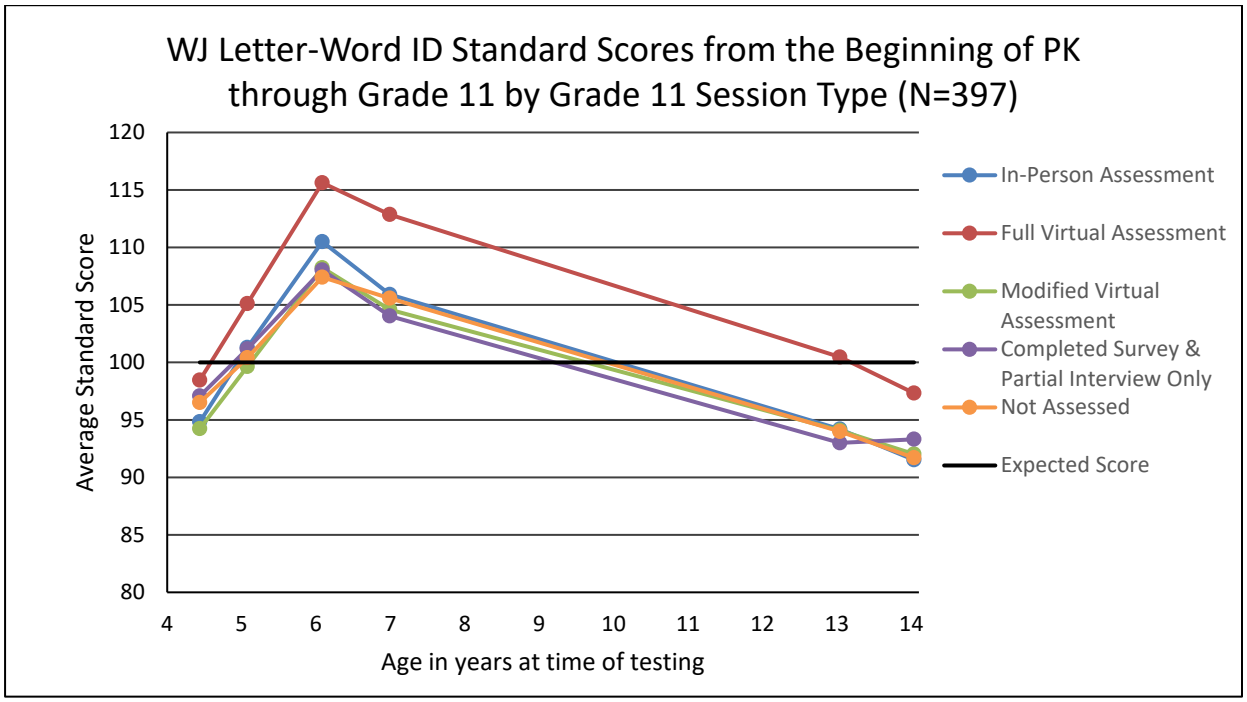




Woodcock-Johnson Scores by Grade 11 Session Type

The following graphs show students' Woodcock-Johnson scores over time when grouped by the type of session conducted in grade 11. Of this year's assessed sample, we only included students who had complete data from pre-k through 10th grade: 209 in-person assessments, 37 full virtual assessments, 39 modified virtual assessments, and 29 students who completed the survey and partial interview only. We also included students who had WJ data from pre-k through 10th grade but who were not assessed this year (N = 83).





Student Survey Outcomes: TIMSS (Trends in International Mathematics and Science Study) Math

Each year since 6th grade, we have administered the TIMSS survey on math attitudes. Beginning last year (10th grade), we added the Science Survey.

	N	Min	Max	Mean	SD
Confidence Scale Average	**353**	**1.00**	**4.00**	**2.88**	**0.69**
I know what my math teacher expects	353	1.00	4.00	3.41	0.81
My math teacher is easy to understand	353	1.00	4.00	2.65	1.02
I usually do well in math	353	1.00	4.00	3.14	0.84
Math is more difficult for me than my classmates (reverse coded)	353	1.00	4.00	2.80	1.00
Math is not one of my strengths (reverse coded)	353	1.00	4.00	2.58	1.16
I learn quickly in math	353	1.00	4.00	2.74	0.94
Math makes me confused and nervous (reverse coded)	353	1.00	4.00	2.75	1.02
I am good at working out hard math problems	353	1.00	4.00	2.64	0.93
My teacher thinks I am good at working out hard math problems	353	1.00	4.00	2.95	0.85
My teacher tells me I am good at math	353	1.00	4.00	2.96	1.01
Math is harder for me than other subjects (reverse coded)	353	1.00	4.00	2.71	1.17
My family thinks I am good at math	353	1.00	4.00	3.20	0.87
Value Scale Average	**353**	**1.50**	**4.00**	**3.25**	**0.53**
It is important to do well in math	353	1.00	4.00	3.85	0.39
Learning math will help me in daily life	353	1.00	4.00	3.42	0.75
I need math to learn other subjects	353	1.00	4.00	3.15	0.74
I need to do well in math to get into college	353	1.00	4.00	3.46	0.80
I need to do well in math to get the job I want	353	1.00	4.00	3.19	0.90
I would like a job that uses math	353	1.00	4.00	2.40	1.05
Like Learning Scale Average	**353**	**1.00**	**4.00**	**2.86**	**0.67**
I enjoy learning math	353	1.00	4.00	3.08	0.86
I wish I did not have to study math (reverse coded)	353	1.00	4.00	2.82	0.99
Math is boring (reverse coded)	353	1.00	4.00	2.73	0.93
I learn interesting things in math	353	1.00	4.00	3.26	0.83
I like math	353	1.00	4.00	2.94	0.97
I think of things not related to the lesson (reverse coded)	353	1.00	4.00	2.25	0.89
I am interested in what my math teacher says	353	1.00	4.00	3.05	0.83
My math teacher gives me interesting things to do	353	1.00	4.00	2.76	1.02

Note. TIMSS items are on a scale of 1 (Disagree a lot) to 4 (Agree a lot). All negative items above were reverse coded (e.g., Math is boring) so that on all items higher scores mean more positive student ratings.

Student Ratings for Math Subscales by Year (Entire Assessed Sample)

		Confidence Scale Average		Value Scale Average		Like Learning Scale Average	
Grade Level[1]	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
6th Grade	513	3.22	0.58	3.55	0.41	3.37	0.53
7th Grade	503	3.07	0.62	3.52	0.42	3.21	0.60
8th Grade	496	3.01	0.65	3.47	0.43	3.06	0.62
9th Grade	484	2.94	0.69	3.39	0.50	2.98	0.67
10th Grade	455	2.93	0.67	3.28	0.54	2.89	0.67
11th Grade	353	2.88	0.69	3.25	0.53	2.86	0.67

Note[1]. Grade level if not retained.

Student Ratings for Math Subscales by 11th Grade Session Type

On average, session type did not appear to influence students' math beliefs. Please see the appendix for more detailed information about students' math beliefs when broken apart by 11th grade session type.

Student Survey Outcomes: TIMSS Science

	N	Min	Max	Mean	SD
Confidence Scale Average	**352**	**1.08**	**4.00**	**3.05**	**0.63**
I know what my science teacher expects	352	1.00	4.00	3.46	0.76
My science teacher is easy to understand	352	1.00	4.00	3.04	0.97
I usually do well in science	352	1.00	4.00	3.32	0.79
Science is more difficult for me than my classmates (reverse coded)	352	1.00	4.00	3.07	0.87
Science is not one of my strengths (reverse coded)	352	1.00	4.00	2.83	0.98
I learn quickly in science	352	1.00	4.00	2.87	0.88
Science makes me confused and nervous (reverse coded)	352	1.00	4.00	3.01	0.91
I am good at working out hard science problems	352	1.00	4.00	2.63	0.91
My teacher thinks I can do well in science class with difficult materials	352	1.00	4.00	3.21	0.81
My teacher tells me I am good at science	352	1.00	4.00	3.08	0.89
Science is harder for me than other subjects (reverse coded)	352	1.00	4.00	3.10	0.92
My family thinks I am good at science	352	1.00	4.00	2.99	0.90
Value Scale Average	**352**	**1.00**	**4.00**	**2.73**	**0.71**
It is important to do well in science	352	1.00	4.00	3.34	0.71
Learning science will help me in daily life	352	1.00	4.00	2.83	0.93
I need science to learn other subjects	352	1.00	4.00	2.38	0.91
I need to do well in science to get into college	352	1.00	4.00	2.91	1.04
I need to do well in science to get the job I want	352	1.00	4.00	2.60	1.11
I would like a job that uses science	352	1.00	4.00	2.34	1.08
Like Learning Scale Average	**352**	**1.00**	**3.89**	**2.88**	**0.65**
I enjoy learning science	352	1.00	4.00	3.13	0.92
I wish I did not have to study science (reverse coded)	352	1.00	4.00	2.92	0.98
I read about science in my spare time	352	1.00	4.00	1.73	0.91
Science is boring (reverse coded)	352	1.00	4.00	2.98	0.96
I learn interesting things in science	352	1.00	4.00	3.52	0.68
I like science	352	1.00	4.00	3.07	0.98
I think of things not related to lesson (reverse coded)	352	1.00	4.00	2.38	0.92
I am interested in what my science teacher says	352	1.00	4.00	3.09	0.88
My science teacher gives me interesting things to do	352	1.00	4.00	3.14	0.94

Note. TIMSS items are on a scale of 1 (Disagree a lot) to 4 (Agree a lot). All negative items above were reverse coded so that higher scores mean more positive ratings.
Note. TIMSS Science data for 1 student were accidentally deleted due to assessor error.

Student Ratings for Science Subscales by Year (Entire Assessed Sample)

		Confidence Scale Average		Value Scale Average		Like Learning Scale Average	
Grade Level[1]	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
10th Grade	455	2.99	0.63	2.76	0.72	2.83	0.67
11th Grade	352	3.05	0.63	2.73	0.71	2.88	0.65

Note[1]. Grade level if not retained.

Student Ratings for Science Subscales by Grade 11 Session Type

On average, session type did not appear to influence students' beliefs about science. Please see the appendix for more detailed information about students' science beliefs when broken apart by 11th grade session type.

Pearson Correlations among 11th Grade Measures

	I. WJ QC	II. CMAT PS	III. CMAT ALG	IV. CMAT GEO	V. TIMSS MATH TOTAL	Va. MATH CONF	Vb. MATH VALUE	Vc. MATH LIKE	VI. TIMSS SCI TOTAL	VIa. SCI CONF	VIb. SCI VALUE
I. WJ Quant Concepts (Std. Score)											
II. CMAT Problem Solving (Std. Score)	0.76**										
III. CMAT Algebra (Std. Score)	0.70**	0.64**									
IV. CMAT Geometry (Std Score)	0.68**	0.64**	0.66**								
V. TIMSS Math (Total Score)	0.15**	0.13*	0.22**	0.20**							
a. Confidence Scale (Avg. Score)	0.21**	0.18**	0.26**	0.24**	0.92**						
b. Value Scale (Avg. Score)	-0.02	-0.02	0.03	-0.01	0.61**	0.34**					
c. Like Learning (Avg. Score)	0.07	0.07	0.18**	0.17**	0.90**	0.71**	0.51**				
VI. TIMSS Science (Total Score)	0.08	0.08	0.00	0.14*	0.10	0.02	0.21**	0.11*			
a. Confidence Scale (Avg. Score)	0.13*	0.09	0.01	0.17**	0.06	0.05	0.06	0.03	0.89**		
b. Value Scale (Avg. Score)	0.00	0.04	0.03	0.02	0.19**	0.04	0.40**	0.19**	0.65**	0.34**	
c. Like Learning (Avg. Score)	0.04	0.05	-0.03	0.13*	0.04	-0.06	0.17**	0.10	0.90**	0.72**	0.48**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Pearson Correlations among 10th & 11th Grade Measures

		10th Grade Outcomes					
		QCS	**CMAT PS (STD SCORE)**	**CMAT ALG (STD SCORE)**	**CMAT GEO (STD SCORE)**	**TIMMS MATH (TOTAL SCORE)**	**TIMSS SCIENCE (TOTAL SCORE)**
11th Grade Outcomes	QCS	0.86**	0.73**	0.70**	0.66**	0.23**	0.03
	CMAT PS (STD SCORE)	0.74**	0.77**	0.68**	0.59**	0.19**	0.03
	CMAT ALG (STD SCORE)	0.69**	0.62**	0.75**	0.65**	0.29**	-0.02
	CMAT GEO (STD SCORE)	0.66**	0.60**	0.60**	0.77**	0.24**	0.12*
	TIMSS MATH (TOTAL SCORE)	0.25**	0.12*	0.28**	0.20**	0.75**	0.06
	TIMSS SCIENCE (TOTAL SCORE)	0.09	0.03	0.02	0.15**	0.05	0.64**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Student Interviews

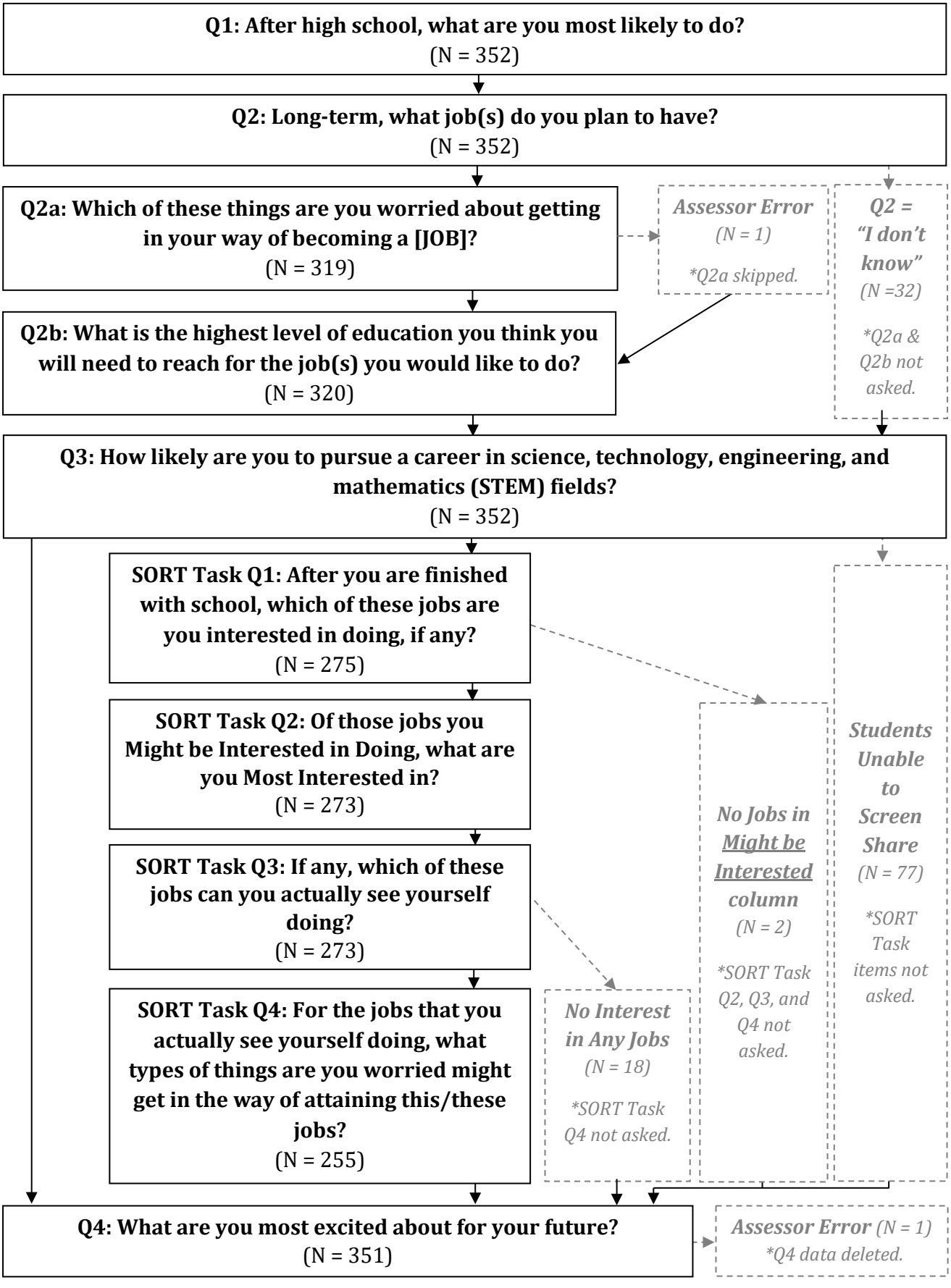
Students were individually interviewed during the spring assessment battery. During the interviews, students were asked about their plans for the future, how likely they thought they were to major in or pursue a career in STEM, and their interest in specific STEM jobs.

Students who were assessed in person completed all interview questions. However, some students who were assessed virtually did not complete all items because they did not have access to necessary technology.

Due to the way the interview was structured, some questions were intentionally skipped based on students' answers. For example, if a student responded that she didn't have a long-term career plan (question #2), then we did not ask questions 2a and 2b, as both were follow-up questions about students' careers.

The flow chart on the following page shows the student N for each interview question. Please note that all interview data for 1 student were accidentally deleted due to assessor error.

Student Ns by Interview Question



Q1: After high school, what are you most likely to do?

Student Response	Freq	Pct
Continue in School	294	83.5
Get a Job	34	9.7
Join the Military	20	5.7
Not Sure	11	3.1
Other	18	5.1

Note. These codes were not mutually exclusive.

Note. The denominator used to calculate percentages for this question was 352 students.

Summary of Students' "Other" Post-High School Plans:

Other Reason (N = 18)	Freq
Care for family	1
Play games ("be a gamer")	1
Sports (e.g., dance, football, basketball)[1]	4
Study or prepare for the future (e.g., work on ACT scores, study how business works, think about college options, etc.)	4
Take a break/gap year before continuing in school	3
Travel	3
No reason specified	2

Note[1]. One student said, "play football…get better at math" and is included in the "Sports" category.

Q2: Long-term, what job(s) do you plan to have?

Career	Freq	Pct
Business owner/CEO/CFO	36	7.7
Nurse	36	7.7
Engineer	29	6.2
Personal appearance worker	27	5.7
Doctor	25	5.3
Athlete	19	4.0
Lawyer	18	3.8
Counselor/therapist	9	1.9
Entrepreneur	9	1.9
Real estate agent	9	1.9
Veterinarian	9	1.9
Business	8	1.7
Interior designer	8	1.7
Law enforcement	8	1.7
Chef/Cook	7	1.5
Mechanic	7	1.5
Teacher/Educator	7	1.5
Actor/Actress	6	1.3
Construction	6	1.3
Psychiatrist/Psychologist	6	1.3
Physical therapist	5	1.1
Anesthesiologist	4	0.9
Architect	4	0.9
Artist/Animator/Illustrator	4	0.9
Dentist/Orthodontist	4	0.9
Forensic pathologist/Scientist	4	0.9
Medical field (not specified)	4	0.9
Social worker	4	0.9
Sonographer/Ultrasound technician	4	0.9
Video game designer, creator or coder, or tester	4	0.9
Welder	4	0.9
Zoologist/Zookeeper	4	0.9
Accountant	3	0.6
Author/Writer/Journalist	3	0.6
Coach	3	0.6
Dog breeder/Dog business/Dog sitter	3	0.6
Filmmaker/Director/Film industry	3	0.6

Massage therapist	3	0.6
Military	3	0.6
Music producer	3	0.6
Photographer	3	0.6
Truck driver	3	0.6
Chemist	2	0.4
Chiropractor	2	0.4
Factory or warehouse worker	2	0.4
Financial planner	2	0.4
Marketing	2	0.4
Nursing assistant	2	0.4
Personal trainer	2	0.4
Retail	2	0.4
Singer	2	0.4
Veterinary technician	2	0.4
Advertising (for tech. industry)	1	0.2
Babysitter	1	0.2
Baker	1	0.2
Bank auditor	1	0.2
Banking and finance	1	0.2
Bartender	1	0.2
Behavioral analyst for the FBI	1	0.2
Biochemist	1	0.2
Biologist or something in the science field	1	0.2
Biophysicist	1	0.2
Clothing designer	1	0.2
Computer repair	1	0.2
Criminal justice field	1	0.2
Dealership	1	0.2
Dental hygienist	1	0.2
Dietician	1	0.2
Electrician	1	0.2
Firefighter	1	0.2
Flight attendant	1	0.2
Florist	1	0.2
Forensic psychologist	1	0.2
Grocery store worker	1	0.2
Healthcare worker	1	0.2
Hotel manager	1	0.2

Lawncare	1	0.2
Lifeguard	1	0.2
Marine biologist	1	0.2
Medical assistant	1	0.2
Mortician	1	0.2
Musical therapist	1	0.2
Paleontologist	1	0.2
Pastor	1	0.2
Pathologist	1	0.2
Philanthropist	1	0.2
Physical therapy assistant	1	0.2
Pilot	1	0.2
Plastic Surgeon	1	0.2
Producer	1	0.2
Programmer	1	0.2
Prop designer	1	0.2
Senator	1	0.2
Speech therapist	1	0.2
Sports (science field as backup)	1	0.2
Sports medicine	1	0.2
Surgeon	1	0.2
Tattoo artist	1	0.2
Technology	1	0.2
Wedding planner	1	0.2
You Tuber	1	0.2
Don't know	33	7.0

Note. Some students planned to have multiple careers. We coded each career separately.

Q2a: Which of these things are you worried about getting in your way of becoming a [JOB]? *Check all that apply.*

- On question #2, 32 students (9.1% of the assessed sample) answered, "I don't know". Those students were not asked this question.
- Also, due to assessor error, this item was accidentally skipped for 1 student.

Reason	Freq	Pct
Lack of Motivation / Confidence	141	44.2
Lack of Money *(College expenses and/or career salary)*	139	43.6
Procrastination / Poor Time Management	128	40.1
Negative Emotions *(Stress, anxiety, feeling overwhelmed, apathy, depression, self-doubt, etc.)*	123	38.6
Not Getting Into or Not Completing the Desired College / Program	122	38.2
Low Grades	120	37.6
Making Mistakes / Getting into Trouble *(Suspension, expulsion, criminal record, etc.)*	81	25.4
Lack of Support / Resources *(Lack of family/professional support and/or lack of knowledge and resources)*	77	24.1
Negative Influences / Expectations *(From peers, friends, parents, and/or others)*	62	19.4
Health Disruptions *(Chronically ill, injury, having a baby, etc.)*	39	12.2
Negative Experiences in Home Life *(Divorce, death, accidents, homelessness, moving between homes or schools, arguments, etc.)*	37	11.6
Dropping Out / School Attendance	36	11.3
Teacher *(Negative relationship, not having a consistent teacher, etc.)*	28	8.8
Drugs / Alcohol	18	5.6
Nothing	16	5.0
Other	5	1.6

Note. These codes were not mutually exclusive.

Note. The denominator used to calculate percentages for this question was 319 students.

Q2b: What is the highest level of education you think you will need to reach for the job(s) you would like to do?

- On question #2, 32 students (9.1% of the assessed sample) answered, "I don't know". Those students were not asked this question.

Student Response	Freq	Pct
High school	23	7.2
Trade/Technical school	18	5.6
Community college	31	9.7
4-year college	152	47.5
Graduate degree	88	27.5
Don't know	8	2.5

Note. The denominator used to calculate percentages for this question was 320 students.

Q3: How likely are you to pursue a career in science, technology, engineering, and mathematics (STEM) fields?

Student Response	Freq	Pct
Very Unlikely	42	11.9
Unlikely	57	16.2
Undecided	98	27.8
Likely	97	27.6
Very Likely	58	16.5

Note. The denominator used to calculate percentages for this question was 352 students.

Sorting Task Items: Please see the appendix for a summary of these data.

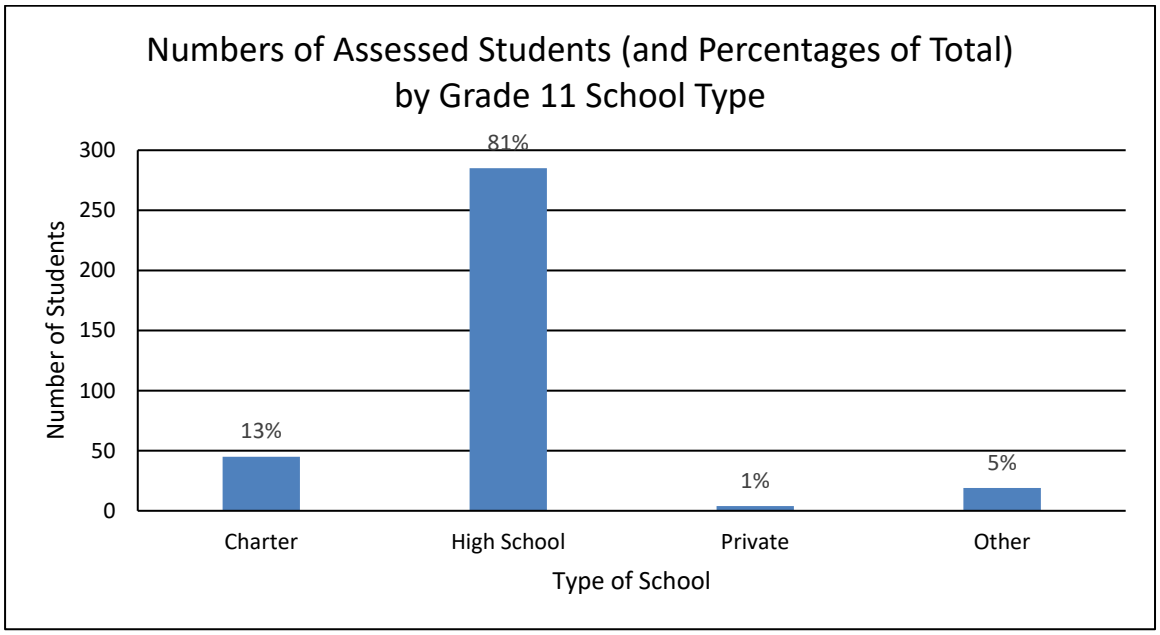
Q4: What are you most excited about for your future?

All students were asked this question at the end of the interview. The question was open-ended, so we have not yet coded or analyzed students' responses.

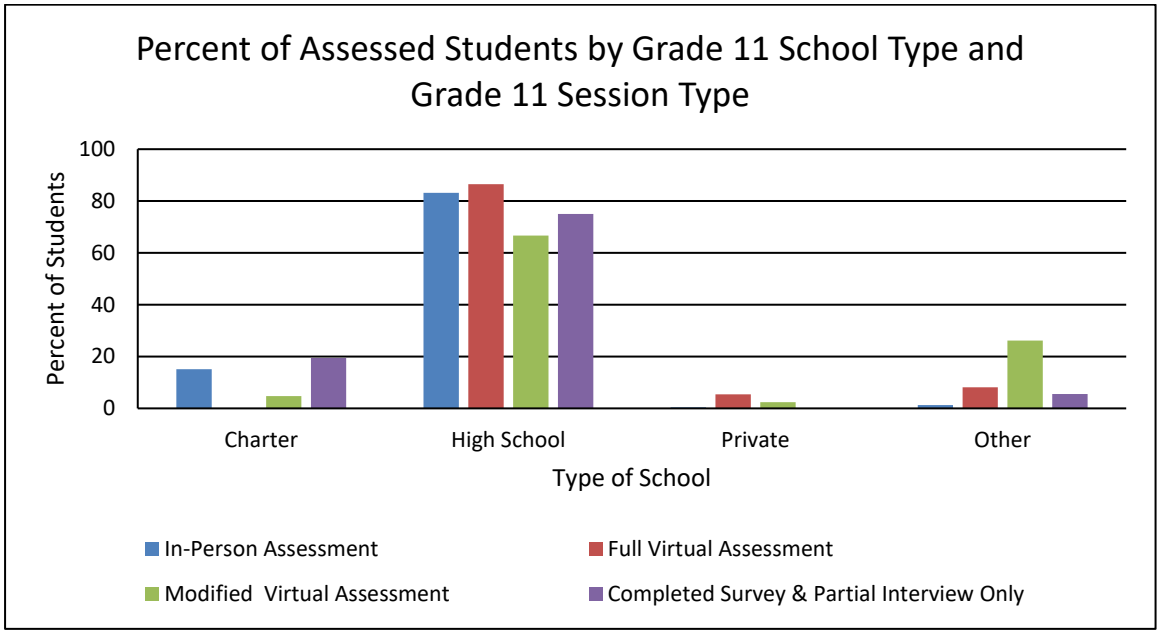
Appendix

Additional Information about Student Demographics

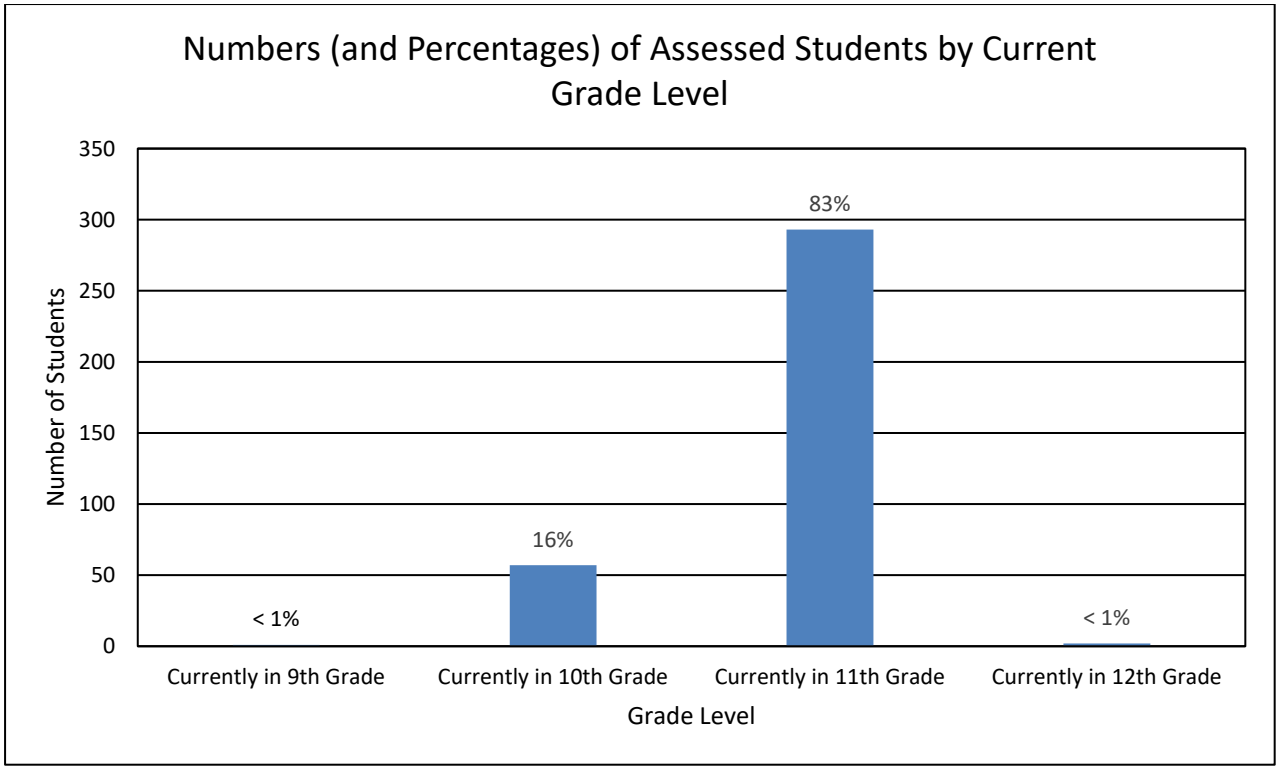
Assessed Students in Grade 11



Note. "Other" schools include 1 that only serves students with IEPs, 1 K-12 school, 3 alternative schools, 1 school serving grades 7–12, and 4 students who were homeschooled.



Note. "Other" schools include 1 that only serves students with IEPs, 1 K-12 school, 3 alternative schools, 1 school serving grades 7–12, and 4 students who were homeschooled.



Note. One student was classified by his school as a 9th grade student because of the number of credits earned.

Mobility of Students between Schools in Grade 11

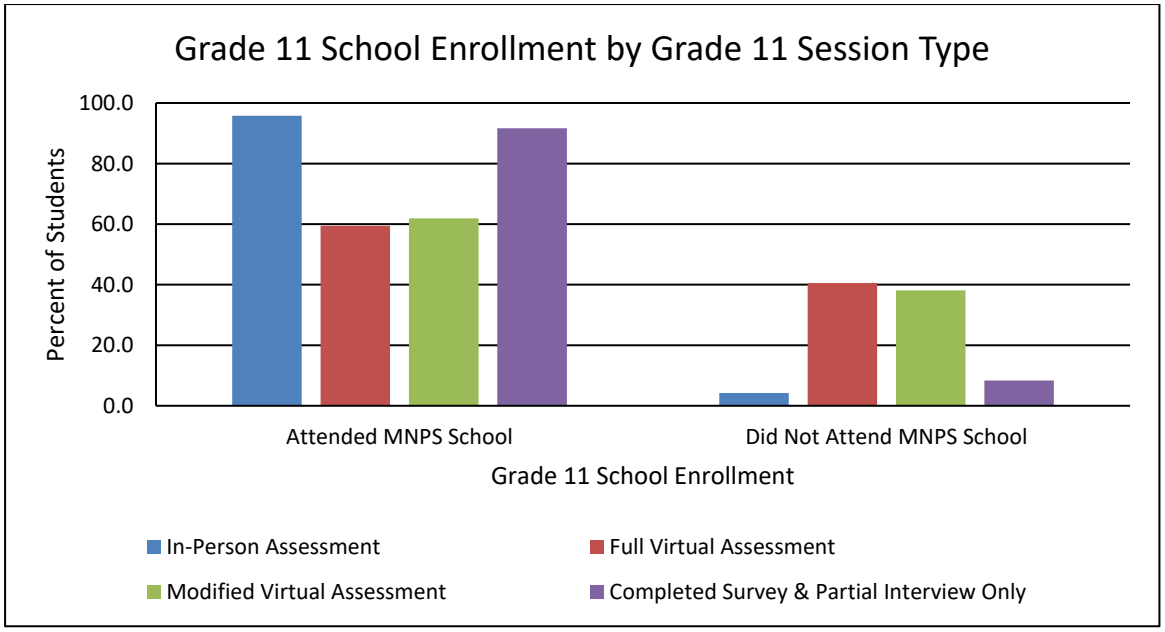
	Frequency	Percent
Attended 1 School	335	94.9
Attended 2 Schools	18	5.1

Note. 10 of the students assessed this year (2.8% of the assessed sample) attended an alternative school at some point during the year.

School Enrollment across Years (Assessed Sample)

		Attended MNPS School		Did Not Attend MNPS School	
Grade Level[1]	N	Freq	Pct	Freq	Pct
5th Grade	519	519	100.0	0	0.0
6th Grade	513	508	99.0	5	1.0
7th Grade	503	483	96.0	20	4.0
8th Grade	496	460	92.7	36	7.3
9th Grade	485	432	89.1	53	10.9
10th Grade	455	395	86.8	60	13.2
11th Grade	353	309	87.5	44	12.5

Note[1]. Grade level if not retained.



DCS and Juvenile Custody across Years

Grade Level[1]	# Students in DCS Custody
5th Grade	0
6th Grade	0
7th Grade	0
8th Grade	6
9th Grade	7
10th Grade	13
11th Grade	13

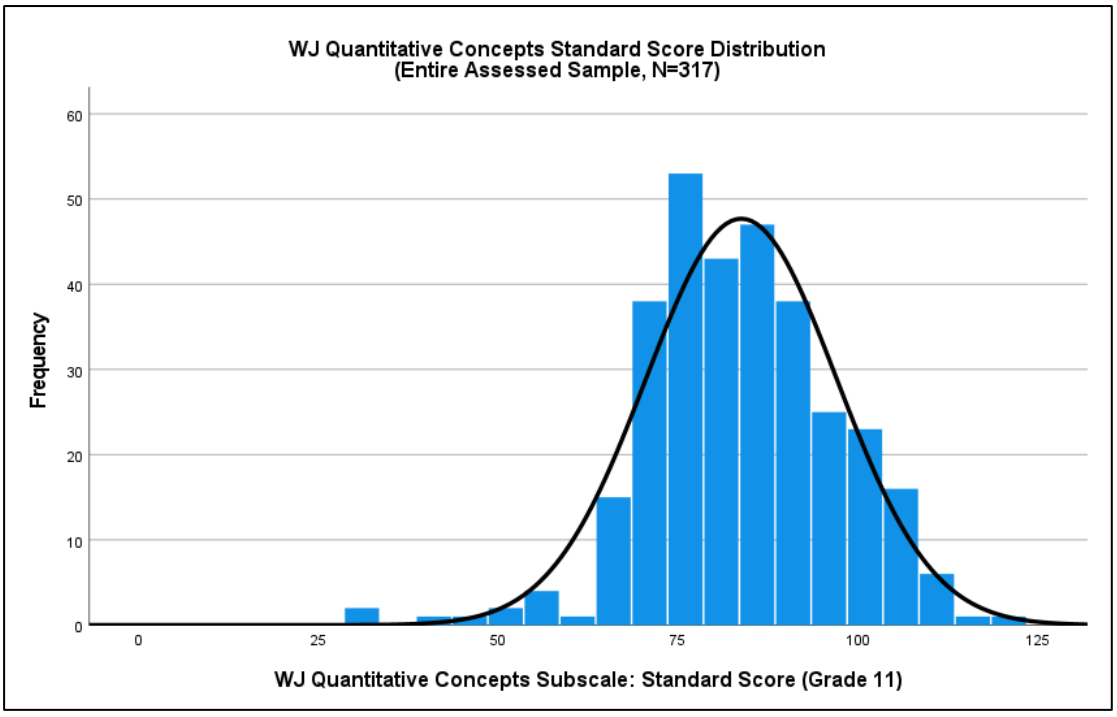
Note[1]. Grade level if not retained.

Note. We have documentation that the students listed in the above table were in DCS (TN Department of Children's Services) custody and/or juvenile custody at some point during the respective school year.

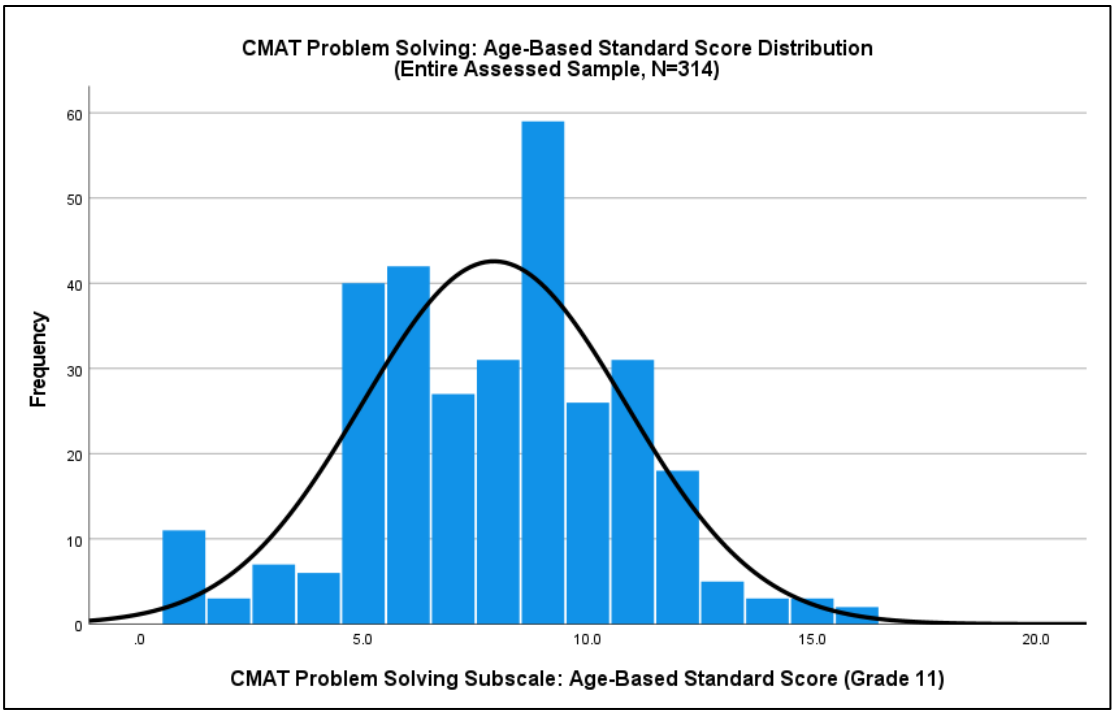
Additional Information about Student Outcomes

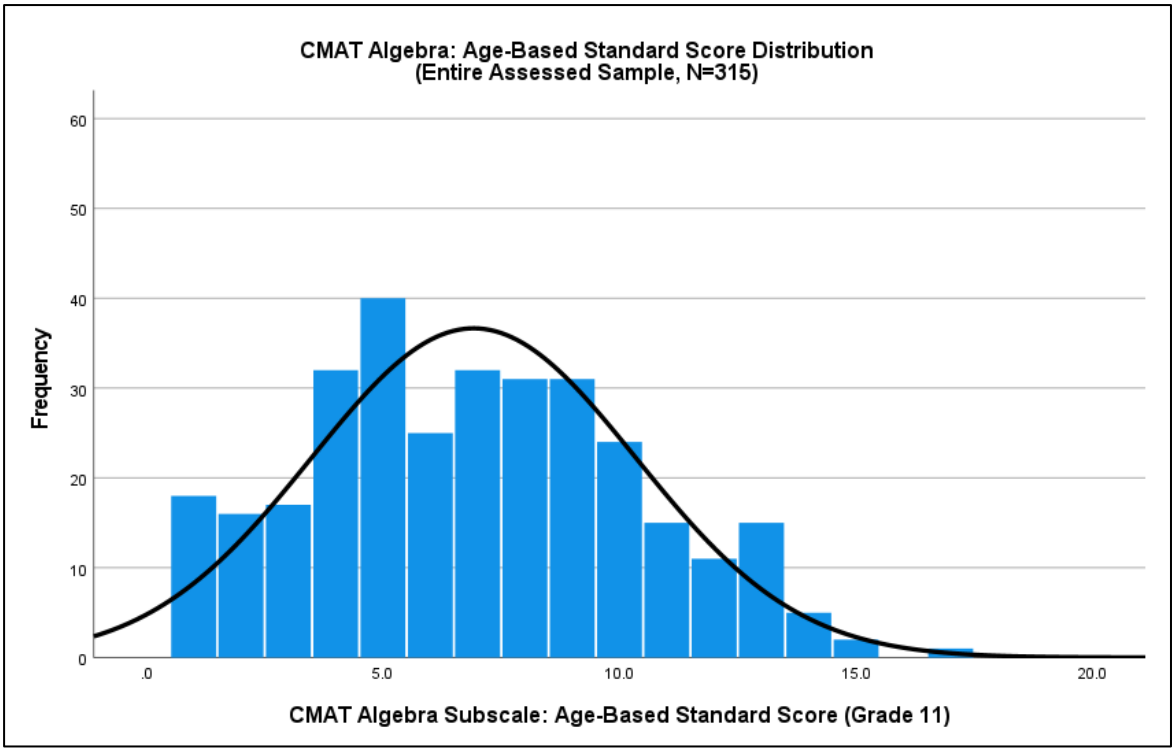
Distributions of Scores Across Direct Child Assessments

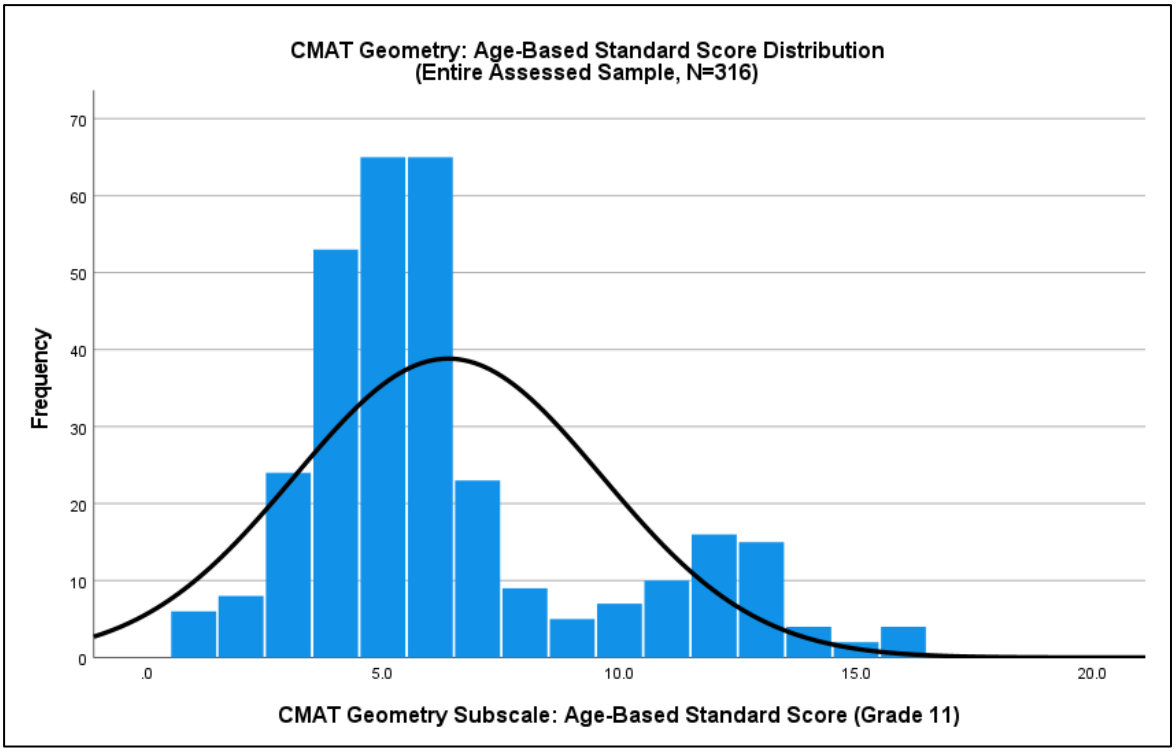
Woodcock-Johnson: Quantitative Concepts Subscale Distributions



CMAT Subscale Distributions

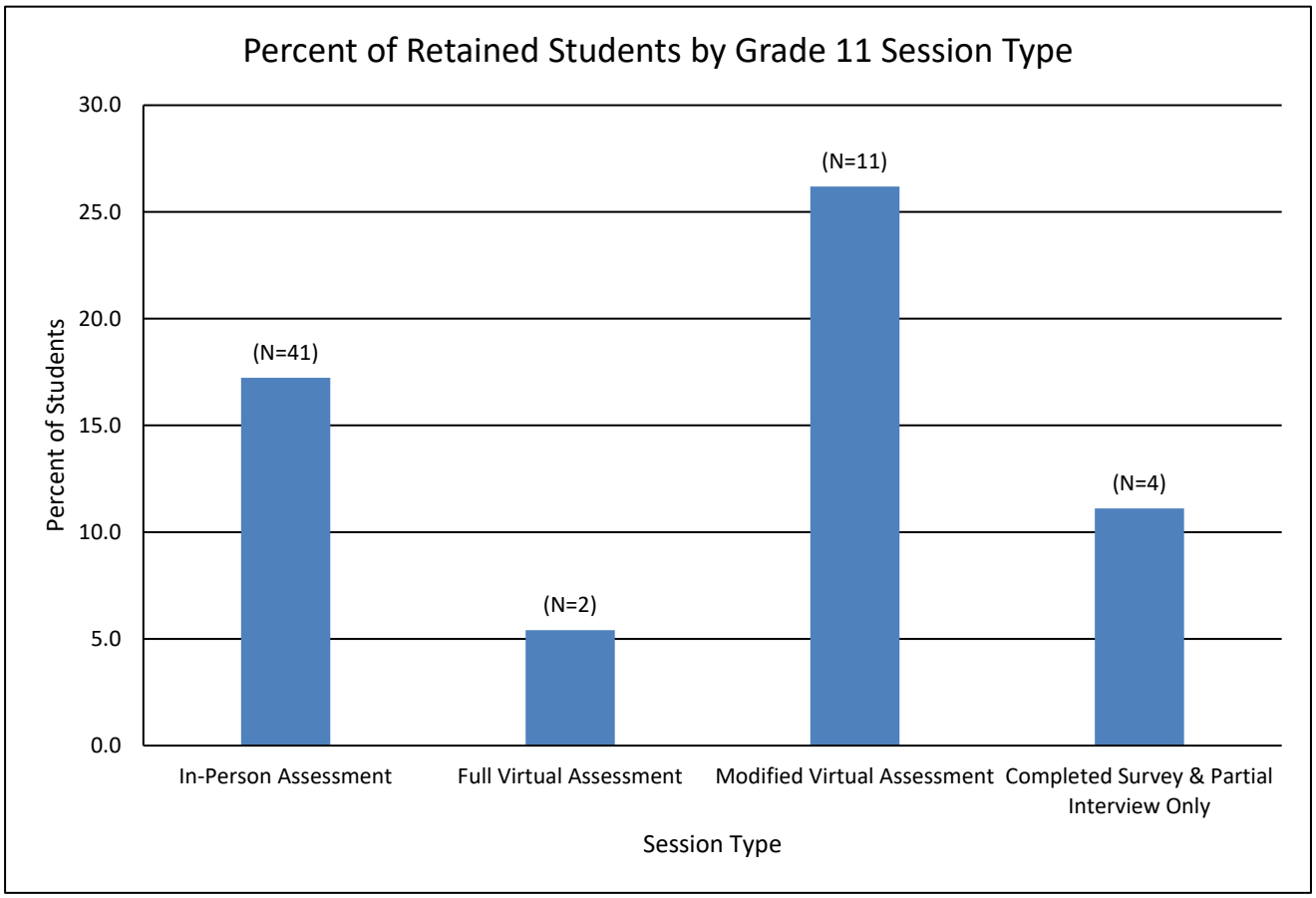



CMAT Algebra: Age-Based Standard Score Distribution
(Entire Assessed Sample, N=315)
Frequency
60
50
40
30
20
10
0
.0
5.0
10.0
15.0
20.0
CMAT Algebra Subscale: Age-Based Standard Score (Grade 11)


CMAT Geometry: Age-Based Standard Score Distribution
(Entire Assessed Sample, N=316)
Frequency
70
60
50
40
30
20
10
0
.0
5.0
10.0
15.0
20.0
CMAT Geometry Subscale: Age-Based Standard Score (Grade 11)

Student Outcomes by Retention Status

Retention Status by Grade 11 Session Type



Note. Student Ns by Grade 11 session type are listed below.

- In-Person Assessment: 238
- Full Virtual Assessment: 37
- Modified Virtual Assessment: 42
- Completed Survey & Partial Interview Only: 36

Student Outcomes on CMAT by Retention Status

Note. Data were dropped for 3 students on Problem-Solving, 2 students on Algebra, and 1 student on Geometry because the criteria for basal or ceiling was not met.

	N	Min	Max	Mean	Median	SD
Not Retained						
Average Age = 16.92 years, Average Grade = 11.7						
CMAT: Problem Solving						
Age-Based Standard Score	261	1.0	16.0	8.3	9.0	2.8
Age Equivalent	261	6.3	18.0	13.7	13.5	3.1
Grade Equivalent	261	1.2	12.7	8.5	8.4	3.0
CMAT: Algebra						
Age-Based Standard Score	261	1.0	17.0	7.4	7.0	3.4
Age Equivalent	261	8.3	18.3	13.6	13.8	3.1
Grade Equivalent	261	3.2	12.7	8.5	8.7	3.0
CMAT: Geometry						
Age-Based Standard Score	262	1.0	16.0	6.7	6.0	3.4
Age Equivalent	262	8.8	18.3	13.4	12.5	2.8
Grade Equivalent	262	3.7	12.7	8.2	7.4	2.7

	N	Min	Max	Mean	Median	SD
Retained						
Average Age = 16.82 years, Average Grade = 10.7						
CMAT: Problem Solving						
Age-Based Standard Score	53	1.0	14.0	5.8	6.0	2.8
Age Equivalent	53	7.3	18.0	11.0	10.8	2.7
Grade Equivalent	53	2.2	12.7	6.0	5.7	2.6
CMAT: Algebra						
Age-Based Standard Score	54	1.0	11.0	4.6	4.0	2.6
Age Equivalent	54	8.3	18.0	11.0	10.5	2.4
Grade Equivalent	54	3.2	12.7	6.0	5.4	2.4
CMAT: Geometry						
Age-Based Standard Score	54	1.0	12.0	4.6	4.0	1.8
Age Equivalent	54	8.8	18.3	11.4	11.3	1.8
Grade Equivalent	54	3.7	12.7	6.3	6.2	1.7

Student Outcomes on Woodcock-Johnson Subtests by Retention Status

	N	Min	Max	Mean	Median	SD
Not Retained						
Average Age = 16.97 years, Average Grade = 11.7						
Quantitative Concepts						
W-Score	263	458.00	563.00	519.16	518.00	14.90
Standard Score	263	31.00	122.00	85.36	84.00	13.07

	N	Min	Max	Mean	Median	SD
Retained						
Average Age = 16.86 years, Average Grade = 10.7						
Quantitative Concepts						
W-Score	54	476.00	545.00	508.46	506.00	12.87
Standard Score	54	47.00	108.00	76.07	74.00	11.44

Students Below a Ninth-Grade Level on CMAT

- Students were selected who were **below a ninth-grade level** this past year on all 3 CMAT subtests.
- This group ended up including 153 students, which is about 49% of the students on whom we had analytical data across all 3 CMAT subtests this year.
- *Note*. Data were dropped for 3 students on Problem-Solving, 2 students on Algebra, and 1 student on Geometry because the criteria for basal or ceiling was not met.

Comparison of Students on Year 11 Assessments
(Below a Ninth-Grade Level on CMAT vs. Not Below a Ninth-Grade Level on CMAT)

	Below a Ninth-Grade Level on CMAT Subtests (N=153)					Not Below a Ninth-Grade Level on CMAT Subtests (N=158)				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
CMAT PS (Std. Score)	153	1.00	9.00	6.01	2.19	158	2.00	16.00	9.68	2.35
CMAT Alg. (Std. Score)	153	1.00	8.00	4.40	2.01	158	2.00	17.00	9.29	2.73
CMAT Geo. (Std. Score)	153	1.00	7.00	4.47	1.41	158	3.00	16.00	8.19	3.50
WJ Quant. Cpts. (Std. Score)	153	31.00	103.00	75.37	10.45	158	65.00	122.00	91.59	10.49
Math Mindset (Total)	153	4.00	18.00	11.07	3.19	158	6.00	18.00	12.73	3.09
TIMSS Math (Total)	153	40.00	102.00	74.54	14.27	158	43.00	102.00	79.11	13.91
TIMSS Science (Total)	153	28.00	107.00	77.94	15.58	158	36.00	107.00	79.62	14.45

Student Characteristics

	Below a Ninth-Grade Level on CMAT Subtests		Not Below a Ninth-Grade Level on CMAT Subtests	
	Freq	Pct	Freq	Pct
Ethnicity				
Black	130	52.4	118	47.6
White	9	39.1	14	60.9
Hispanic	11	37.9	18	62.1
Other	3	27.3	8	72.7
Gender				
Male	66	51.6	62	48.4
Female	87	47.5	96	52.5
ELL in Pre-K Year				
ELL	12	37.5	20	62.5
Not ELL	141	50.7	137	49.3
Pre-K Curriculum Condition				
Building Blocks	90	47.9	98	52.1
Control	63	51.2	60	48.8
Pre-K School System				
Head Start	66	54.5	55	45.5
MNPS Pre-K	87	45.8	103	54.2

Pearson Correlations between 10th Grade Measures and TCAP/TNReady Scores

Each year, the project receives the state end of grade tests in the late fall of the year following spring testing. Consequently, for this report we can only examine the relationships between the 10th grade assessments and the 10th grade state tests. Tennessee switched its state test from the TCAP to TNReady in 2016. Also, we stopped giving the KeyMath subtests (and began giving the CMAT subtests) when students were in 10th grade.

		TCAP Math Scale Score 2013-2014 (5th Grade)	TCAP Math Scale Score 2014-2015 (6th Grade)	TNReady Math Scale Score 2016-2017 (8th Grade)	TNReady Math Scale Score 2017-2018 (9th Grade)	TNReady Math Scale Score 2018-2019 (10th Grade)
KeyMath Raw Scores	NUM G5	**0.63**	0.61	0.60	0.53	0.48
	NUM G6	0.69	**0.66**	0.65	0.57	0.50
	NUM G7	0.67	0.67	0.68	0.59	0.53
	NUM G8	0.69	0.68	**0.69**	0.62	0.53
	NUM G9	0.67	0.65	0.69	**0.60**	0.53
	ALG G5	**0.62**	0.60	0.60	0.49	0.49
	ALG G6	0.66	**0.67**	0.63	0.55	0.50
	ALG G7	0.67	0.69	0.66	0.59	0.54
	ALG G8	0.69	0.70	**0.70**	0.66	0.57
	ALG G9	0.67	0.68	0.69	**0.64**	0.58
	GEO G5	**0.45**	0.49	0.50	0.43	0.40
	GEO G6	0.56	**0.57**	0.58	0.49	0.40
	GEO G7	0.51	0.56	0.57	0.48	0.41
	GEO G8	0.56	0.58	**0.60**	0.51	0.45
	GEO G9	0.56	0.58	0.62	**0.54**	0.49
CMAT Raw Scores	PS G10	0.61	0.63	0.65	0.64	**0.57**
	ALG G10	0.60	0.60	0.67	0.58	**0.56**
	GEO G10	0.46	0.51	0.58	0.55	**0.54**
WJ Quant Concepts W Scores	WJ QC G5	**0.57**	0.55	0.51	0.53	0.45
	WJ QC G6	0.60	**0.60**	0.56	0.50	0.46
	WJ QC G7	0.63	0.63	0.61	0.54	0.49
	WJ QC G8	0.64	0.66	**0.66**	0.56	0.52
	WJ QC G9	0.64	0.66	0.66	**0.64**	0.54
	WJ QC G10	0.63	0.64	0.65	0.62	**0.56**

Note. All correlations are significant at the 0.01 level (2-tailed). Correlations between measures from the same year are bolded.

Students' 10th Grade Direct Assessment Scores within TNReady Levels

In addition to a total score, the TNReady state test scores are divided into bands that characterize students as being below expected performance, approaching expectations, on-track, or mastering the content area. We provide the mean scores for each band.

		CMAT: Problem Solving Age-Based Standard Score			
Perf. Level	**N**	**Min**	**Max**	**Mean**	**SD**
Below	263	1.00	13.00	6.80	2.49
Approaching	71	3.00	15.00	9.46	2.57
On-Track	32	6.00	14.00	11.00	1.78
Mastered	2	14.00	15.00	14.50	0.71

		CMAT: Algebra Age-Based Standard Score			
Perf. Level	**N**	**Min**	**Max**	**Mean**	**SD**
Below	263	1.00	13.00	6.06	2.64
Approaching	71	1.00	13.00	8.61	2.96
On-Track	32	9.00	15.00	11.66	1.31
Mastered	2	15.00	17.00	16.00	1.41

		CMAT: Geometry Age-Based Standard Score			
Perf. Level	**N**	**Min**	**Max**	**Mean**	**SD**
Below	263	1.00	13.00	6.09	1.93
Approaching	71	2.00	14.00	7.87	2.89
On-Track	32	5.00	16.00	11.00	3.22
Mastered	2	15.00	16.00	15.50	0.71

		Woodcock-Johnson: Quantitative Concepts Standard Score			
Perf. Level	**N**	**Min**	**Max**	**Mean**	**SD**
Below	262	32.00	107.00	80.39	11.32
Approaching	71	64.00	115.00	90.68	11.38
On-Track	32	88.00	116.00	103.25	7.46
Mastered	2	117.00	121.00	119.00	2.83

Note. WJ data were dropped for 1 student due to assessor error.

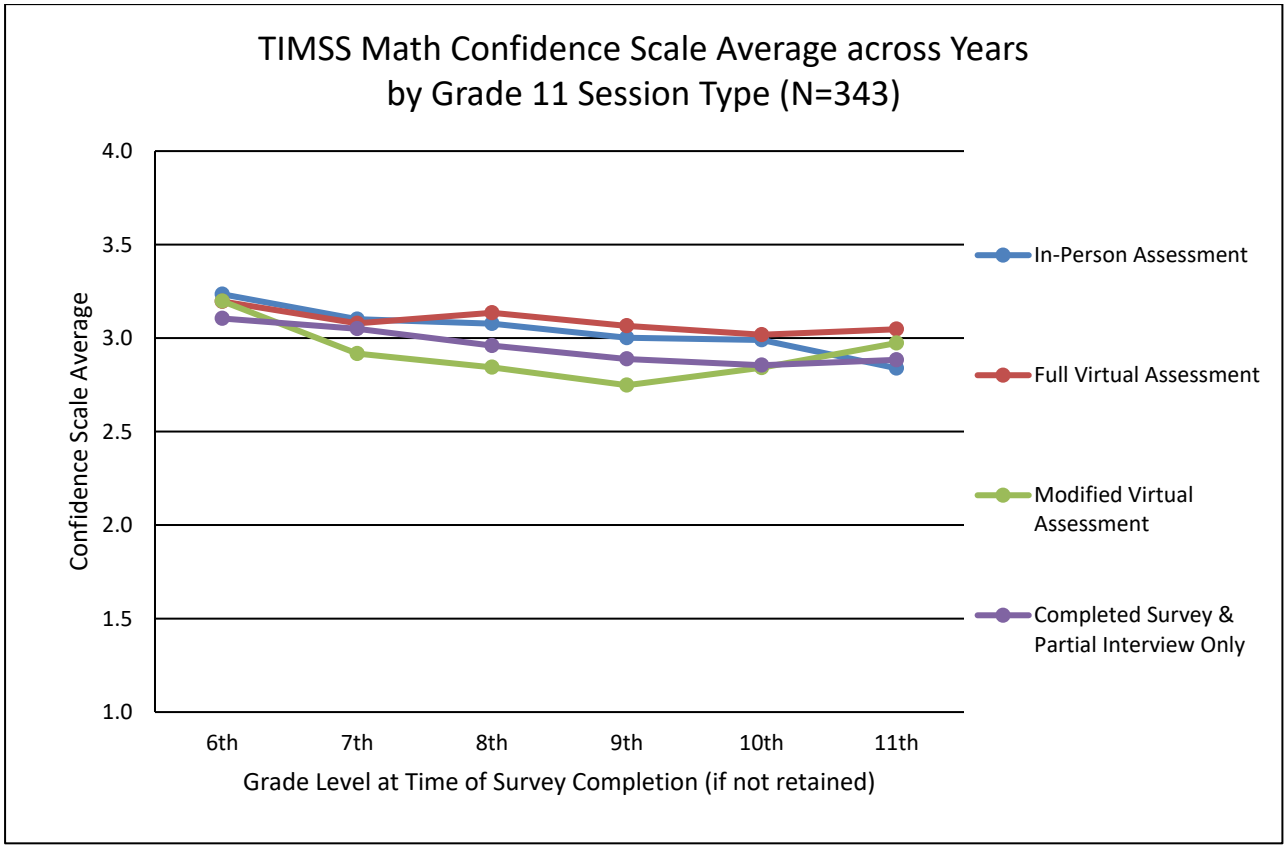
Early Correlates of Later Skills

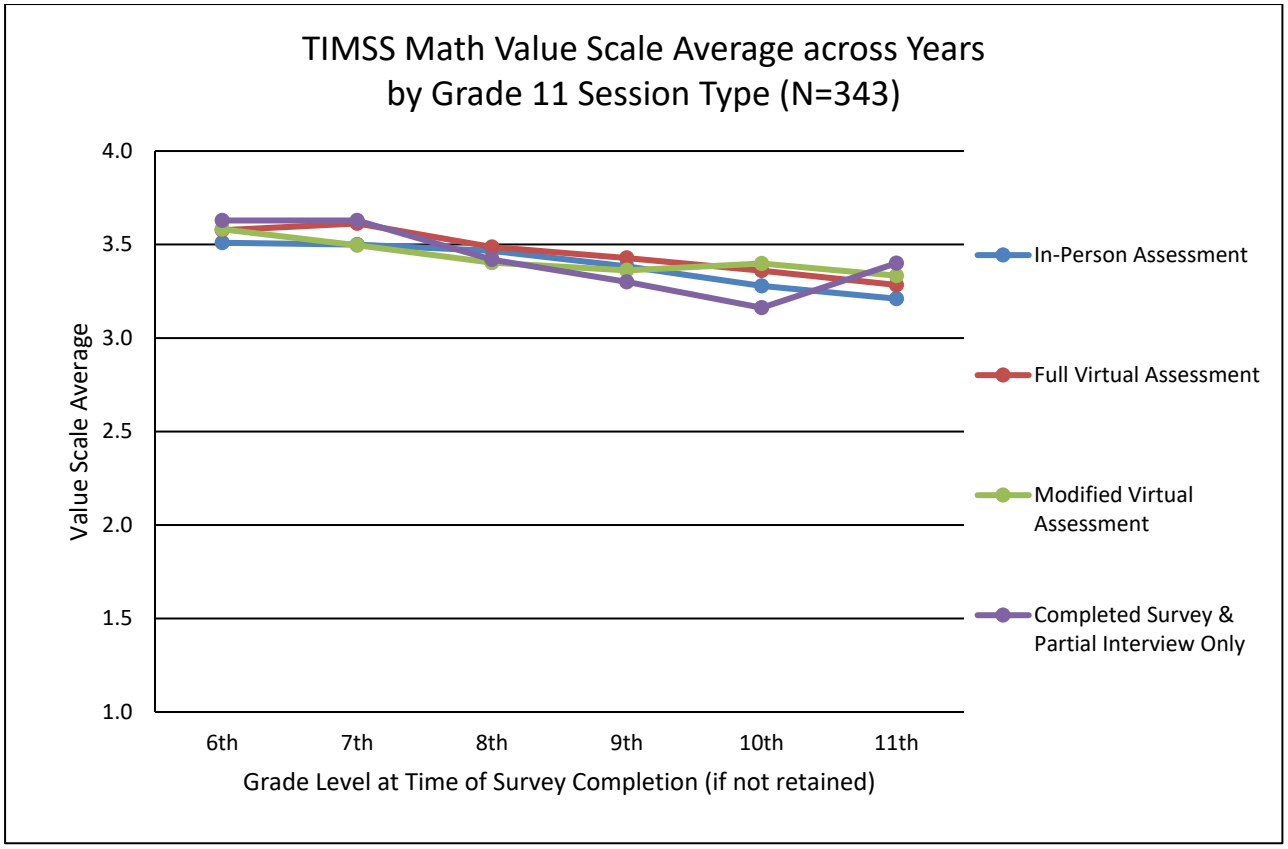
Zero-Order Pearson Correlations: All Students																
		Fall PK QC (Std Score)	Spring PK QC (Std Score)	Spring K QC (Std Score)	Spring G1 QC (Std Score)	Fall PK AP (Std Score)	Spring PK AP (Std Score)	Spring K AP (Std Score)	Spring G1 AP (Std Score)	Fall PK REMA NUM	Spring PK REMA NUM	Spring K REMA NUM	Spring G1 REMA NUM	Fall PK REMA GEO	Spring PK REMA GEO	Spring K REMA GEO	Spring G1 REMA GEO
11th Grade Outcomes	WJ Quant Cpts (Std Score)	0.40	0.53	0.52	0.51	0.31	0.46	0.49	0.59	0.33	0.46	0.60	0.62	0.27	0.44	0.41	0.39
	CMAT Problem Solving (Std Score)	0.40	0.49	0.45	0.46	0.33	0.45	0.48	0.57	0.36	0.47	0.54	0.61	0.27	0.45	0.39	0.44
	CMAT Algebra (Std Score)	0.37	0.43	0.42	0.45	0.23	0.36	0.39	0.50	0.27	0.39	0.45	0.45	0.24	0.29	0.33	0.24
	CMAT Geometry (Std Score)	0.33	0.38	0.38	0.37	0.20	0.30	0.35	0.40	0.29	0.35	0.43	0.42	0.26	0.34	0.34	0.26
	TIMSS Math (Total)	0.01	0.05	0.08	0.12	-0.07	-0.01	0.11	0.09	0.01	0.03	0.07	0.07	0.02	0.02	0.08	0.00
	TIMSS Science (Total)	0.06	0.03	0.10	0.07	0.01	0.07	0.10	0.05	0.04	0.00	0.00	0.01	0.09	0.02	-0.02	-0.03

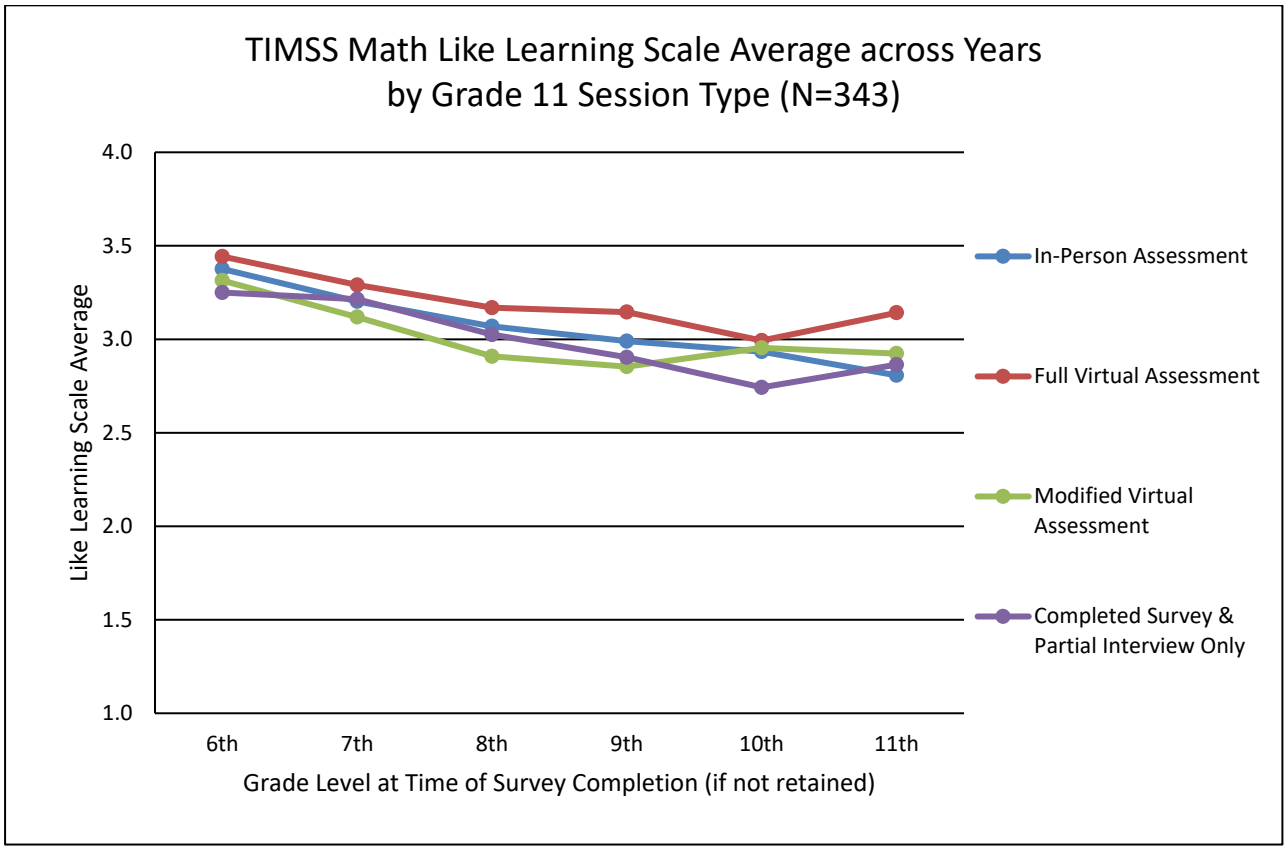
Additional Information about Student Survey Outcomes: TIMSS Math and TIMSS Science

Student Ratings for Math Subscales by Grade 11 Session Type

The following graphs show students' TIMSS Math scores across years when broken apart by the type of session conducted during grade 11. Only students with TIMSS data at all timepoints (grades 6 – 11) were included: 230 in-person assessments, 37 full virtual assessments, 41 modified virtual assessments, and 35 students who completed the survey and partial interview only.




TIMSS Math Value Scale Average across Years
by Grade 11 Session Type (N=343)
Value Scale Average
4.0
3.5
3.0
2.5
2.0
1.5
1.0
6th
7th
8th
9th
10th
11th
Grade Level at Time of Survey Completion (if not retained)
In-Person Assessment
Full Virtual Assessment
Modified Virtual Assessment
Completed Survey & Partial Interview Only

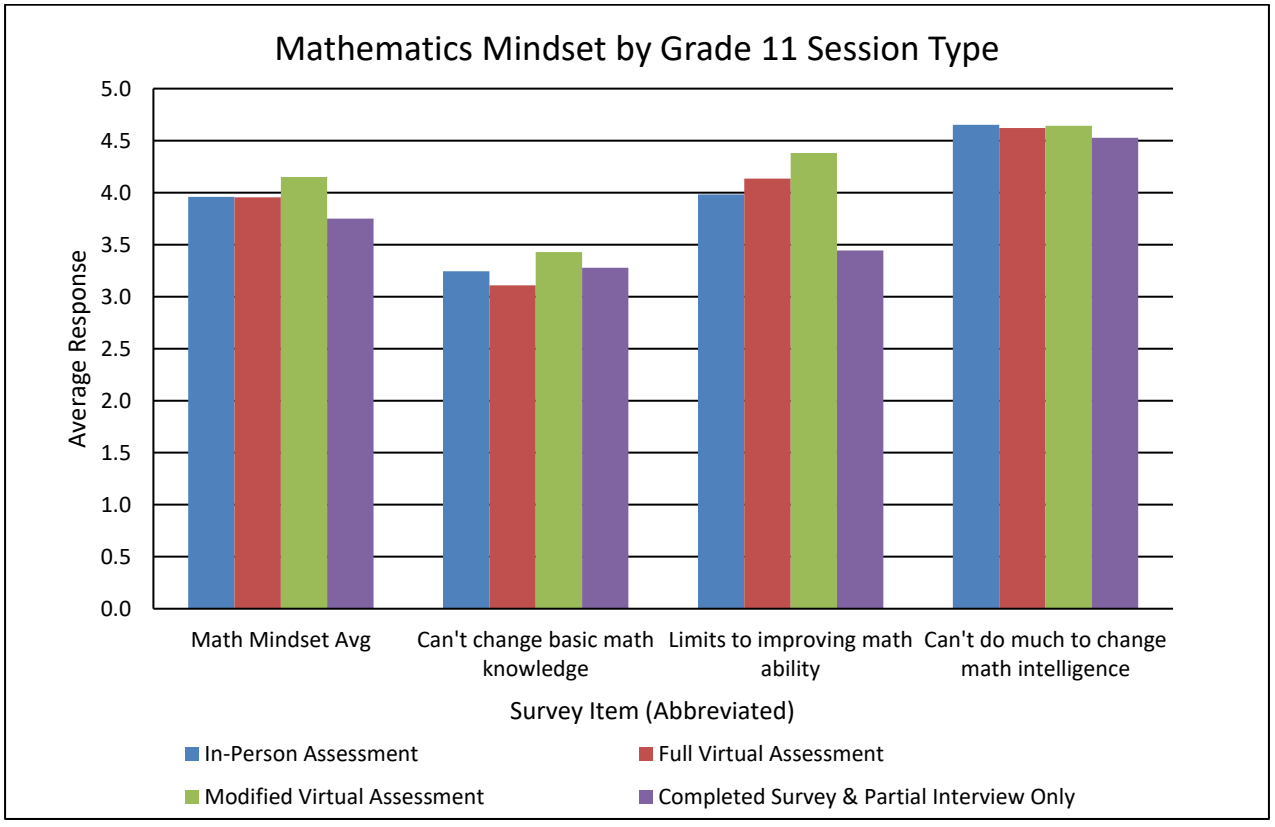

TIMSS Math Like Learning Scale Average across Years
by Grade 11 Session Type (N=343)
Like Learning Scale Average
4.0
3.5
3.0
2.5
2.0
1.5
1.0
6th
7th
8th
9th
10th
11th
Grade Level at Time of Survey Completion (if not retained)
In-Person Assessment
Full Virtual Assessment
Modified Virtual Assessment
Completed Survey & Partial Interview Only

Student Survey Outcomes: Mathematics Mindset

Beginning this year (11th grade), we asked students about their mathematics mindset. Items were taken from Boaler et al. (2018) and used a 6-point response scale.

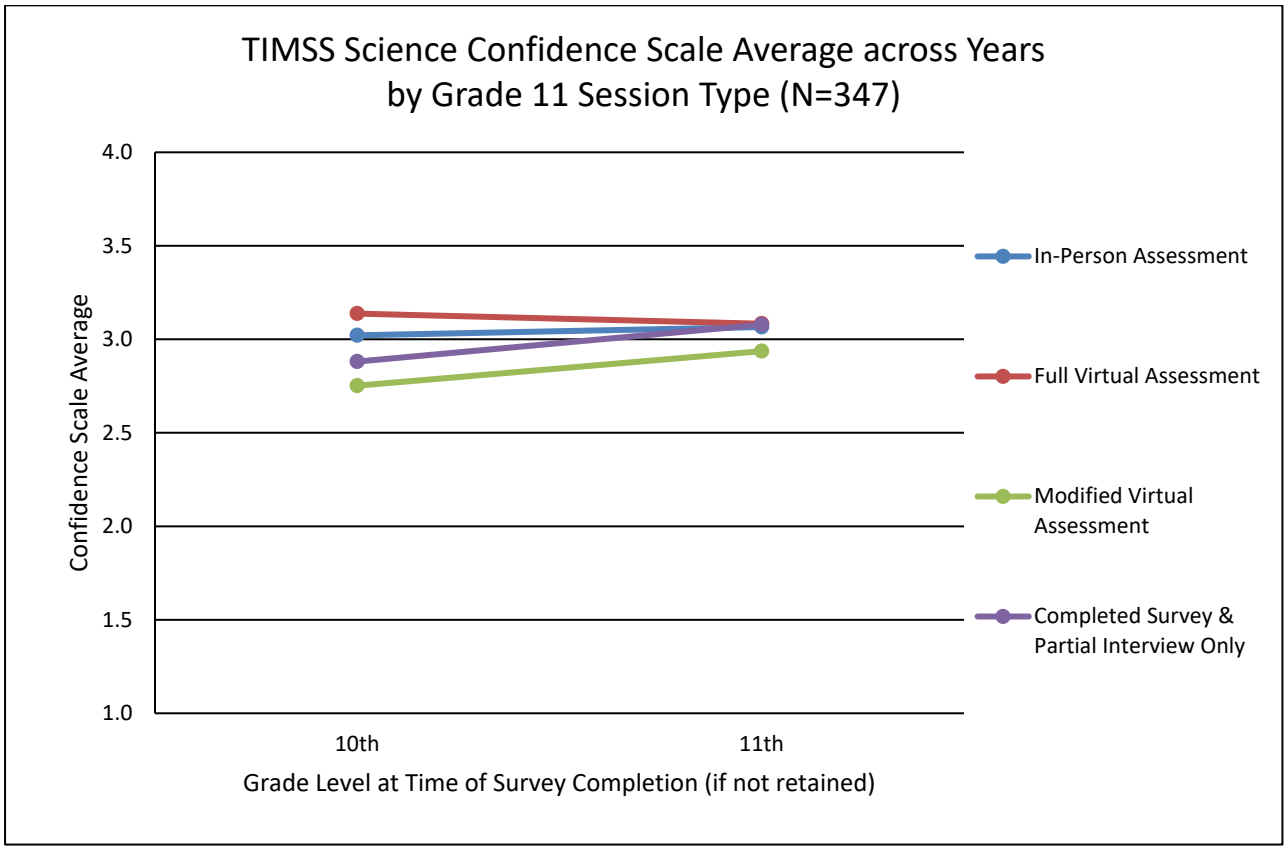
We reverse coded the items so that on every question, 1 = strongly agree and 6 = strongly disagree. Higher scores indicate that students have more of a *growth* mindset, while lower scores indicate a *fixed* mindset about learning mathematics.

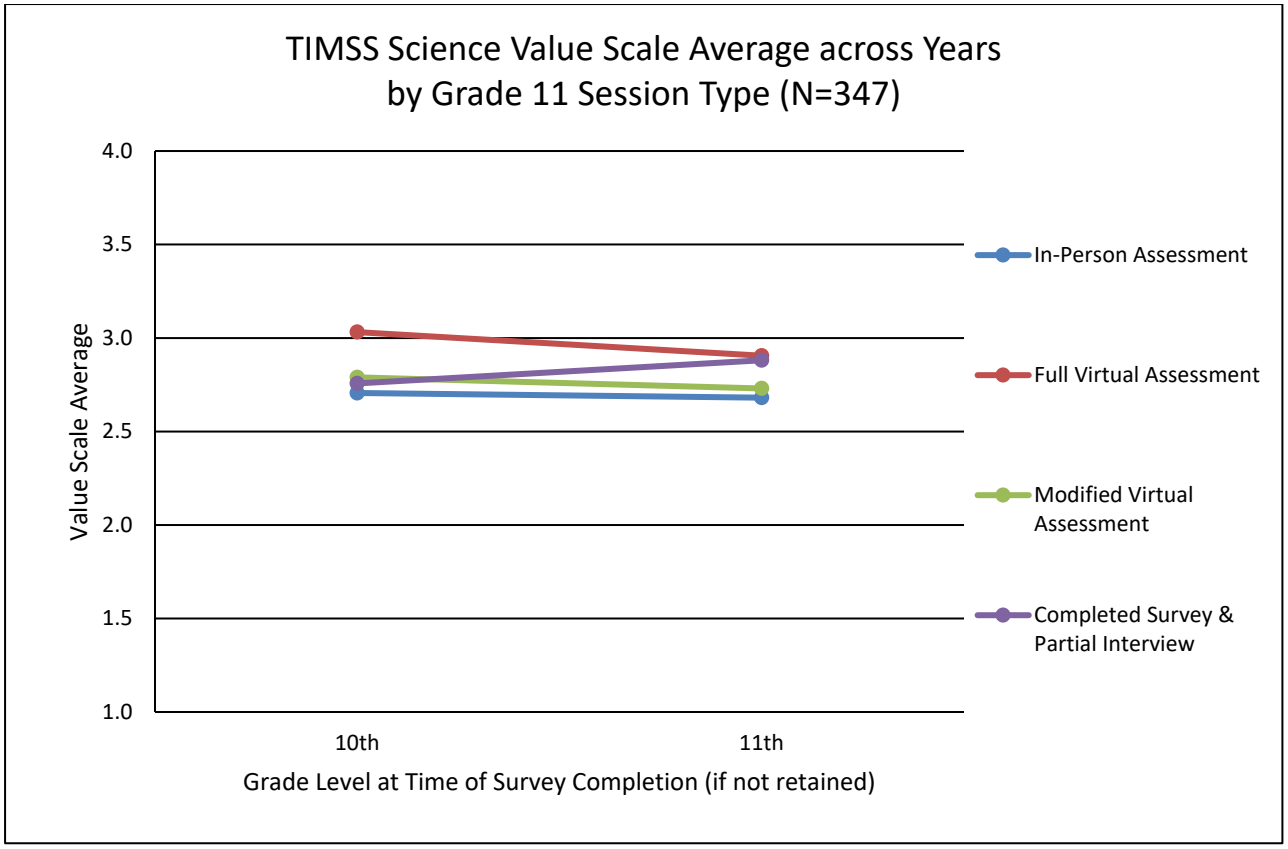
	N	Min	Max	Mean	SD
Mindset Scale Average	**353**	**1.33**	**6.00**	**3.96**	**1.09**
People can learn more math, but they can't really change their basic math knowledge (reverse coded)	353	1.00	6.00	3.25	1.36
There are limits to how much people can improve their basic math ability (reverse coded)	353	1.00	6.00	3.99	1.57
You have a certain amount of math intelligence and you can't really do much to change it (reverse coded)	353	1.00	6.00	4.63	1.44

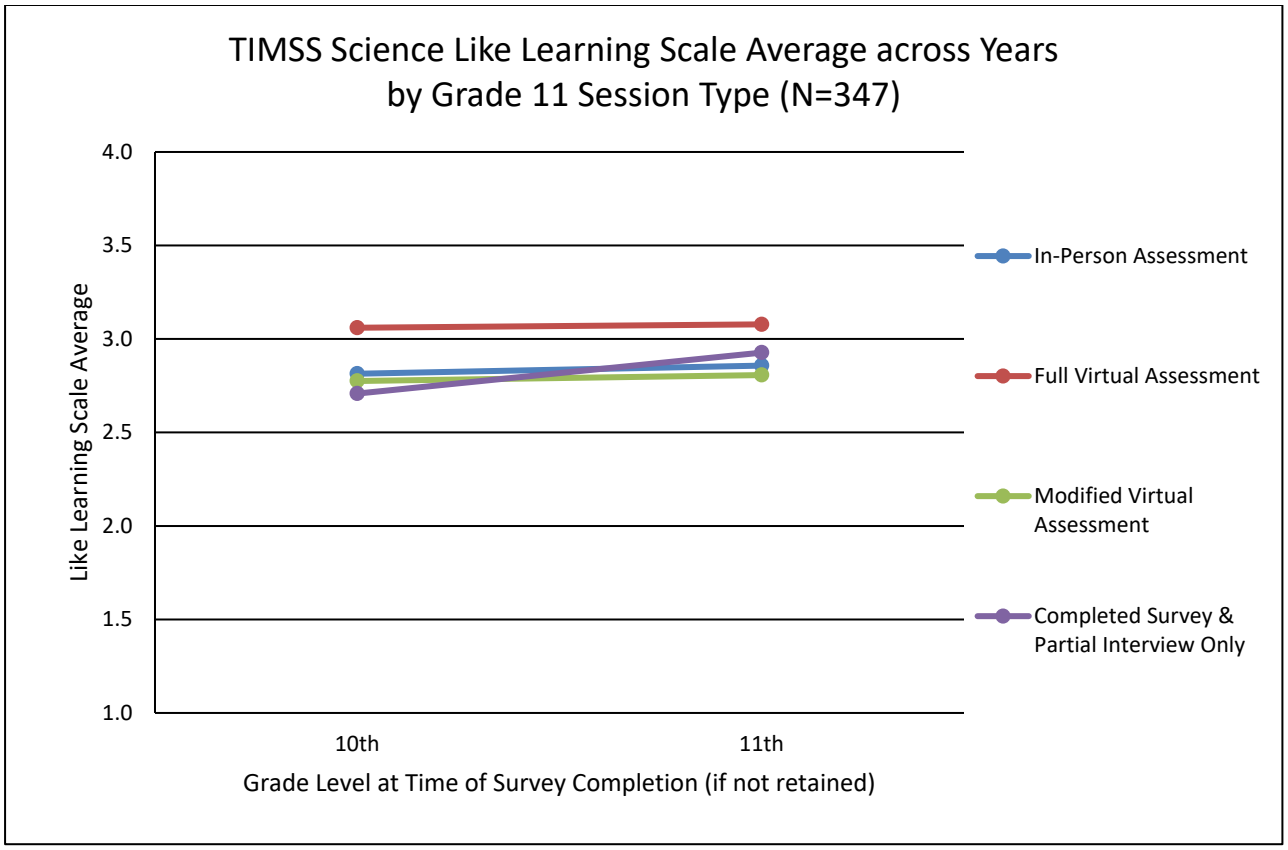


Student Ratings for Science Subscales by Grade 11 Session Type

The following graphs show students' TIMSS Science scores across years when broken apart by the type of session conducted during grade 11. Only students with TIMSS data at all timepoints (grades 10 and 11) were included: 233 in-person assessments, 37 full virtual assessments, 42 modified virtual assessments, and 35 students who completed the survey and partial interview only.




TIMSS Science Value Scale Average across Years
by Grade 11 Session Type (N=347)
Value Scale Average
4.0
3.5
3.0
2.5
2.0
1.5
1.0
10th
11th
Grade Level at Time of Survey Completion (if not retained)
In-Person Assessment
Full Virtual Assessment
Modified Virtual Assessment
Completed Survey & Partial Interview


TIMSS Science Like Learning Scale Average across Years
by Grade 11 Session Type (N=347)
Like Learning Scale Average
4.0
3.5
3.0
2.5
2.0
1.5
1.0
10th
11th
Grade Level at Time of Survey Completion (if not retained)
In-Person Assessment
Full Virtual Assessment
Modified Virtual Assessment
Completed Survey & Partial Interview Only

Additional Information about Student Interviews

SORT Q1: After you are finished with school, which of these jobs are you interested in doing, if any?

Part of the interview involved a sorting task. Students were given a list of STEM careers (job titles only) and were asked to sort the jobs into different categories based on our interview questions.

For example, on this item, students were asked which, if any, of the STEM jobs they were interested in doing. Then, they sorted each job into one of the following categories: Might be Interested in Doing, Not Interested in Doing, Don't Know Enough to Decide.

Note. Students could sort multiple (or no) jobs into each category.

The following results include all students who completed the sorting task (N = 275). Students in the "Modified Virtual Assessment" and "Completed Survey & Partial Interview Only" groups (N = 77) did not complete the sorting task because they could not control the screen.

	Might Be Interested in Doing		Not Interested in Doing		Don't Know Enough to Decide	
Career	**Freq**	**Pct**	**Freq**	**Pct**	**Freq**	**Pct**
Nurse	141	51.3	104	37.8	30	10.9
Doctor	143	52.0	96	34.9	36	13.1
Veterinarian	96	34.9	136	49.5	43	15.6
Psychologist	122	44.4	86	31.3	67	24.4
Engineer	112	40.7	110	40.0	53	19.3
Biologist	58	21.1	145	52.7	72	26.2
Construction Worker	57	20.7	185	67.3	33	12.0
Web/Software/Game Developer	112	40.7	104	37.8	59	21.5
Chemist	40	14.5	172	62.5	63	22.9
Accountant	82	29.8	120	43.6	73	26.5
Science or Math Teacher	49	17.8	199	72.4	27	9.8
Diagnostic Test Technician	34	12.4	119	43.3	122	44.4
Architect	96	34.9	94	34.2	85	30.9
Electrician	52	18.9	173	62.9	50	18.2
Zoologist/Zookeeper	84	30.5	129	46.9	62	22.5
Mechanic	68	24.7	158	57.5	49	17.8
Mathematician	46	16.7	182	66.2	47	17.1

Note. Yellow cells indicate values > 50%.

SORT Q2: Of those jobs you Might be Interested in Doing, what are you Most Interested in?

SORT Q3: If any, which of these jobs can you actually see yourself doing?

For SORT questions 2 and 3, students were shown a list of the job(s) that they sorted into the "Might be Interested in Doing" category during the previous question. Then, they were asked to identify which of those jobs they were most interested in doing (SORT Q2) and which of those jobs they could actually see themselves doing (SORT Q3).

Note. Students could select multiple (or no) jobs for both of these questions.

- Students who could not control the screen were not asked to complete either of these questions (N = 77).
- In addition, 2 students were not asked to respond to these items because they did not sort any careers into the "Might be Interested" category during the previous question.

The table below summarizes responses from the 273 students who completed these items.

	SORT Q2: Jobs Students are Most Interested in Doing		SORT Q3: Jobs Students Can See Themselves Doing	
Career	**Freq**	**Pct**	**Freq**	**Pct**
Nurse	89	63.1	83	58.9
Doctor	66	46.2	58	40.6
Veterinarian	39	40.6	37	38.5
Psychologist	65	53.3	64	52.5
Engineer	53	47.3	52	46.4
Biologist	16	27.6	10	17.2
Construction Worker	22	38.6	26	45.6
Web/Software/Game Developer	62	55.4	63	56.3
Chemist	13	32.5	11	27.5
Accountant	22	26.8	29	35.4
Science or Math Teacher	20	40.8	21	42.9
Diagnostic Test Technician	7	20.6	4	11.8
Architect	37	38.5	36	37.5
Electrician	12	23.1	10	19.2
Zoologist/Zookeeper	33	39.3	30	35.7
Mechanic	26	38.2	21	30.9
Mathematician	11	23.9	2	4.3
None	27	9.9	18	6.6

Note. The frequencies of the jobs selected for SORT Q1 were used to calculate percentages for SORT questions 2 and 3. For example, 141 students sorted Nurse into the "Might be Interested" category for SORT Q1, and 89 students sorted Nurse into the "Most Interested" category for SORT Q2. So, (89 / 141) *100 = 63.1% of students who are Most Interested in being a Nurse.

SORT Q4: For the jobs that you actually see yourself doing, what types of things are you worried might get in the way of attaining this/these jobs? *Check all that apply.*

For this question, students were shown a list of the job(s) that they said they could actually see themselves doing (SORT Q3). Then, they were asked to read through a list of options and select all of the reasons that they felt could get in their way of attaining those jobs.

- Students who could not control the screen were not asked to complete this question (N = 77).
- In addition, 2 students were not asked to respond to this question because they did not sort any careers into the "Might be Interested" category during the previous question.
- Finally, on question SORT Q3, 18 students said that they were not interested in any of the jobs. Those students were not asked to respond to this question.

The table below summarizes responses from the 255 students who completed this item.

Reason	Freq	Pct
The Amount of Schooling Needed after High School	106	41.6
The Amount of Science it Takes	42	16.5
The Amount of Math it Takes	65	25.5
Lack of Money *(College expenses and/or career salary)*	101	39.6
Low Grades	85	33.3
Not Learning Enough in High School	110	43.1
Lack of Support / Resources *(Lack of family/professional support and/or lack of knowledge and resources)*	59	23.1
Not Getting Into the Desired College / Program	95	37.3
Discrimination *(Discrimination based on gender, race, ethnicity, etc.)*	46	18.0
Other	9	3.5
Nothing	31	12.2

Note. These codes were not mutually exclusive.

Note. The denominator used to calculate percentages for this question was 255 students.

Teacher Surveys

- The online teacher survey was changed in 2019-2020. Teachers no longer reported on each individual child. Instead the focus of the instrument was on teacher beliefs.
    - This year's teacher survey was largely pulled from the 2008 TEDS-M, which included questions about teachers' beliefs about (1) the nature of mathematics, (2) learning mathematics, and (3) mathematics achievement.
    - To supplement the TEDS-M questions, we also included several questions about teacher efficacy. Those questions were taken from a 1989 paper by Midgley, Feldlaufer, and Eccles.
- This year's teacher survey included 3 major sections:
    - Teacher background questions (demographics, education, experience)
    - Classroom-level demographic questions (characteristics of participating students' math class)
    - Teacher beliefs questions
- We sent out 155 teacher surveys to teachers who had at least 1 participating student enrolled in their math class.
- For Grade 11, we have survey data on **92** teachers: **89** teachers (57.4% of the teachers who were contacted) fully completed their surveys, and **3** teachers (1.9%) completed part of the survey. We analyzed classroom-level demographic data for 85 teachers who taught **248 students** who are participating in our study (47.8% of our original sample, N = 519).
- We included all possible collected data in our analyses except for the following:
    - We dropped all survey data for 3 respondents because they indicated after completing the survey that they hadn't actually taught the student(s) on their class list. Thus, the highest possible responses for any item will be 89**.**
    - We also only dropped the classroom-level data for 2 other teachers who incorrectly filled out those questions.

<u>Section 1</u>: Teacher Background

- Gender
  - Female: 57 (64.0%)
  - Male: 32 (36.0)
  - Non-Binary: 0 (0.0%)
- Ethnicity
  - Asian or Pacific Islander: 3 (3.4%)
  - Black: 15 (16.9%)
  - Hispanic: 1 (1.1%)
  - White: 65 (73.0%)
  - American Indian or Alaska Native: 0 (0.0%)
  - Other: 2 (2.2%)
  - Prefer not to answer: 3 (3.4%)
- Experience
  - Years as a teacher
    - This is 1st year: 6 (6.7%)
    - 2-4 years: 18 (20.2%)
    - 5-10 years: 30 (33.7%)
    - More than 10 years: 35 (39.3%)
  - Years at current school
    - This is 1st year: 24 (27.0%)
    - 2-4 years: 30 (33.7%)
    - 5-10 years: 27 (30.3%)
    - More than 10 years: 8 (9.0%)
- Licensure (categories add up to more than 100%)
  - Mathematics license (6-12 or 7-12) (at least): 84 (94.4%)
  - Special Education license (at least): 8 (9.0%)
  - Other license (at least): 11 (12.4%)
    - *Note.* Examples of 'Other' licensure include Administration, Science (Biology, Chemistry, Physics), Gifted Education, K–8 General, and None.
- Education
  - Highest degree earned
    - Bachelor's degree: 29 (32.6%)
    - Master's degree: 38 (42.7%)
    - Master's degree + 30: 19 (21.3%)
    - Doctoral degree: 3 (3.4%)
  - Majored in math in undergraduate program
    - Yes: 53 (59.6%)
    - No: 36 (40.4%)
  - Minored in math in undergraduate program
    - Yes: 9 (10.1%)
    - No: 55 (61.8%)
    - No minor (N/A): 25 (28.1%)

- Majored in math in graduate school
  - Yes: 21 (23.6%)
  - No: 48 (53.9%)
  - No grad school (N/A): 20 (22.5%)
- Ever majored or minored in math
  - Yes: 64 (71.9%)
  - No: 25 (28.1%)

<u>Section 2</u>: Classroom-Level Demographics

At the beginning of this section, teachers were shown a list of all participating students enrolled in their math classes. Then, they were asked to fill in the math period that they taught each student on the list.

The survey was designed so that teachers answered one set of classroom-level questions for every math period where at least one study participant was enrolled. For some teachers, all participating students were clustered entirely within one math period; in other cases, participating students were spread across multiple math periods.

	N (Teachers)	Min	Max	Mean	SD
Number of Math Periods	85	1.00	6.00	1.71	1.06

As mentioned previously, we dropped classroom-level data for 2 teachers because they did not fill out their surveys correctly. Therefore, the following data summarizes:

- 85 teachers (54.8% of the target sample, N = 155)
- 145 math periods
- 248 students (47.8% of our original sample, N = 519)

- **Grade Level of Most Students across Math Classes**
  - 9^{th}: 3 (2.1%)
  - 10^{th}: 46 (31.7%)
  - 11^{th}: 91 (62.8%)
  - 12^{th}: 5 (3.4%)
- **Total Number of Students across Math Classes**

N (Math Periods)	Min	Max	Mean	SD
145	5	37	23	6.90

- **Proportion of Students across Math Classes by Ethnicity**

Race/Ethnicity of Students	N	Min	Max	Mean	SD
Asian or Pacific Islander	145	0.00	0.22	0.03	0.04
Hispanic	145	0.00	0.78	0.20	0.18
Black	145	0.00	1.00	0.46	0.26
White	145	0.00	0.96	0.30	0.25
American Indian or Alaska Native	145	0.00	0.08	0.00	0.01
Other Race	145	0.00	0.60	0.02	0.06

Note. Mean class size is 23 students.

Racial/Ethnic Majority of Students across Math Classes

	All Study Schools		Public Schools in Davidson County	
	Freq	Pct	Freq	Pct
Majority White	28	19.3	9	7.8
Majority Black	54	37.2	53	45.7
Majority Hispanic	10	6.9	10	8.6
No Racial/Ethnic Majority	53	36.6	44	37.9

Note. A class was defined as majority white if at least 51% of students were white, majority black if at least 51% of students were black, etc.

- **Gender of Students in Math Classes**

Student Gender	Min. # Students across Math Classes	Max. # Students across Math Classes	Avg. # Students across Math Classes
Male	0	28	12
Female	2	26	12
Non-Binary	0	1	0

- **English Learner (EL) Status of Students in Math Classes**

EL Status	Min. # Students across Math Classes	Max. # Students across Math Classes	Avg. # Students across Math Classes
EL	0	25	3
Not EL	0	35	21

- Achievement Level of Most Students in Math Classes Compared to National Norms
  - High Achievement Levels: 12 (8.3%)
  - Average Achievement Levels: 28 (19.3%)
  - Low Achievement Levels: 46 (31.7%)
  - Mixed Achievement Levels: 59(40.7%)

- What is Considered Most When Scheduling Students into Math Classes
  - Ability or Prior Achievement: 30 (20.7%)
  - Limited English Proficiency: 0 (0.0%)
  - Teacher Recommendation: 1 (0.7%)
  - IEP Recommendation: 18 (12.4%)
  - Parent Request: 0 (0.0%)
  - Student Decision: 12 (8.3%)
  - No One Factor More Than Another: 84 (57.9%)

Section 3: Teacher Beliefs

The items in the following table were taken from the 2008 TEDS-M survey for future teachers. We used questions from three beliefs categories: (1) the nature of mathematics, (2) learning mathematics, and (3) mathematics achievement.

Teachers rated each statement on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree). Then, we created subscales based on the derived variables outlined in the TEDS-M user guide.

	N	Min	Max	Mean	SD
Beliefs About the Nature of Mathematics (Sum)	**89**	**45.00**	**72.00**	**58.42**	**5.71**
Rules & Procedures Average	**89**	**2.33**	**6.00**	**4.34**	**0.85**
Mathematics is a collection of rules and procedures that prescribe how to solve a problem	89	1.00	6.00	4.18	1.43
Mathematics involves the remembering and application of definitions, formulas, mathematical facts and procedures	89	1.00	6.00	4.26	1.20
When solving mathematical tasks you need to know the correct procedure else you would be lost	89	1.00	6.00	3.37	1.32
Fundamental to mathematics is its logical rigor and preciseness	89	2.00	6.00	4.92	0.88
To do mathematics requires much practice, correct application of routines, and problem solving strategies	89	2.00	6.00	4.83	0.97
Mathematics means learning, remembering and applying	89	1.00	6.00	4.49	1.07
Process of Inquiry Average	**89**	**4.17**	**6.00**	**5.39**	**0.46**
Mathematics involves creativity and new ideas	89	2.00	6.00	5.11	0.92
In mathematics many things can be discovered and tried out by oneself	89	3.00	6.00	5.21	0.71
If you engage in mathematical tasks, you can discover new things (e.g., connections, rules, concepts)	89	4.00	6.00	5.55	0.60
Mathematical problems can be solved correctly in many ways	89	3.00	6.00	5.60	0.65
Many aspects of mathematics have practical relevance	89	2.00	6.00	5.38	0.76
Mathematics helps solve everyday problems and tasks	89	3.00	6.00	5.51	0.69
	N	**Min**	**Max**	**Mean**	**SD**
Beliefs About Learning Mathematics (Sum)	**88**	**37.00**	**59.00**	**50.23**	**4.76**
Teacher Direction Average	**88**	**1.00**	**3.88**	**2.52**	**0.66**
The best way to do well in mathematics is to memorize all the formulas	88	1.00	6.00	2.58	1.24
Pupils need to be taught exact procedures for solving mathematical problems	88	1.00	6.00	3.39	1.25

It doesn't really matter if you understand a mathematical problem, if you can get the right answer	88	1.00	6.00	1.98	1.20
To be good in mathematics you must be able to solve problems quickly	88	1.00	6.00	2.23	1.16
Pupils learn mathematics best by attending to the teacher's explanations	88	1.00	6.00	3.39	1.03
When pupils are working on mathematical problems, more emphasis should be put on getting the correct answer than on the process followed	88	1.00	6.00	2.18	1.13
Non-standard procedures should be discouraged because they can interfere with learning the correct procedure	88	1.00	5.00	2.28	1.05
Hands-on mathematics experiences aren't worth the time and expense	88	1.00	6.00	2.11	1.06
Active Learning Average	**88**	**3.50**	**6.00**	**5.02**	**0.52**
In addition to getting a right answer in mathematics, it is important to understand why the answer is correct	88	4.00	6.00	5.47	0.62
Teachers should allow pupils to figure out their own ways to solve mathematical problems	88	2.00	6.00	4.64	0.92
Time used to investigate why a solution to a mathematical problem works is time well spent	88	2.00	6.00	5.19	0.86
Pupils can figure out a way to help solve mathematical problems without a teacher's help	88	2.00	6.00	4.65	0.96
Teachers should encourage pupils to find their own solutions to mathematical problems even if they are inefficient	88	1.00	6.00	4.47	1.03
It is helpful for pupils to discuss different ways to solve particular problems	88	4.00	6.00	5.68	0.54
	N	**Min**	**Max**	**Mean**	**SD**
Beliefs About Mathematics Achievement (Sum)	**88**	**8.00**	**31.00**	**16.61**	**5.45**
Fixed Ability Average	**88**	**1.00**	**3.88**	**2.08**	**0.68**
Since older pupils can reason abstractly, the use of hands-on models and other visual aids becomes less necessary	88	1.00	6.00	2.66	1.13
To be good at mathematics, you need to have a kind of "mathematical mind"	88	1.00	6.00	2.19	0.96
Mathematics is a subject in which natural ability matters a lot more than effort	88	1.00	6.00	1.99	0.90
Only the more able pupils can participate in multi-step problem solving activities	88	1.00	4.00	1.82	0.72
In general, boys tend to be naturally better at mathematics than girls	88	1.00	4.00	1.57	0.74

Mathematical ability is something that remains relatively fixed throughout a person's life	88	1.00	6.00	2.05	1.17
Some people are good at mathematics and some aren't	88	1.00	6.00	2.66	1.34
Some ethnic groups are better at mathematics than others	88	1.00	5.00	1.68	1.07

Note. One teacher only completed the "Beliefs About the Nature of Mathematics" items.

As a supplement to the TEDS-M items, we incorporated several questions from a paper by Midgley et al. (1989) into this year's teacher survey. These items were included so that we could investigate teacher efficacy for helping students learn math.

Teachers rated each statement on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Negative items were reverse coded so that in all cases a higher score indicates higher teacher efficacy.

	N	Min	Max	Mean	SD
Teacher Efficacy Average	**88**	**2.40**	**5.00**	**4.12**	**0.56**
If I try really hard I can get through to even the most difficult or unmotivated student	88	1.00	5.00	3.90	0.91
If some students in my class are not doing well in math, I feel that I should change my approach to the subject	88	2.00	5.00	4.00	0.80
By trying a different teaching method, I can significantly affect a student's achievement	88	2.00	5.00	4.19	0.69
There is really very little I can do to insure that most of my students achieve at a high level (reverse coded)	88	1.00	5.00	4.24	0.79
I am certain I am making a difference in the lives of my students	88	1.00	5.00	4.26	0.90

Note. One teacher did not complete this section of the survey.