

## CCERC Remote Learning Study: Appendices

## Contents

Appendix A: Measures ..... 13
Connecticut State Department of Education (CSDE) administrative data ..... 13
Table A1. CSDE student demographic variables ..... 13
Table A2. CSDE enrollment and attendance variables. ..... 13
Table A3. CSDE standardized assessment variables ..... 14
Table A4. CSDE learning modes survey variables ..... 14
CCERC remote learning district inventory ..... 15
Table A5. CCERC remote learning district inventory domains ..... 15
CCERC remote learning teacher survey ..... 16
Table A6. CCERC remote learning teacher survey domains ..... 16
Table A7. Teacher survey respondents by district type ..... 16
Table A8. Teacher survey respondents by education level. ..... 16
Table A9. Teacher survey respondents by job type ..... 17
Table A10. Teacher survey respondents by years of experience ..... 17
Table A11. Teacher survey respondents by gender ..... 18
Table A12. Teacher survey respondents by age ..... 18
Table A13. Teacher survey respondents by race/ethnicity ..... 19
CCERC remote learning focus groups ..... 20
Table A14. CCERC remote learning teacher focus group protocol ..... 20
Table A15. Teacher focus group participants' demographics ..... 22
Table A16. Teacher focus group participants' professional characteristics ..... 22
Appendix B: Technical details ..... 23
Administrative data analysis ..... 23
District inventory indicators of remote learning conditions ..... 26
Table B1. District inventory indicators: Remote learning conditions in spring 2020 ..... 26
Table B2. District inventory indicators: Remote learning conditions in 2020-21 ..... 27
Analysis of integrated data set ..... 29
Figure B1: Inferential analysis ..... 29
Figure B2: Exploratory analysis ..... 30
Detailed Description of Inferential Analysis ..... 30
Detailed Description of Exploratory Analysis ..... 35
Appendix C: Implementation of remote learning (Research Goal 1) ..... 37
Research Question 1a. What remote learning formats did districts use and how did these learning formats vary by district type? ..... 37
Table C1. In-Person Option Available in September ..... 37
Table C2. Share of Days in Person Available Through End of School Year ..... 39
Table C3. Monthly In-Person Enrollment Days as a Share of Total Enrollment Days ..... 41
Table C5. District-reported learning models by grade level in May 2020 ..... 43
Table C6. Teacher-reported use of learning models by grade level in spring 2020 ..... 44
Table C7. District-reported learning models for fully remote students by grade level during the 2020-21 school year ..... 45
Table C8. District-reported learning models for hybrid students by grade level during the 2020-21 school year ..... 46
Table C9. Teacher-reported use of learning models by grade level in school year 2020-21 47
Table C10. Teacher-reported percentage of students by grade level in each learning model in 2020-21 ..... 48
Research Question 1b. What general curricular student learning outcomes were targeted? ..... 49
Table C11. District-reported primary goal for core academic subjects in spring 2020 ..... 49
Table C12. District-reported primary goal for music, art, health \& PE in spring 2020 ..... 50
Table C13. District-reported primary goal for special services in spring 2020. ..... 51
Table C14. District-reported primary goal (overall) for fully remote students in 2020-21 ..... 52
Table C15. District-reported primary goal (overall) for hybrid students in 2020-21 ..... 53
Table C16. District-reported elementary school assessment practices prior to COVID-19. 54
Table C17. District-reported middle school assessment practices prior to COVID-19 ..... 54
Table C18. District-reported high school assessment practices prior to COVID-19. ..... 55
Table C19. District-reported elementary school assessment practices in spring 2020 ..... 55
Table C20. District-reported middle school assessment practices in spring 2020 ..... 56
Table C21. District-reported high school assessment practices in spring 2020 ..... 56
Table C22. District-reported elementary school assessment practices in 2020-21 ..... 57
Table C23. District-reported middle school assessment practices in 2020-21 ..... 57
Table C24. District-reported high school assessment practices in 2020-21 ..... 58
Table C25. Teacher-reported elementary school assessment practices in 2020-21 ..... 59
Table C26. Teacher-reported middle school assessment practices in 2020-21 ..... 60
Table C27. Teacher-reported high school assessment practices in 2020-21 ..... 61
Table C28. Teacher-reported assessment practices in 2020-21 (mixed-level) ..... 62
Table C29. District-reported use of an early warning system for elementary school students prior to COVID-19. ..... 63
Table C30. District-reported use of an early warning system for elementary school students during spring 2020 ..... 63
Table C31. District-reported use of an early warning system for elementary school students during school year 2020-21 ..... 64
Table C32. District-reported use of an early warning system for middle school students prior to COVID-19 ..... 64
Table C33. District-reported use of an early warning system for middle school students during spring 2020 ..... 65
Table C34. District-reported use of an early warning system for middle school students during school year 2020-21 ..... 65
Table C35. District-reported use of an early warning system for high school students prior to COVID-19 ..... 66
Table C36. District-reported use of an early warning system for high school students during spring 2020 . ..... 66
Table C37. District-reported use of an early warning system for high school students during school year 2020-21 ..... 67
Table C38. District-reported elementary school grading practices prior to the COVID-19 pandemic ..... 68
Table C39. District-reported elementary school grading practices in spring 2020 ..... 68
Table C40. District-reported elementary school grading practices in school year 2020-21 ..... 68
Table C41. District-reported middle school grading practices prior to the COVID-19 pandemic ..... 69
Table C42. District-reported middle school grading practices in spring 2020 ..... 69
Table C43. District-reported middle school grading practices in school year 2020-21 ..... 69
Table C44. District-reported high school grading practices prior to the COVID-19 pandemic ..... 70
Table C45. District-reported high school grading practices in spring 2020 ..... 70
Table C46. District-reported high school grading practices in school year 2020-21 ..... 70
Research Question 1c. What did administrators and teachers say about the challenges of and strategies for different learning formats? ..... 71
Table C47. District-reported student disengagement by grade level in May 2020 ..... 71
Table C48. District-reported reasons by grade level for student disengagement in May 202072
Table C49. Teacher-reported rates of student disengagement by grade level in spring 2020 ..... 74
Table C50. Teacher-reported reasons for student disengagement by grade level in spring 2020. ..... 75
Table C51. District-reported rates of student disengagement during the 2020-21 school year ..... 76
Table C52. District-reported reasons by grade level for student disengagement during 2020- 21 ..... 77
Table C53. Teacher-reported rates of student disengagement by grade level among fully remote learners in 2020-21 ..... 79
Table C54. Teacher-reported rates of student disengagement by grade level among hybrid learners in 2020-21 ..... 79
Table C55. Teacher-reported rates of student disengagement by grade level among fully in- person learners in 2020-21 ..... 80
Table C56. Teacher-reported reasons for student disengagement by grade level in 2020-21 ..... 81
Table C57. District-reported changes in digital cheating by grade level. ..... 82
Table C58. Teacher-reported changes in digital cheating by grade level ..... 83
Table C59. Teacher-reported of changes in school/homework avoidance by grade level ..... 84
Table C60. Teacher-reported challenges and benefits of different learning formats ..... 85
Research Question 1d. How did approaches to remote learning change over time, and how did these changes affect teachers and students? ..... 86
Table C61. District-reported virtual learning opportunities for elementary students prior to the COVID-19 pandemic ..... 86
Table C62. District-reported virtual learning opportunities for middle school students prior to the COVID-19 pandemic ..... 86
Table C63. District-reported virtual learning opportunities for high school students prior to the COVID-19 pandemic ..... 87
Table C64. Teacher-reported pre-COVID teaching experience by grade level with learning models ..... 88
Table C65. District-reported improvements to remote learning for elementary students ..... 89
Table C66. District-reported improvements to remote learning for middle school students 90
Table C67. District-reported improvements to remote learning for high school students ..... 91
Table C68. Teacher-reported improvements to remote/hybrid instruction for elementary school students ..... 92
Table C69. Teacher-reported improvements to remote/hybrid instruction for middle school students ..... 93
Table C70. Teacher-reported improvements to remote/hybrid instruction for high school students ..... 94
Table C71. Teacher-reported improvements to remote/hybrid instruction for students (mixed-level teachers) ..... 95
Table C72. Teacher-reported changes by grade level in the proportion of the curriculum they were able to cover ..... 97
Table C73. Teacher-reported changes in different learning models ..... 98
Appendix D: Supports for students (Research Goal 2) ..... 99
Research Question 2a. What do administrators and teachers say about the pandemic's effects on students and their families? ..... 99
Table D1. Teacher-reported student academic behaviors by grade level in 2020 ..... 99
Table D2. Teacher-reported academic behaviors of fully remote students by grade level in 2020-21 ..... 100
Table D3. District-reported academic behaviors of fully remote students by grade level during the 2020-21 school year. ..... 101
Table D4. Teacher-reported academic behaviors of hybrid students by grade level in 2020- 21 ..... 102
Table D5. Teacher-reported academic behaviors of fully in-person students by grade level in 2020-21 ..... 103
Table D6. Teacher-reported school support by grade level for student learning in 2020-21 ..... 104
Table D7. District-reported changes in student behavior by grade level: cyberbullying ..... 105
Table D8. Teacher-reported changes in student behavior by grade level: cyberbullying . ..... 106
Table D9. District-reported changes in student behavior by grade level: excessive screen time ..... 107
Table D10. Teacher-reported changes in student behavior by grade level: excessive screen time ..... 108
Table D11. District-reported changes in student behavior by grade level: lack of connection to school ..... 109
Table D12. Teacher-reported changes in student behavior by grade level: lack of connection to school ..... 110
Table D13. District-reported changes in student behavior by grade level: sexting ..... 111
Table D14. Teacher-reported services provided to IEP students by grade level ..... 112
Table D15. Teacher-reported services provided to EL students by grade level ..... 113
Table D16. Teacher-reported changes in resources/supports needed by elementary students ..... 114
Table D17. Teacher-reported changes in resources/supports needed by middle school students ..... 115
Table D18. Teacher-reported changes in resources/supports needed by high school students ..... 116
Table D19. Teacher-reported changes in resources/supports needed by students (mixed- level) ..... 117
Table D20. Teacher-reported effects of pandemic on students and their families ..... 118
Research Question 2b. What technological and other resources did districts provide to support student learning during the pandemic, and what technology challenges did students experience? ..... 121
Table D21. District-reported access to electronic devices for elementary school students prior to the COVID-19 pandemic ..... 121
Table D22. District-reported mean percentage of elementary students with access to digital devices as of March 1, 2020. ..... 121
Table D23. District-reported mean percentage of elementary students with access to digital devices as of May 1, 2020 ..... 122
Table D24. District-reported mean percentage of elementary students with access to digital devices as of November 1, 2020 ..... 122
Table D25. District-reported access to electronic devices middle school students prior to the COVID-19 pandemic ..... 123
Table D26. District-reported mean percentage of middle school students with access to digital devices as of March 2020 ..... 123
Tables D27. District-reported mean percentage of middle school students with access to digital devices as of May 2020 ..... 124
Tables D28. District-reported mean percentage of middle school students with access to digital devices as of Nov 2020 ..... 124
Table D29. District-reported access to electronic devices for high school students prior to the COVID-19 pandemic ..... 125
Table D30. District-reported mean percentage high school students with access to digital devices as of March 2020 ..... 125
Table D31. District-reported mean percentage high school students with access to digital devices as of May 2020 ..... 126
Table D32. District-reported mean percentage high school students with access to digital devices as of Nov 2020 126
Table D33. Teacher-reported access to 1:1 devices for students by grade level: spring 2020 ..... 127
Table D34. Teacher-reported access to 1:1 devices for students by grade level: school year 2020-21 ..... 128
Table D35. District-reported changes over time in the mean percent of students with sufficient internet access to participate in online learning ..... 129
Table D36. District-reported changes over time in the mean percent of students who would have had sufficient internet access for full participation in online learning without district action ..... 129
Table D37. District-reported efforts to improve internet access in students' homes. ..... 129
Table D38. Teacher-reported technology challenges ..... 130
Research Question 2c. What resources were available to support students' physical and emotional well-being during the pandemic, compared to before the pandemic?... ..... 131
Table D39. District-reported availability of free meals by grade level prior to the COVID-19 pandemic ..... 131
Table D40. District-reported strategies for providing nutrition support to students during spring 2020 ..... 131
Table D41. District-reported strategies for providing nutrition support to students during the 2020-21 school year ..... 132
Table D42. District-reported allocation of resources for social services referrals in spring 2020. ..... 133
Table D43. District-reported number of social services referrals in spring 2020 ..... 133
Table D44. District-reported efforts to connect students to social services in spring 2020134
Table D45. District-reported allocation of resources for social services referrals in school year 2020-21 ..... 135
Table D46. District-reported number of social services referrals in school year 2020-21 . ..... 135
Table D47. District-reported efforts to connect students to social services during school year2020-21136
Table D48. District-reported changes by grade level in students' participation in counseling meetings ..... 137
Table D49. District-reported SEL programs/approaches used by elementary schools during 2019-20 and 2020-21 ..... 138
Table D50. District-reported SEL programs/approaches used by middle schools during 2019-20 and 2020-21 ..... 139
Table D51. District-reported SEL programs/approaches used by high schools during 2019- 20 and 2020-21 ..... 140
Table D52. Teacher-reported school support by grade level for students' physical health in 2020-21 ..... 141
Table D53. Teacher-reported school support by grade level for students' social-emotional well-being in 2020-21 ..... 142
Table D54. Teacher-reported support for students' physical and emotional well-being ..... 143
Appendix E: Supports for teachers (Research Goal 3) ..... 144
Research Question 3a. What do administrators and teachers say about how the pandemic and the resources provided affected teaching and teacher well-being? ..... 144
Table E1. District-reported staffing adjustments/reassignments in spring 2020 ..... 144
Table E2. District-reported staffing adjustments/reassignments in fall 2020 ..... 144
Table E3. District-reported summer 2020 preparation for fall 2020: safety-related activities ..... 145
Table E4. Teacher-reported teaching challenges in 2020-21 (elementary school teachers) ..... 146
Table E5. Teacher-reported teaching challenges in 2020-21 (middle school teachers) ..... 147
Table E6. Teacher-reported teaching challenges in 2020-21 (high school teachers) ..... 148
Table E7. Teacher-reported teaching challenges in 2020-21 (mixed level teachers) ..... 149
Table E8. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (elementary school teachers) ..... 150
Table E9. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (middle school teachers) ..... 151
Table E10. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (high school teachers) ..... 152
Table E11. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (mixed level teachers) ..... 153
Table E12. Teacher-reported resources/supports needed during the pandemic (elementary teachers) ..... 154
Table E13. Teacher-reported resources/supports needed during the pandemic (middle school teachers) ..... 155
Table E14. Teacher-reported resources/supports needed during the pandemic (high school teachers) ..... 156
Table E15. Teacher-reported resources/supports needed during the pandemic (mixed-level teachers) ..... 157
Table E16. Teacher-reported effects of pandemic and resources provided on teaching and teacher well-being ..... 157
Research Question 3b. What technological resources did districts/schools provide to teachers to support remote and hybrid learning, and what technology challenges and strategies did teachers report? ..... 162
Table E17. District-reported use of technology by elementary school teachers prior to the COVID-19 pandemic ..... 162
Table E18. District-reported use of technology by middle school teachers prior to the COVID-19 pandemic ..... 163
Table E19. District-reported use of technology by high school teachers prior to the COVID- 19 pandemic ..... 163
Table E20. District-reported technology provided to elementary school teachers to support remote learning ..... 164
Table E21. District-reported technology provided to middle school teachers to support remote learning ..... 165
Table E22. District-reported technology provided to high school teachers to support remote learning ..... 166
Table E23. District-reported learning management systems provided to elementary school teachers to support remote learning ..... 167
Table E24. District-reported learning management systems provided to middle school teachers to support remote learning ..... 168
Table E25. District-reported learning management systems provided to high school teachers to support remote learning ..... 169
Table E26. District-reported apps and tools used by elementary school teachers during spring 2020 and school year 2020-2021 ..... 170
Table E27. District-reported apps and tools used by middle school teachers during spring 2020 and school year 2020-2021 ..... 171
Table E28. District-reported apps and tools used by high school teachers during spring 2020 and 2020-21 ..... 172
Table E29. District-reported single sign-on/app management systems used during spring 2020 by grade level. ..... 173
Table E30. District-reported single sign-on/app management systems used during 2020-21 by grade level ..... 174
Table E31. District-reported summer 2020 preparation for fall 2020: Online resources and learning management platforms ..... 175
Table E32. Teacher-reported access to instructional technology in spring 2020 (elementary teachers) ..... 176
Table E33. Teacher-reported access to instructional technology in 2020-21 (elementary teachers) ..... 177
Table E34. Teacher-reported access to instructional technology in spring 2020 (middle school teachers)
Table E35. Teacher-reported access to instructional technology in 2020-21 (middle school teachers) ..... 179
Table E36. Teacher-reported access to instructional technology in spring 2020 (high school teachers) ..... 180
Table E37. Teacher-reported access to instructional technology in 2020-21 (for high school teachers) ..... 181
Table E38. Teacher-reported access to instructional technology in spring 2020 (mixed-level teachers) ..... 182
Table E39. Teacher-reported access to instructional technology in 2020-21 (mixed-level teachers) ..... 183
Table E40. Teacher-reported technological resources provided by districts/schools to support remote and hybrid learning ..... 184
Research Question 3c. What types and amount of professional development did districts/schools provide to teachers to support remote and hybrid learning (e.g., training on education technology, pedagogy of virtual teaching, etc.)? ..... 185
Table E41. District-reported hours of paid professional development devoted to remote/virtual learning during spring 2020 ..... 185
Table E42. District-reported summer 2020 preparation for fall 2020: paid professional and voluntary development ..... 186
Table E43. District-report hours of paid professional development devoted to remote and/or hybrid instruction in 2020-21 by grade level ..... 187
Tables E44. Teacher-reported professional development over the past 5 years (elementary teachers) ..... 188
Tables E45. Teacher-reported professional development over the past 5 years (middle school teachers) ..... 189
Tables E46. Teacher-reported professional development over the past 5 years (high school teachers) ..... 190
Tables E47. Teacher-reported professional development over the past 5 years (mixed-level teachers) ..... 191
Table E48. Teacher-reported professional development to support remote and hybrid learning ..... 193
Research Question 3d. What tools and strategies introduced during the pandemic do administrators and teachers say they will continue to use in their practice? ..... 194
Table E49. District-reported remote/hybrid practices to continue after the pandemic has passed ..... 194
Table E50. Teacher-reported instructional technologies introduced during the pandemic by grade level ..... 196
Table E51. Teacher-reported plans for instructional technology introduced during the pandemic (elementary teachers) ..... 197
Table E452. Teacher-reported plans for instructional technology introduced during the pandemic (middle school teachers) ..... 197
Table E53. Teacher-reported plans for instructional technology introduced during the pandemic (high school teachers) ..... 198
Table E54. Teacher-reported plans for instructional technology introduced during the pandemic (mixed level teachers) ..... 199
Research Question 3e. What lessons do administrators and teachers say they learned regarding teaching and learning during the pandemic and how the state could improve in a future pivot to remote learning? ..... 200
Table E55. Teacher-reported rankings by grade level of preferred learning model post- pandemic ..... 200
Table E56. Teacher-reported rankings by grade level of how prepared they feel to teach each of the learning models ..... 201
Table E57. Teacher-reported rankings by grade level of how effective the learning models are for students ..... 202
Table E58. Teacher-reported "lessons learned" about teaching and learning during a crisis ..... 203
Appendix F: Student outcomes (Research Goal 4) ..... 206
Q4a. To what extent were students able to access remote learning? ..... 206
Figure F1. Enrollment Patterns for Alliance Opportunity Districts ..... 207
Figure F2. Enrollment Patterns for Non-Alliance Districts ..... 208
Table F1. In-Person Option in September as Dependent Variable ..... 210
Table F2: Enrolled in Kindergarten if Observed in First Grade Next Year. ..... 211
Table F3. Fall Enrollment if Enrolled in the Previous Year ..... 212
Table F4. Fall Enrollment and Share High Need Students ..... 213
Table F5. Attendance conditional on previous year attendance ..... 215
Table F6. Attendance conditional on previous year attendance ..... 216
Table F7. English Language Arts Test Score Effects ..... 218
Table F8. Mathematics Test Score Effects ..... 220
Table F9. English Language Arts Test Score Effects by Share High Needs ..... 221
Table F10. Math Test Score Effects by Share High Needs ..... 223
Table F11. Falsification of In-Person Learning Effects on Enrollment ..... 226
Table F12. Falsification Tests for In-Person Learning Effects on Attendance ..... 227
Table F13. Falsification Tests for In-person Learning Effects on ELA Test Scores ..... 228
Table F14. Falsification Tests for In-person Learning Effects on Math Test Scores ..... 229
Table F15. Remote learning conditions: Access to synchronous instruction in spring 2020 (district inventory indicator 1) ..... 230
Table F16. Remote learning conditions: Access to remote learning technology in spring 2020 (district inventory indicator 2) ..... 230
Table F17. Remote learning conditions: Summer 2020 preparation for fall (district inventory indicator 3) ..... 231
Table F18. Remote learning conditions: District improvements in remote learning (district inventory indicator 4) ..... 232
Table F19. Remote learning conditions: Rigor of student assessment in 2020-21 (district inventory indicator 5). ..... 233
Table F20. Remote learning conditions: Social services referrals for students in 2020-21 (district inventory indicator 6) ..... 234
Q4b. What do teachers say about the association of learning models and conditions with student attendance and performance? ..... 235
Q4c. How were remote learning models and conditions associated with changes in student attendance and performance on standardized assessments? ..... 235
Table F21. Results of Inferential Analysis: Association of Remote Learning Conditions with Student Outcomes ..... 239
Table F22. Individual test and grade estimates for remote learning conditions ..... 240
Table F23. Individual grade span attendance estimates for remote learning conditions ..... 241

## Appendix A: Measures

## Connecticut State Department of Education (CSDE) administrative data

Table A1. CSDE student demographic variables

| Variable Name | Description |
| :--- | :--- |
| SASID | State Assigned Student ID |
| RaceEth | USDE race/ethnicity code: |
|  | 1. Hispanic/Latino of any race; |
|  | 2. American Indian or Alaska Native; |
|  | 3. Black or African American; |
|  | 4. Asian; |
|  | 5. Native Hawaiian or Other Pacific Islander; |
|  | 6. White; and |
|  | 7. Two or more races. |
| FRPL | 3-category code for Free or Reduced-Price Lunch eligibility: |
|  | $\mathrm{F}=$ eligible for free lunch; |
|  | $\mathrm{R}=$ eligible for reduced-price lunch; |
|  | $\mathrm{N}=$ ineligible |
|  | Special Education status: |
|  | $\mathrm{Y}=$ student has an active IEP and receives special education instruction |
|  | (i.e., student with disability) |
|  | $\mathrm{N}=$ student does not have an IEP (i.e. student without disability) |
|  | English Learner status: |
|  | $\mathrm{Y}=$ identified as an English Learner; |
|  | $\mathrm{N}=$ not identified as an English Learner |
| EL |  |

Note: Students are included in the CSDE's high needs group if they are a student with a disability, English learner, or eligible for free or reduced-price lunch..

Table A2. CSDE enrollment and attendance variables

| Variable Name | Description |
| :--- | :--- |
| SASID | State Assigned Student ID |
| FallOfYear | Year in which school year began |
| CollectionInstanceName | Name of data collection |
| GradeLevelCode | Code for student grade level, from PK-12 |
| School_SK | School name |
| SchoolCode | School code |
| RptngDistrict_SK | Reporting district name |
| ReportingDistrictCode | Reporting district code |
| Fac1AttendanceDays | Number of attendance days at end-of-year school |
| Fac1MembershipDays | Number of days enrolled at end-of-year school |
| AttendanceRate | Attendance days divided by membership days, expressed as a <br> percentage |
| ChronicAbsenteeism | 1 if attendance rate is $<=90 \%, 0$ if attendance rate is $>90 \%$ |

Table A3. CSDE standardized assessment variables

| Variable Name | Description |
| :--- | :--- |
| SASID | State Assigned Student ID |
| FallOfYear | $2014-2020$ |
| Grade | $3-8,11$ |
| AssessmentName | Smarter Balanced or SAT |
| Subject | ELA or Math |
| PerformanceLevel | $1-4$ |
| ProficientOrAbove | 1 if PerformanceLevel $=3$ or 4,0 if PerformanceLevel $=1$ or 2 |
| ScaleScore | Raw scale score |

Table A4. CSDE learning modes survey variables

| Variable Name | Description |
| :--- | :--- |
| District code | State assigned district identification number |
| District name | Name of district |
| School start date | Date of first date of school |
| Grades: In person | Comma delimited list of grades taught in person |
| Grades: Hybrid | Comma delimited list of grades taught hybrid |
| Grades: Remote | Comma delimited list of grades taught remote |
| ProficientOrAbove | 1 if PerformanceLevel=3 or 4, 0 if PerformanceLevel=1 or 2 |
| ScaleScore | Raw scale score |
| Percentage fully remote | Percentage from 0 to 100 of students attending fully remote in district |
| Total number students | Total number of students in district |
| Predominant model | Text variable describing the primary learning model across grades |
| Organization type | The type of Local Education Authority reporting |
| Alliance district | Whether alliance, alliance opportunity, or non-alliance district |
| Reporting period | Calendar week for which the remote learning report was made |
| Update date | Date on which the weekly report was filed |

## CCERC remote learning district inventory

Table A5. CCERC remote learning district inventory domains

| Domain | Items |
| :--- | :--- |
| District information | Q1-Q3 |
| Pre-pandemic learning opportunities | Q4 |
| Spring 2020 learning models | Q5-8 |
| Spring 2020 learning goals | Q5-8 |
| Spring 2020 staffing | Q9 |
| Spring 2020 professional development | Q10 |
| Spring 2020 food security | Q11 |
| Spring 2020 social services referrals | Q12-Q14 |
| Summer 2020 preparation | Q15 |
| 2020-21 learning models | Q16 |
| Fall 2020 staffing | Q17 |
| 2020-21 professional development | Q18 |
| 2020-21 food security | Q19 |
| 2020-21 social services referrals | Q20-Q22 |
| 2020-21 technology | Q23-Q25 |
| Post-COVID plans | Q26 |
| Spring 2020 student disengagement | Q27-Q28 |
| 2020-21 remote learning | Q29-Q33 |
| 2020-21 hybrid learning | Q34-Q35 |
| 2020-21 improvements in online learning | Q36 |
| Changes in technology | Q37-Q41 |
| Changes in assessment and grading | Q43-44 |
| Changes in emotional wellbeing | Q45-Q47 |

Note: The complete CCERC remote learning district inventory is posted at https://osf.io/9k5yg.

## CCERC remote learning teacher survey

Table A6. CCERC remote learning teacher survey domains

| Domain | Items |
| :--- | :--- |
| Professional background | Q1-Q5 |
| 2019-20 Instructional models | Q6-Q8 |
| 2020-21 Instructional models | Q9-Q17 |
| 2020-21 Teaching challenges | Q18 |
| Technology | Q19-Q21 |
| Professional development | Q22-Q23 |
| Priorities, needs, and supports | Q24-Q28 |
| Teacher beliefs and preferences about learning models | Q29-Q31 |
| Teacher demographics | Q32-Q35 |

Note: The complete CCERC remote learning district inventory is posted at https://osf.io/psrgf.
Table A7. Teacher survey respondents by district type
Based on district named in Teacher Survey Q4. In what school district were you a teacher?

|  | Survey respondents |  | Connecticut teachers |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Valid Count | Valid <br> Percent | FTEs | Percent |
| Alliance Districts (including Opportunity Districts) | 1009 | 35.4 | 16717.9 | 39.9 |
| Local School Districts (excluding Alliance Districts) | 1424 | 49.9 | 19730.5 | 47.1 |
| Regional School Districts | 150 | 5.3 | 1975.6 | 4.7 |
| Public Charter School Districts | 45 | 1.6 | 758.6 | 1.8 |
| Endowed and Incorporated Academy Districts | 45 | 1.6 | 267.6 | 0.6 |
| Regional Education Service Center Districts | 108 | 3.8 | 1338.7 | 3.2 |
| College Affiliated School Districts | 2 | 0.1 | 0.0 | 0.0 |
| State Agencies | 4 | 0.1 | 122.5 | 0.3 |
| CT Technical Education and Career Districts | 64 | 2.2 | 982.7 | 2.3 |
| Total N | 2851 | 100.0 | 41894.1 | 100.0 |

Table A8. Teacher survey respondents by education level
Teacher Survey Q2. What grade levels did you teach? Please select all that apply.

|  | Survey respondents |  |
| :--- | :---: | :---: |
|  | Valid Count | Valid Percent |
| Elementary school | 1024 | 35.9 |
| Middle school | 576 | 20.2 |
| High school | 899 | 31.5 |
| Multiple levels, ungraded, or unknown | 352 | 12.3 |
| Total N | 2851 | 100.0 |

Note: CSDE does not report teachers by grade level. Also note that respondents were instructed to "select all that apply;" the fourth category includes respondents who selected $>1$ education levels.

Table A9. Teacher survey respondents by job type
Teacher Survey Q3. What was your main teaching assignment?

|  | Survey respondents |  | Connecticut teachers |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Valid Count | Valid Percent | FTEs | Percent |
| Special education | 345 | 12.1 | 6976.17 | 16.4 |
| General education |  |  | 35663.2 | 83.6 |
| Early childhood or general elementary | 690 | 24.2 |  |  |
| Arts or music | 196 | 6.9 |  |  |
| English and language arts | 326 | 11.4 |  |  |
| English as a second language or bilingual education | 113 | 4.0 |  |  |
| Foreign languages | 130 | 4.6 |  |  |
| Health education | 27 | 0.9 |  |  |
| Mathematics | 288 | 10.1 |  |  |
| Natural sciences | 243 | 8.5 |  |  |
| Social sciences | 197 | 6.9 |  |  |
| Career or technical education | 110 | 3.9 |  |  |
| Other (please describe) | 184 | 6.5 |  |  |
| Total N | 2849 | 100.0 | 42639.4 | 100.0 |

Note: CSDE reports teachers by general education vs. special education; CSDE does not report general education teachers by certification area or teaching assignment.

Table A10. Teacher survey respondents by years of experience
Teacher Survey Q32. Including this school year (2021-2022), but excluding your student teaching, how long have you worked as a teacher? Please round to the nearest whole number.

|  | Survey respondents |  | Connecticut teachers |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Valid <br> Count | Valid Percent | FTEs | Percent |
| 1-5 years | 223 | 8.7 | 8674.21 | 20.3 |
| 6-15 years | 829 | 32.5 | 15038.39 | 35.3 |
| 16 or more years | 1498 | 58.7 | 18926.75 | 44.4 |
| Total N | 2550 | 100.0 | 42639.35 | 100.0 |

Table A11. Teacher survey respondents by gender
Teacher Survey Q33. How would you describe your gender?

|  | Survey respondents |  | Connecticut teachers |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Valid | Valid | FTEs | Percent |
|  | Count | Percent |  |  |
| Male | 442 | 16.9 | 10362.90 | 24.3 |
| Female | 2095 | 79.9 | 32276.45 | 75.7 |
| Another gender identity | 12 | 0.5 |  |  |
| Prefer not to answer | 72 | 2.7 |  |  |
| Total | 2621 | 100.0 | 42639.35 | 100.0 |

Note: Note that the CCERC RL teacher survey offered response options for the gender question that differ from how CSDE collects data on teacher gender.

Table A12. Teacher survey respondents by age Teacher Survey Q34. What is your age?

|  | Survey respondents |  | Connecticut teachers |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Valid | Valid | FTEs | Percent |
| $20-29$ | 155 | 5.9 | 4893.95 | 11.5 |
| $30-39$ | 545 | 20.8 | 11175.54 | 26.2 |
| $40-49$ | 710 | 27.1 | 12179.66 | 28.6 |
| $50-59$ | 794 | 30.3 | 10163.17 | 23.8 |
| 60 or older | 339 | 12.9 | 4227.03 | 9.9 |
| Prefer not to answer | 78 | 3.0 |  |  |
| Total | 2635 | 100.0 | 42639.35 | 100.0 |

Table A13. Teacher survey respondents by race/ethnicity
Teacher Survey Q35. What categories describe you? Please select all that apply.

|  | Survey respondents |  | Connecticut teachers |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Valid Count | Valid Percent | FTEs | Percent |
| American Indian or Alaska Native | 15 | 0.6 | 58.14 | 0.1 |
| Asian | 39 | 1.5 | 576.43 | 1.4 |
| Black or African-American | 75 | 2.8 | 1527.05 | 3.6 |
| Hispanic, Latino, or Spanish origin | 128 | 4.9 | 1905.5 | 4.5 |
| Middle Eastern or North African | 10 | 0.4 |  |  |
| Native Hawaiian or other Pacific Islander | 2 | 0.1 | 22.2 | 0.1 |
| White | 2266 | 86.4 | 38409.81 | 90.2 |
| Two or more races |  |  | 80.42 | 0.2 |
| Some other race, ethnicity, or origin | 22 | 0.8 |  |  |
| Prefer not to answer | 159 | 6.1 |  |  |
| Not reported |  |  | 59.8 | 0.1 |
| Total |  |  | 42579.55 | 100.0 |

Note: Note that the CCERC RL teacher survey offered response options for the race/ethnicity question that differ from how CSDE collects data on teacher race and ethnicity. In addition, the CCERC RL teacher asks respondents to select all that apply, whereas the CSDE demographic categories include "Hispanic or Latino of any race" and "Two or more races." For this reason, the teacher survey columns include more than one response for some respondents and valid percentages do not add up to $100 \%$.

## CCERC remote learning focus groups

Table A14. CCERC remote learning teacher focus group protocol
This first set of questions will focus on your experiences in March of 2020 at the beginning of the pandemic and also during the 2020-2021 school year.

1. Thinking back to the beginning of the pandemic in the Spring of 2020, what was your greatest teaching challenge?
a. What about during the 2020-2021 school year, what would you say was your greatest teaching challenge then?
2. What about your students? What were their greatest needs in the Spring of 2020?
a. What about during the 2020-2021 school year, what do you think were your students' greatest needs then?
3. How did you connect with your students in the Spring of 2020 when the pandemic first began?
b. What strategies worked well to help you connect with your students when you first pivoted to remote or asynchronous teaching?
4. What about during the 2020-21 school year, how did you connect with your students?
a. What strategies worked well to help you connect with your students during the 2020-21 school year?

Now I would like to ask you about any training or supports that were offered in the Spring of 2020 and in the 2020-21 school year, to assist with changes in teaching modalities.
5. In the spring of $\mathbf{2 0 2 0}$ what supports or resources such as: technology supports, curriculum resources, resources to help support your students or other resources did your district provide as you transitioned to fully remote or asynchronous teaching?
a. How helpful were these supports?
b. What else was needed?
6. How did the 2020-2021 school year begin in your district, in person, remote or hybrid?
a. Were there any changes in teaching modality as the year progressed?
b. What supports or resources such as technology supports, curriculum resources, resources to help support your students or other resources were provided as you continued to teach remotely or in person?
c. How helpful were these supports?
d. What else was needed?
7. When you think back to how parents navigated the different learning models and transitions from one learning model to another, what types of supports if any did parents need you to provide to help them navigate these learning models?

The next set of questions have to do with how students were doing and access to services and supports since the beginning of the pandemic.
8. When you think about student learning (and achievement) in the 2020-21 school year, how did that compare to prior to the pandemic?
9. What about any emotional concerns of your students like stress, anxiety, depression, trauma in the 2020-21 school year, how did this compare to prior to the pandemic?
10. What about student behavior during the 2020-21 school year, how did that compare to prior to the pandemic?
11. What resources or skills did you have to address student concerns?
a. What other resources would have been helpful to support your students?
b. Were support services like social work, guidance counselors available to students and families during the 2020-2021 school year?
i. What did families do if they needed more support?
12. What about you and your colleagues, what supports were provided to you to support your physical and emotional well-being?

We just have two more questions.
13. Looking back on these past two years, is there anything that you learned or any changes that were made during the pandemic that you think should continue postpandemic?
14. Finally, what is the take home message for the state in thinking about how to prepare for something like this in the future?

Thank you for participating in this focus group, the information you shared will be invaluable in helping the state to understand the experiences of teachers during the pandemic.

Table A15. Teacher focus group participants' demographics

|  | Focus group participants <br> $(n=67)$ | Connecticut teachers <br> $(n=42,639.35)$ |  |
| :--- | :---: | :---: | :---: |
| Age | $\mathbf{n}$ | $\mathbf{\%}$ | $\mathbf{\%}$ |
| $20-29$ | 3 |  |  |
| $30-39$ | 21 | $3 \%$ | $11 \%$ |
| $40-49$ | 16 | $24 \%$ | $26 \%$ |
| $50-59$ | 21 | $31 \%$ | $29 \%$ |
| $60-69$ | 6 | $9 \%$ | $24 \%$ |
| Gender |  |  | $7 \%$ |
| Male | 14 | $20.9 \%$ |  |
| Female | 53 | $79.1 \%$ | $24 \%$ |
| Race/Ethnicity (select all) | 1 |  | $76 \%$ |
| Asian | 7 | $2 \%$ |  |
| Black or African American | 5 | $10 \%$ | $1 \%$ |
| Hispanic, Latino, or Spanish origin | 57 | $8 \%$ | $4 \%$ |
| White | 0 | $85 \%$ | $5 \%$ |
| Other |  | - | $90 \%$ |

Table A16. Teacher focus group participants' professional characteristics
Years of teaching experience Focus group participants Connecticut teachers

| (excluding student teaching) | $(\mathrm{n}=67)$ | $(\mathrm{n}=42,639.35)$ |  |
| :--- | :---: | :---: | :---: |
| Mean | 17 |  |  |
| SD | 8.73 |  |  |
| Min / Max | $2 / 36$ |  |  |
| Current Role (select all that apply) | $\mathbf{n}$ | $\mathbf{\%}$ | $\mathbf{\%}$ |
| General Education Teacher | 50 | $75 \%$ | $84 \%$ |
| Special Education Teacher | 10 | $15 \%$ | $16 \%$ |
| Other Teacher (e.g., ESL teachers, | 11 | $16 \%$ |  | specialists)


| Other (e.g., instructional coach, <br> afterschool teacher, etc.) |
| :--- |

Type of School District

| Alliance | 57 | $70 \%$ | $60 \%$ |
| :--- | :---: | :---: | :---: |
| Non-Alliance | 20 | $30 \%$ | $40 \%$ |
| District locale |  |  |  |
| $\quad$ Urban | 30 | $44.8 \%$ |  |
| Suburban | 29 | $43.3 \%$ |  |
| Rural | 8 | $11.9 \%$ |  |


| School Type (select all) |  |  |
| :--- | :--- | :--- |
| Elementary School (grades preK-5) | 24 | $35.8 \%$ |
| Middle School (grades 6-8, 5-8, etc.) | 22 | $32.8 \%$ |
| High School (Grades 9-12) | 25 | $37.3 \%$ |

## Appendix B: Technical details

## Administrative data analysis

We first estimate a model of the likelihood that a school (s) belongs to an LEA or district (d) that provides an in person option either hybrid or fully in person in September ( $I$ ) as a function of both the school share of high needs students $\left(Z_{s d}\right)$ and the type of LEA $\left(T_{d}\right)$. All models are weighted by pre-pandemic school enrollment. We estimate simple probit models of this likelihood that follows the standard form.
$I_{s d}= \begin{cases}1 & \text { if } I_{s d}^{*}>0 \\ 0 & \text { otherwise }\end{cases}$
where
$I_{s d}^{*}=\alpha_{1}+\alpha_{2} Z_{s d}+\alpha_{3} T_{d}+\alpha_{4} T_{d} Z_{s d}+\varepsilon_{s d}$
We also estimate similar models for a two sided Tobit on share of days offered in person ( $S$ ) since this share is truncated at zero and one.
$S_{s d}= \begin{cases}1 & \text { if } S_{\text {isd }}^{*} \geq 1 \\ S_{s d}^{*} & \text { if } 1>S_{\text {isd }}^{*}>0 \\ 0 & \text { if } S_{\text {isd }}^{*} \leq 0\end{cases}$
where
$S_{s d}^{*}=\varphi_{1}+\varphi_{2} Z_{s d}+\varphi_{3} \boldsymbol{T}_{d}+\varphi_{4} \boldsymbol{T}_{d} Z_{s d}+\varepsilon_{s d}$
With the notable change that LEA type is specified as a vector of indicators because the continuous share of days variables allows for a more disaggregate classification of LEA's. Standard errors in both models are clustered at the district level.

For examining student take up, we regress each student's fraction of days enrolled in person relative to the total days enrolled each month $\left(F_{i s d t}\right)$ on our calculated share of days available in person each month based on weekly learning modes relative to the total days of school each month $\left(S_{s d t}\right)$.
$F_{i s d t}=\alpha+\beta S_{d t}+\varepsilon_{i s d t}$
We also estimate an interactive model based on each school's share of high needs students
$F_{i s d t}=\alpha+\beta_{1} S_{d t}+\beta_{2} Z_{s d t}+\beta_{3} S_{d t} Z_{s d t}+\varepsilon_{i s d t}$
Standard errors are clustered at the district level.
For examining initial enrollment of kindergarteners, we only observe students who actually enrolled in kindergarten, and so we cannot know how many students would have enrolled if the pandemic had not occurred. Therefore, we reverse the regression, similar to many studies of discrimination in police stops where those at risk of stop are unobserved (Kalinowski et al. 2021; Grogger and Ridgeway 2006), and regress whether the school belongs to an LEA that provided a September in person option $(I)$ on a linear trend $(T)$ and a dummy for the pandemic year $(P)$ using a linear probability model.
$I_{i s d t}=\alpha+\beta T_{t}+\gamma P_{t}+\varepsilon_{i s d t}$
The trend allows enrollment to change over time away from or towards schools that will offer an in person option in 2020-21, and the pandemic dummy tests for a trend break associated with enrollment responses to an in person option. Again, we expand this model allowing effects to differ between schools with high and low shares of high needs students.
$I_{i d t}=\alpha_{1}+\beta_{1} T_{t}+\gamma_{1} P_{t}+\alpha_{2} Z_{d}+\gamma_{2} P_{t} Z_{d}+\varepsilon_{i d t}$
Again, standard errors are clustered at the district level.
While we observe large declines in kindergarten enrollment, a significant share of that decline is eliminated by the end of the school year because students enroll in kindergarten midway through the school year. Using first grade enrollments, we estimate a month by month model of the likelihood of observing 2021-22 first graders enrolled in kindergarten ( $E$ ) during the 2020-21 school year in order to test whether in person opportunities (share days in person) increases the likelihood of mid-year enrollment among those future first graders who have not yet enrolled.
$E_{i s d t}=\alpha+\beta S_{d t}+\varepsilon_{i s d t}$
$E_{i s d t}=\alpha+\beta_{1} S_{d t}+\beta_{2} Z_{s d t}+\beta_{3} S_{d t} Z_{s d t}+\varepsilon_{i s d t}$
We mean difference share in person prior to including the control so that intercept can be interpreted as the share of first graders present in kindergarten for the state average share of days offered in person.

Next, we exploit longitudinal information on students starting with enrollment in fall 2020-21 $(E)$ if the student was observed in public education in the previous year. Continued enrollment is estimated using a difference-in-differences model, comparing changes in the likelihood of continuing enrollment the next year pre/post pandemic and estimating differences in those differences between schools with an in person option in September and those without.

$$
\begin{align*}
& E_{\text {isdt }}=\alpha_{s d}+\gamma_{1} P_{t}+\gamma_{2} P_{t} I_{d}+\varepsilon_{i s d t} \text { for } E_{\text {isdt-1 }}=1  \tag{11}\\
& E_{i s d t}=\alpha_{s d}+\gamma_{1} P_{t}+\gamma_{2} P_{t} I_{d}+\gamma_{3} P_{t} Z_{s d}+\gamma_{4} P_{t} I_{d} Z_{s d}+\varepsilon_{i s d t} \text { for } E_{\text {isdt }-1}=1 \tag{12}
\end{align*}
$$

where $\alpha_{s d}$ are school fixed effects.
Estimates of equations (2) and (4) will show that high needs districts are less likely to provide in person learning and traditional public schools are more likely to provide in person learning than choice schools like magnet or charter schools. Therefore, we use the propensity score estimates from equation (2) to develop overlap weights (Li et al. 2018), and re-estimate equations (11) and (12) using weighted regressions. Overlap weights, like inverse propensity score weights, restore sample balance, but do so by targeting the product of the probability of treatment and the probability of not receiving treatment, which places more weight on propensity scores near zero where the data provides equal support over treatment and non-treatment. Specifically, we define overlap weights as
$W_{i s d}= \begin{cases}\left(1-F\left(\hat{\alpha}_{1}+\hat{\alpha}_{2} Z_{s d}+\hat{\alpha}_{3} T_{d}+\hat{\alpha}_{4} T_{d} Z_{s d}\right)\right) & \text { if } N R_{i s d}^{*}=1 \\ F\left(\hat{\alpha}_{1}+\hat{\alpha}_{2} Z_{s d}+\hat{\alpha}_{3} T_{d}+\hat{\alpha}_{4} T_{d} Z_{s d}\right) & \text { if } N R_{i s d}^{*}=0\end{cases}$
based on estimates arising from equation (2).
Finally, we develop difference-in-differences models of attendance and test scores $(Y)$ that include controls for lagged student outcomes. For these models, we control for the share of days offered in person over the relevant portion of the school year.
$Y_{i s d t}=\alpha_{s d}+\delta Y_{i d t-s}+\gamma_{1} P_{t}+\gamma_{2} P_{t} S_{s d}+\varepsilon_{i s d t}$
$Y_{i s d t}=\alpha_{s d}+\delta Y_{i d t-s}+\gamma_{1} P_{t}+\gamma_{2} P_{t} S_{s d}+\gamma_{3} P_{t} Z_{s d}+\gamma_{4} P_{t} S_{d} Z_{s d}+\varepsilon_{i s d t}$
where $s$ represents the lag applied to the previous outcome control, which is one year for attendance in our primary models and two years for test scores.

As with September in person learning, we use the estimates from equation (4) to obtain a propensity score associated with each student's school's tendency to offer a higher share of days in person based on the school's share of high need students and LEA. However, simple weighting approaches based on probabilities or densities are not available because the appropriate model for share of days involves a continuous variable with truncation. Since the weights are intended to avoid differences in trends created by imbalance in the sample over treatment, we instead address potential bias from such trends by adding an interaction of the propensity score with the pandemic control. The propensity score is defined as

$$
\begin{equation*}
\hat{S}_{s d}=\hat{\varphi}_{1}+\hat{\varphi}_{2} Z_{s d}+\hat{\varphi}_{3} \boldsymbol{T}_{d}+\hat{\varphi}_{4} \boldsymbol{T}_{d} Z_{s d} \tag{16}
\end{equation*}
$$

Admittedly, the same effect could be accomplished by adding the controls in equation (16) interacted with the pandemic variable to equations (14) and (15). However, by using the propensity score, we can mean difference a single variable, propensity score, prior to inclusion in the model, and as a result the pandemic variable estimate represents the effect for the average school in terms of propensity to offer a high share of days in person. The resulting model is

$$
\begin{align*}
Y_{i s d t}= & \alpha_{s d}+\delta Y_{i d t-s}+\gamma_{1} P_{t}+\gamma_{2} P_{t} S_{s d}+\gamma_{3} P_{t}\left(\hat{S}_{s d}-\bar{S}\right)+\varepsilon_{i s d t}  \tag{17}\\
Y_{i s d t}= & \alpha_{s d}+\delta Y_{i d t-s}+\gamma_{1} P_{t}+\gamma_{2} P_{t} S_{s d}+\gamma_{3} P_{t} Z_{s d}+\gamma_{4} P_{t} S_{d} Z_{s d} \\
& +\gamma_{5} P_{t}\left(\hat{S}_{s d}-\bar{S}\right)+\varepsilon_{i s d t} \tag{18}
\end{align*}
$$

Standard errors for all difference-in-differences models are clustered at the level of the fixed effects, i.e. the school.

For all difference-in-differences models, we estimate falsification tests where we treat an earlier year, 2018-19, as a fake pandemic year and use the years 2016-17 and earlier as the pre-event sample.

## District inventory indicators of remote learning conditions

Table B1. District inventory indicators: Remote learning conditions in spring 2020

| Domain | Item | Levels* | Response Set/Measurement |
| :---: | :---: | :---: | :---: |
| 1. Synchronous learning in spring 2020 | As of May 1 2020, what did learning look like when students from the following grade levels were learning from home? | E, M, H | Binary indicator (fully or partially synchronous vs. fully asynchronous) based on four possible responses: <br> a. Fully asynchronous without technology: assignments were distributed in print format and no online/electronic learning materials were provided <br> b. Fully asynchronous with technology: students had no classes conducted in real time through video conferencing (for example, Google Meet or Zoom), but online/electronic learning materials were provided (e.g, online activities, instructional videos, etc.) <br> c. Partially synchronous: students had at least one class meeting conducted in real time through video conferencing (for example, Google Meet or Zoom) <br> d. Fully synchronous: the majority of students' classes took place in real time, through video conferencing (for example, Google Meet or Zoom) |


| 2. Student technology access in spring 2020 | (1) Please provide your best guess for what percentage of students had sufficient internet access for full participation in online learning as of the following dates. March 1, 2020 <br> (2) Please estimate the percentage of [GRADE SPAN LEVEL] students who had access to digital devices at home as of March 1, 2020: - Chromebooks, laptops, or iPads provided by the district or by family | E, M, H | Mean percentage based on the two items. |
| :---: | :---: | :---: | :---: |

Table B2. District inventory indicators: Remote learning conditions in 2020-21

| Domain | Item | Levels | Response Set/Measurement |
| :--- | :--- | :--- | :--- |
| 3. Summer 2020 <br> preparation for <br> fall | Which of the following <br> activities did your district <br> conduct between the last <br> student day of spring 2020 | District |  |
|  |  | Count of the following binary responses: |  |
| and the students' return to |  |  |  |$\quad$| a. Building improvements (ventilation, air purification devices, directional |
| :--- | :--- |
| signs) |


| 4. Improvements | In what ways did remote |
| :--- | :--- |
| for remote | learning for [GRADE SPAN |
| learning in 2020- | LEVEL] students improve |
| $\mathbf{2 1}$ | from 2019-20 to 2020-21? |
|  | [Respondents select all that <br> apply] |


| 5. Rigor of <br> student <br> assessment in | On what basis did your <br> [GRADE SPAN LEVEL] <br> teachers report student | E,M,H | Weighted sum of two items: |
| :--- | :--- | :--- | :--- |
| $\mathbf{2 0 2 0 - 2 1}$ | progress during each of the <br> following time periods? | $\mathbf{0 - 2}$ points based on grading approach (maximum score wins): |  |

What data did your district use to assess how [GRADE
SPAN LEVEL] students
were doing during the
following time periods?
Please select all that apply
for school year 2020-21. -
6. Social services During the 2020-21 school referrals in year, how did your district's 2020-21

## 1 point each for in-class assignments, quizzes/tests, diagnostic assessments:

a. Their completed classroom tasks or assignments
b. Their performance on classroom quizzes or tests
c. Diagnostic or benchmark schoolwide assessments in English language arts
d. Diagnostic or benchmark schoolwide assessments in mathematics

## No points for:

- Their attendance in class
- Their responses to a student survey (excluding social and emotional assessments)
- Their performance on a social and emotional assessment


## District Mean score of two items:

5-point scale: Allocated a lot more resources to Allocated a lot less resources

5-point scale: A lot more students to A lot fewer students

Note: E,M,H=Question asked regarding elementary, middle, and high school levels; District=Asked of the district as a whole

## Analysis of integrated data set

## Approach for Inferential Analyses (see Figure B1)

1. Estimate treatment effects with difference-in-differences models for each combination of district-level predictors and the four outcomes of interests ( 24 models) across all relevant grades for standardized assessment performance and broader grade spans for attendance.
2. Using pooled samples across all relevant grades or grade spans, we will conduct an F-test for each of the four outcomes listed above to assess whether the district-level treatments predict any of these outcomes for any grade or grade span.
3. We will then combine the information from these four tests to assess the general combined statistical significance of any rejection of the null hypothesis above.
4. We will test for the specific combined effect of each treatment using a Bonferroni stepdown procedure to adjust for Type-1 error.

## Approach for Exploratory Analyses (see Figure B2)

5. If the specific combined effect for a treatment is significant with alpha set to .10 , we will explore the treatment's effect on each outcome at the .05 level.
6. If the above step is significant for any of the outcomes, we will examine the treatment effect at each grade span ( $\mathrm{k}-2,3-5,6-8$, and $9-12$ ) for each significant outcome, again setting alpha at .05 .
7. If any grade span is significant, we will assess whether effects differ across demographic groups by assessing homogeneity via F-tests.

Figure B1: Inferential analysis


Figure B2: Exploratory analysis


## Detailed Description of Inferential Analysis (see Figure B1)

## Estimation of Treatment Effect Models

Students in our administrative data will be matched to district inventory data based on the district and the type of school (i.e., elementary, middle or high school) they attended as of October in a given academic year. We will use the administrative data to determine the grades for each school type within each district. We will classify schools with kindergarten or first grade as elementary school and schools with $11^{\text {th }}$ and $12^{\text {th }}$ grade as high school by default. For districts with uniform grade structure across all schools, we will then assign additional grades (e.g., $2^{\text {nd }}, 3^{\text {rd }}$, etc.) to elementary school based on the grades contained in the schools that educate kindergarten and/or first grade students. Similarly, for high school, we will assign additional grades (e.g., $9^{\text {th }}, 10^{\text {th }}$ ) to high school that are contained in the schools that educate $11^{\text {th }}$ and $12^{\text {th }}$ grade students. If only one additional type of school exists in a district in terms of grades served, that school will be assigned as a middle school. When different schools within the same district serve different combinations of grades (e.g., a large district with some K-8 schools and some K-5 schools), then we will rely on our district inventory to determine which schools or grades within schools the district classifies as elementary, middle, or high school. In cases where the district inventory is ambiguous, we will contact the districts directly for clarification. Students attending approved special education schools will be excluded from the analysis sample because these schools are very small, highly specialized, and implemented substantively different learning models during the pandemic, compared to traditional schools.

We will then construct longitudinal student samples for the school years of 2017-18 through 2020-21, pooling the cross-sections of students across these years. The use of longitudinal data allows us to control for lagged outcomes minimizing concerns of bias from selective attrition from the sample during the 2020-21 school year. For attendance, we restrict this sample to observing each student in the spring enrollment file for the previous year and in both the fall and spring enrollment files for the current year. If students change school during the year, we base treatment on their fall enrollment file school. These restrictions assure that we observe attendance rates for both the current year and the previous year and that students are exposed for the entire 2020-21 year to the calculated treatment of share of days offered in person. For
standardized assessment scores, we create subsamples of the two-year lagged attendance rate sample for ELA and Math assessment scores where students are only included in this sample if we observe an ELA or Math assessment score in both the 2020-21 year and two years earlier. The two-year restriction is imposed because these assessments were not administered in 201920, and this restriction implies that our ELA and Math assessment score samples are restricted to 5th, 6th, 7th and 8th grades.

Using the pooled samples, we will estimate separate models for each treatment-outcome pairing so that we can develop separate general p-values (prior to correcting for Type-1 error) that allow for different effects for different measures of student outcomes. This yields 24 difference-indifferences models: one for each combination of 6 treatments and 4 outcomes. Models will consist of student $i$ 's attendance rate, chronic absenteeism status ( $0 / 1$ ), asessment scale scores and assessment proficiency during grade $g$ in school $s$ and district $d\left(Y_{i g s d t}\right)$ that include controls for a pandemic year dummy $\left(P_{t}\right)$ where $t$ represents the academic year, the interaction of pandemic year with district $d$ treatment $\left(T_{s d}\right)$, the lagged student outcome and school $s$ fixed effects. We will estimate different models for each grade or grade span by interacting all controls including the fixed effects with the grade or grade span. For performance outcomes (assessment scores and proficiency), models will be estimated separately by each grade. For attendance outcomes (attendance rate and chronic absenteeism status), models will be estimated separately by grade span (elementary, middle and high school), except that we will also allow for separate models for early elementary grades (kindergarten, $1^{\text {st }}$ and $2^{\text {nd }}$ grades) and later elementary school grades. For these analyses, students will be grouped into grade spans based on the school at which they are enrolled. As an example, $6^{\text {th }}$ grade students attending a middle school will be included in the middle school model, while $6^{\text {th }}$ grade students attending an elementary school will be included in the later elementary school model. For the two binary indicators, chronic absenteeism and assessment proficiency, we will estimate linear probability models to facilitate the use of high dimensional fixed effects.
$Y_{i g s d t}=\alpha_{g s d}+\gamma_{0 g} Y_{i g s d t-s}+\gamma_{1 g} P_{t}+\gamma_{2 g} P_{t} T_{s d}+\varepsilon_{i g s d t}$
where $s$ represents the lag applied to the previous outcome control, which is one year for attendance outcomes and two years for performance outcomes. Standard errors will be clustered in two ways: at the school level and at the student level. School fixed effects yield estimates based on within school comparisons, and clustered robust standard errors are robust to general correlation and heteroscedasticity within clusters.

For all treatments except Improvements in Remote Learning 2020-21, we will use an F-test to assess the null hypothesis of whether $\gamma_{2 g}=0$ for all $g$.

In the case of the Improvements in Remote Learning 2020-21 treatment, these improvements are unlikely to matter if virtually all education within a school took place in person. Therefore, we will estimate an alternative model interacting the pandemic year dummy and treatment with a measure of the share of days during the school year where learning was required to be remote $\left(S_{s d}\right)$ at the student's school.
$Y_{i g s d t}=\alpha_{g s d}+\gamma_{0 g} Y_{i d t-s}+\gamma_{1 g} P_{t}+\gamma_{2 g} P_{t} T_{s d}+\gamma_{3 g} P_{t} S_{s d}+\gamma_{4 g} P_{t} T_{s d} S_{s d}+\varepsilon_{i g s d t}$

We will then use an F-test to the null hypothesis of whether $\gamma_{4 g}=0$ for all $g$.

## Testing the Null Hypothesis Separately for Each Treatment

Rather than using resampling approaches, we will stack the data pooling grades or grade spans and use interaction terms to allow for a separate model for each outcome. In the case of attendance data, we will combine the data for all students in each grade K-12. For assessment data, we will standardize all scores by assessment (Smarter Balance or SAT and ELA or math) by grade by year. Similar stacks will be created using binary outcomes associated with SBAC and SAT assessment proficiency (based on state established proficiency thresholds for scores) and chronic absenteeism (based on the state definition of missing $10 \%$ or more of enrolled days).

Then, separately for (1) attendance, (2) chronic absenteeism, (3) standardized assessment scores and (4) standardized assessment proficiency, we will estimate pooled sample models except that the school fixed effects will now be by school by grade (or grade span) and we will include interaction terms between our treatment variable (the treatment indicator interacted with the pandemic dummy) and each grade (or grade span) dummy, omitting the treatment variable itself so that all grade (or grade span) interaction estimates are relative to pre-pandemic levels. We will then use an F-test to test the null hypothesis above separately for the four regressions. These Ftests independently test four separate null hypotheses $H_{a}^{1}$ that the treatment considered has no positive influence on any of the grades (or grade spans) examined.

Unlike controls for the Family-Wise Error Rate (FWER), such as Bonferroni adjustments, we cannot ignore the correlation between tests. When combining results under a test for whether at least one null is rejected, correlation between those tests will reduce the certainty provided by multiple rejections of null hypotheses and yield a test that is too likely to reject the null. Too correct for correlations between tests without resampling, Conneely and Boehnke (2007) recommend assuming that the estimates are distributed as a multi-dimensional normal distribution and directly calculating the likelihood of a type 1 error using the estimated parameters and the correlation matrix between those estimates.

To estimate the average correlation across the tests in our four regressions, we will estimate twoequation, seemingly unrelated, regression models for pairs of outcome variables. Separate models of treatment effects on outcomes will be estimated for each grade (or grade span) that is common between the related dependent variables, again controlling for fixed effects and a pandemic year dummy. We will back out a correlation coefficient between the estimated treatment effect estimates in the two equations for each grade (or grade span) for each pair of treatments, and then for each pair we calculate a population weighted average of each set of estimated correlations averaged across the grades (or grade spans).

Under the null for each outcome, the p-values $\left(\hat{P}_{k}\right)$ resulting from that F -test describe the Cumulative Distribution Function (CDF) of the distribution of F-tests over potential populations. Therefore, we can map these probabilities into a continuous latent variable ( $\hat{Z}_{k}$ ) and if we use the
standard normal CDF to conduct that mapping then each variable will be distributed as standard normal under the null by construction. Specifically,

$$
\hat{Z}_{k}=F^{-1}\left(\hat{P}_{k}\right)
$$

where $F$ is the CDF of the standard normal. Finally, we impose a very intuitive, but somewhat strong assumption, that the average correlations between the treatment effect estimates for each pair provide a good proxy for the correlation between the normally distributed latent variables. Then our calculation for the probability that none of the four null hypotheses are false (i.e., at least one alternative hypothesis is true) can be calculated as

$$
\operatorname{Pr}\left[H_{a}^{1} \text { or } H_{a}^{2} \text { or } H_{a}^{3} \text { or } H_{a}^{4}\right]=F\left[\hat{Z}_{1}, \hat{Z}_{2}, \hat{Z}_{3}, \hat{Z}_{4} \mid \hat{\Sigma}\right]
$$

where $\hat{\Sigma}$ is the estimated correlation matrix between the treatment effect estimates.

## Type 1 Error Adjusted Tests for Whether a Treatment Matters

Turning to our six hypothesis tests regarding treatment effects on any outcome in any grade (or grade span), we wish to draw strong conclusions concerning which specific elements of district behavior or actions influenced student outcomes. Therefore, we must provide a correction for multiple hypothesis testing to control for the FWER. To do this, we will use the step-down Bonferroni correction as in Holm (1979). This approach orders the p-values from low to high, i.e. $\hat{P}_{1}$ to $\widehat{P}_{K}$ where $K$ is the number of tests and $\widehat{P}_{k-1} \leq \widehat{P}_{k}$ for all $k$, and adjust the standard Bonferroni correction. This test takes the following form for a corrected P -value

Holm-Sidak: $\quad \tilde{P}_{k}=(K+1-k) \hat{P}_{k}$ for all $k$ where $\tilde{P}_{k} \leq \alpha$

## Considering Resampling Approaches

## Null Hypothesis Separately for Each Treatment

We will generate 10,000 bootstrap samples conducting the hypotheses tests for every sample and counting the share of samples in which the null is rejected (Westfall and Young, 1993, p. 123). Specifically, since the null is rejected if the treatment matters for any outcome considered, a false rejection of the null in the bootstrap sample is only recorded if the estimated $p$-values for each outcome in a bootstrap sample is less than the estimated p-value for every outcome using the original sample. Then, the corrected p-value is the share of bootstrap samples that falsely reject the null.

Due to the clustered nature of our data and the use of school fixed effects, we will use a clustered bootstrap resampling schools with replacement. We will use a cluster bootstrap in pairs approach sampling with replacement jointly the controls and the outcome (and so sampling the controls and residual in pairs) associated with an observation. As shown by Cameron, Gelbach and Miller (2008), sampling residuals for a fixed population of observations can have poor size properties (i.e., reject the null far too often) when the unobservable is heteroscedastic, while both clustered standard errors and the pairs cluster bootstrap have proper size under heteroscedasticity, as long as the number of clusters is not too small, over 30 observations.

The bootstrap procedure for our null hypothesis is as follows:

1. Estimate all outcome models separately by grade (or grade span) for a given treatment. For assessment scores, each grade (or grade span) and subject (i.e. ELA or Math) will result in a separate regression. In the case of attendance, we will divide the sample into the following grade spans for estimation: early elementary (K-2), late elementary, middle school and high school. Save the treatment effect estimates $\left(\hat{\beta}_{j}\right)$ and estimated standard errors $\left(\hat{\sigma}_{j}\right)$ where $j$ is the index for each model where there are $J$ models.
2. Create bootstrap samples by sampling schools with replacement retaining all observations associated with each selected school, while preserving the number of schools in each bootstrap sample.
3. For each bootstrap sample $i$, re-estimate all outcome regression models for each grade (or grade span) collecting the bootstrap sample treatment estimates $\left(\hat{\gamma}_{i j}\right)$ and standard errors $\left(\widehat{\omega}_{i j}\right)$.
4. Calculate the likelihood of a Type-1 error $\left(\hat{q}_{i j}\right)$ (i.e. the standard p -value for the bootstrap sample) when rejecting the null hypothesis $\hat{\beta}_{j}=\hat{\gamma}_{i j}$ following the shift and pivot approach described by (Westfall and Young, 1993, p. 38).
5. For each bootstrap sample $i$, test whether $\hat{p}_{j}$ is greater than or equal to $\hat{q}_{i j}$ for all $j$ and if so set $\delta_{i}=1$, which is consistent with the rejection of all null hypotheses even though all null hypotheses are true. The generalized p-value is the fraction of bootstrap samples that satisfies this condition, i.e. the mean of $\delta_{i}(\bar{\delta})$.

## Type 1 Error Adjusted Tests for Whether a Treatment Matters

By choosing a very large bootstrap sample for the individual treatment analyses and using the same bootstrap sample for each treatment, we can resample among the bootstrap samples to conduct our Type-1 Error adjustment for the Family-Wise Error Rate. For example, if we drew a sample of 10,000 bootstrap samples based on sampling schools with replacement and saved the estimation results across all treatments for all 10,000 samples, then it would be reasonable to repeatedly draw 1,000 of these samples with replacement to obtain adjusted p-values.

1. Draw bootstrap samples with replacement from the full set of bootstrap samples from the previous step above where we have conducted regression estimates and calculated adjusted p-values for the generalized null associated with a treatment. Repeat this process $L$ times so that we have many sets of bootstrap samples. Note that we do not need to draw all of the data. We only retain the dummy variable associated with each treatment and bootstrap sample for whether we falsely rejected all null hypotheses in step 5 above ( $\delta_{i k}$ ).
2. For every treatment $k$ and sample of bootstraps $l$, calculate the mean of $\delta_{i k}$ for all bootstrap samples selected as part of $l\left(\bar{\delta}_{l k}\right)$.
3. Identify every sample of bootstraps $l$ where $\bar{\delta}_{l k}$ is less than the uncorrected p -value from step 5 above $\bar{\delta}_{k}$. The fraction of samples of bootstraps where this is true provides the adjusted p -value.

## Detailed Description of Exploratory Analysis (see Figure B2)

For any district behaviors/actions where we find statistically significant impacts on some outcome in some grade (or grade span), we will examine the individual estimates on the treatment variable associated with each outcome and grade for test scores (or grade span for attendance). Specifically, we can look at the F-tests for assessment scores, assessment proficiency, attendance, and chronic absence, and only look at the set of estimates for an outcome if the specific F-test rejects at the $5 \%$ level. For performance outcomes (assessment scores and proficiency), we will look at each individual grade given State Department of Education concerns about pooling assessment data across grades (4 models). For attendance outcomes (attendance and chronic absenteeism), we will focus on pooled analyses by grade span: early elementary (K-2), late elementary, middle school and high school (10 models). While we may not have statistical precision to establish that treatment effects exist for a specific grade (or grade span) and outcome, it will be policy-relevant to know which grades and which outcomes are primarily driving the significant finding for a given district treatment.

We also may look at heterogeneous effects across schools or students for specific grades and outcomes where we observe sizable relationships between treatment and outcomes. In order to address concerns about Type-1 error in such investigations, we will only examine outcome by grade (or grade span) samples if we reject the null hypothesis of zero treatment effects for that sample at the $5 \%$ level. Then, we take an approach similar to the null hypothesis utilized in Gelman, Hill and Yajima (2012). Specifically, they specify the null hypothesis for whether the estimated effect is the same across all groups.

In our case, we will divide students or schools based on composition into observationally similar subgroups based on same racial/ethnic category (Non-Hispanic African American, Non-Hispanic all other races, Hispanic), free or reduced-price lunch status (eligible or ineligible), and English Learner status (EL or non-EL). We then implement this test for heterogeneous effects across the 12 resulting categories as an F-test interacting treatment with a dummy associated with each subgroup, omitting one subgroup, and then running an F-test of the full set of 11 interactions. As with our analysis on outcomes by grade (or grade span), we will only report the individual interactions if the overall F-test is significant at the $5 \%$ level for the purpose of documenting the specific groups that were most influential in the rejection of the null hypothesis of equal treatment effects.

## References

Cameron, AC, Gelbach, A and Miller, DL (2008). Bootstrap-Based Improvements for Inference with Clustered Errors. Review of Economics and Statistics 90 (3): 414-427.

Conneely, KN. and Boehnke, M. (2007). So Many Correlated Tests, So Little Time! Rapid Adjustment of P Values for Multiple Correlated Tests. The American Journal of Human Genetics 81(6): 1158-1168.

Gelman, Andrew, Jennifer Hill, and Masanao Yajima (2012). Why We (Usually) Don't Have to Worry About Multiple Comparisons. Journal of Research on Educational Effectiveness 5(2): 189-211.

Holm, S. (1979). A simple sequentially rejective multiple test procedure. Scandinavian Journal of Statistics. 6 (2): 65-70.

Kaufman, J. H., Diliberti, M. K., Hunter, G. P., Snoke, J., Grant, D., Setodji, C. M., and Young, C.J. (2021). COVID-19 and the State of K-12 Schools: Results and Technical Documentation from the Spring 2021 American Educator Panels COVID-19 Surveys. Santa Monica, CA: RAND Corporation. Retrieved from https://www.rand.org/pubs/research_reports/RRA168-7.html.

Westfall, P.H. and Young, S.S. (1993). Resampling-Based Multiple Testing: Examples and Methods for p-value Adjustment. New York City: John Wiley \& Sons, Inc.

## Appendix C: Implementation of remote learning (Research Goal 1)

## Research Question 1a. What remote learning formats did districts use and how did these learning formats vary by district type?

Table C1. In-Person Option Available in September

|  | $(1)$ <br> Grades 1st <br> through 5th | $(2)$ <br> Grades 6th <br> through 8th | $(3)$ <br> Grades 9th <br> through 12th |
| :--- | :---: | :---: | :---: |
| Controls | $-1.840^{* * *}$ | $-2.411^{* * *}$ | $-1.731^{* * *}$ |
| Percent of students high needs: FRPL, SWD, or ELL | $(0.316)$ | 2.359 | $2.629^{*}$ |

Note: The top panel shows the results of a probit model regressing in person/hybrid learning mode on school share of students who are high needs, whether the Local Education Agency represents a school choice option, and the interaction of these two variables. Columns 1 through 3 present results for elementary, middle and high school grades, respectively. The bottom panel presents the fraction of students with an in person/hybrid option in September, and the school share of high needs students at the 25 th and 75 th percentiles. The final rows in the bottom panel present the model based predicted likelihood of in person/hybrid option at the 25th and 75th percentiles of share high needs.

Table C1 presents the initial/September decision to offer hybrid or fully in-person learning as the primary learning mode. We divide the population of students into three subsamples by grade level: $1^{\text {st }}-5^{\text {th }}, 6^{\text {th }}-8^{\text {th }}$, and $9^{\text {th }}-12^{\text {th }}$ following the most common grade configuration of elementary, middle and high schools in the state, but all results below are very similar if we analyze each grade separately. ${ }^{1}$ The top panel presents the estimates showing that the likelihood of students having an in-person option in September falls with the share of high need students, and this relationship is even stronger for the subsample composed of students in charter schools and in

[^0]schools managed by the RESCs and CTECS. ${ }^{2}$ The bottom panel presents the fraction of students in the state that were provided with an in-person option in September for each of the three grade subsamples, as well as the $25^{\text {th }}$ and $75^{\text {th }}$ percentile school share of high need students within the state's student population. The share of students with an in-person option is $91 \%$ at the elementary school level, and $93 \%$ and $90 \%$ for middle and high school, respectively.

We then use these percentiles to predict the likelihood of a school providing an in-person option at a hypothetical school that was at the $25^{\text {th }}$ and $75^{\text {th }}$ percentiles of share of students with high needs. The $25^{\text {th }}$ percentile is between $24 \%$ and $25 \%$ percent depending upon grade level, but the $75^{\text {th }}$ percentile ranges more broadly between about $70 \%$ for elementary and middle school and $60 \%$ for high school. For traditional public schools, an in-person option in September was available to over $95 \%$ of students, $98 \%$ of elementary and middle school students, at the $25^{\text {th }}$ percentile and available to $86 \%$ to $89 \%$ of students at the $75^{\text {th }}$ percentile of share high needs. Looking at the RESCs, Charters and CTECS, percentages were relatively high at the $25^{\text {th }}$ percentile ranging between $85 \%$ and $96 \%$, but fall dramatically with share high needs in elementary and middle school with some in person being available to only $6 \%$ to $9 \%$ of students at the $75^{\text {th }}$ percentile share.

[^1]Table C2. Share of Days in Person Available Through End of School Year

| Controls | (1) <br> Grades 1st <br> through 5th | (2) <br> Grades 6th through 8th | (3) <br> Grades 9th through 12th |
| :---: | :---: | :---: | :---: |
| Percent of students high needs: FRPL, SWD, or ELL in school attended | $\begin{gathered} -0.320^{* * *} \\ (0.0380) \end{gathered}$ | $\begin{gathered} -0.237 * * * \\ (0.0507) \end{gathered}$ | $\begin{gathered} -0.183^{* * *} \\ (0.0600) \end{gathered}$ |
| Regional School District | $\begin{gathered} 0.293 \\ (0.264) \end{gathered}$ | $\begin{aligned} & 0.0714 \\ & (0.113) \end{aligned}$ | $\begin{aligned} & -0.00722 \\ & (0.0766) \end{aligned}$ |
| Regional School District*Percent of students high needs | $\begin{aligned} & -0.783 \\ & (0.995) \end{aligned}$ | $\begin{gathered} 0.125 \\ (0.444) \end{gathered}$ | $\begin{gathered} 0.173 \\ (0.300) \end{gathered}$ |
| Regional Education Service Centers or Charters | $\begin{gathered} 0.628^{* * *} \\ (0.217) \end{gathered}$ | $\begin{gathered} 0.685^{* * *} \\ (0.262) \end{gathered}$ | $\begin{gathered} 0.118 \\ (0.257) \end{gathered}$ |
| Regional Education Service Centers or Charters*Percent of students high needs | $\begin{gathered} -0.901^{* * *} \\ (0.305) \end{gathered}$ | $\begin{gathered} -0.912 * * * \\ (0.338) \end{gathered}$ | $\begin{gathered} 0.107 \\ (0.381) \end{gathered}$ |
| Endowed Schools |  | $\begin{gathered} -0.241^{* * *} \\ (0.0135) \end{gathered}$ | $\begin{gathered} -0.284^{* * *} \\ (0.0227) \end{gathered}$ |
| Endowed Schools*Percent of students high needs |  |  | $\begin{gathered} 0.205 * * * \\ (0.0615) \end{gathered}$ |
| Connecticut Technical Education Career System |  |  | $\begin{gathered} -0.230^{* * *} \\ (0.0227) \end{gathered}$ |
| Observations | 9,657 | 3,469 | 3,859 |
| Average Share of Days with In Person Option | 0.720 | 0.649 | 0.567 |
| Estimated Share of Days with In Person Option |  |  |  |
| Traditional Public (25th percentile high needs) | 0.776 | 0.696 | 0.605 |
| Traditional Public (75th percentile high needs) | 0.717 | 0.613 | 0.549 |
| RESC and Charter (25th percentile high needs) | 0.982 | 0.981 | 0.889 |
| RESC and Charter (75th percentile high needs) | 0.633 | 0.719 | 0.762 |
| Endowed School (25th percentile high needs) |  | 0.474 | 0.369 |
| Endowed School (75th percentile high needs) |  | 0.389 | 0.377 |

Note: The top panel shows the results of a tobit model regressing share of days in person offered for the entire school year on school share of students who are high needs, dummy variables for the type of Local Education Agency, and the interaction of these variables. Columns 1 through 3 present results for elementary, middle and high school grades, respectively. The bottom panel presents the average share of days in person. The rest of the rows in the bottom panel present model predicted share of days in person at the 25 th and 75 th percentiles of share high needs.

Table C2 presents the share of days that were offered in-person over the entire school year. Again, the estimates are shown in the top panel of the table. As in September, share of in person days available falls as the school share of high need students increases, although this effect weakens for higher grade levels. We cannot detect any differences between town based school districts and regional school districts, although estimates are very noisy at lower grade levels where regional school districts have minimal representation. The negative relationship between
share high needs and having in person opportunities is even stronger for the charter/RESC subsample in elementary and middle school grades, but the relationship is much weaker at endowed high schools. ${ }^{3}$

The bottom panel shows the average of share of days provided in-person: $72 \%$ for elementary, $70 \%$ for middle and $60 \%$ for high school grades and the expected share based on the $25^{\text {th }}$ and $75^{\text {th }}$ percentiles of share high need students separately for different types of schools. For traditional public schools, we observe approximately a 6 to 8 percentage point lower share of days provided in-person at the $75^{\text {th }}$ percentile share high needs relative to the $25^{\text {th }}$ percentile. These differences are even larger for RESCs and Charter schools: 35 percentage points for elementary, 26 points for middle and 13 points for high school grades. Endowed schools have on average substantially lower shares of in person days: $47 \%$ for middle school and $37 \%$ for high school at the $25^{\text {th }}$ percentile, but for endowed high schools the share in person is unaffected by school share of high need students.

[^2]Table C3. Monthly In-Person Enrollment Days as a Share of Total Enrollment Days

|  | $(1)$ <br> Oct_Dec | $(2)$ <br> Jan_Mar | Apr_Jun |
| :--- | :---: | :---: | :---: |
| VARIABLES | $0.646^{* * *}$ | $0.651^{* * *}$ | $0.591^{* * *}$ |
| Share of Days Offered in Person for the Same Month | $(0.0388)$ | $(0.0316)$ | $(0.0752)$ |
|  |  |  |  |
|  | $1,401,411$ | $1,388,433$ | $1,279,065$ |
| Observations | 0.311 | 0.260 | 0.114 |
| R-squared | $0.923 * * *$ | $0.849 * * *$ | $0.657 * * *$ |
| Share of Days Offered in Person for the Same Month | $(0.0455)$ | $(0.0537)$ | $(0.141)$ |
|  | 0.0318 | 0.0413 | -0.0804 |
| Percent of students high needs: FRPL, SWD, or ELL | $(0.0548)$ | $(0.0796)$ | $(0.280)$ |
|  |  |  |  |
| Share of Days in offered person* Percent of students high | $-0.562 * * *$ | $-0.467 * * *$ | -0.287 |
| needs | $(0.0900)$ | $(0.0965)$ | $(0.294)$ |
|  |  |  |  |
| Observations | $1,398,156$ | $1,385,238$ | $1,276,179$ |
| R-squared | 0.359 | 0.292 | 0.153 |
| Average of Share Monthly In Person Enrollment Days | 0.3741658 | 0.4145769 | 0.6823971 |
| Average of Share of Days Offered in Person by Month | 0.5316727 | .6075055 | 0.8437183 |
| Share days in person effect at 25th percentile high needs | 0.756 | 0.710 | 0.572 |
| Share days in person effect at 75th percentile high needs | 0.519 | 0.514 | 0.451 |

Note: The top panel shows the results from a linear regression of share of days a student is enrolled in person during a given month on the share of days offered in person by that school in the same month. The second panel presents estimates adding controls for the share of students who are high needs and the interaction of share high needs with share of days offered in person. Columns 1 through 3 present results for Oct-Dec, Jan-Mar and AprJun, respectively. The bottom panel presents the average share of enrollment days in person, the average share of days offered in person, and the estimated effect of share days offered in person calculated at the 25 th and 75 th percentiles using the estimates from panel 2.

Next, we examined rates at which students enroll in person as a function of the share of days offered in person. These results are shown in Table 3 separately for Oct-Dec, Jan-Mar and AprJune in each column. The first panel presents the simple relationship between share enrolled and share available. The estimate ranges between 0.59 and 0.65 implying that if 10 additional days were available in person one would observe on average six to six and one half additional days of in-person enrollment per student. However, since virtually all districts required students to choose between all remote and the primary learning mode, a better interpretation of these estimates is that approximately six out of ten students enrolled in-person for all available days and four students continued with remote learning. The second panel estimates a model interacting the share of days in person with the school share of high needs students. Estimates on these interactions are strongly negative for the fall and winter, and the level estimate on share in person increases to 0.92 and 0.85 for elementary and middle school grades, where an estimate of one would be consistent with perfect take-up.

The first two rows of the bottom panel present the average of the student share of enrollment days that are recorded as in person and the average share of days available in-person based on the weekly learning mode. As the year progressed, the share of days available in person and the share of days students enrolled in person education increased, but there was a steady gap of
between 16 and 19 percentage points. The last two rows use the estimates from the second panel to predict the effect of share in-person provided for a hypothetical school at the $25^{\text {th }}$ and $75^{\text {th }}$ percentiles of share of students with high needs. For elementary and middle schools, we observe a sizable gap with $70 \%$ to $75 \%$ of students appearing to respond to a school offering more days in-person at the $25^{\text {th }}$ percentile of share high needs, but just over $50 \%$ of students responding at the $75^{\text {th }}$ percentile. In the spring, we observe less responsiveness overall to increases in in-person learning availability, but the influence of share high needs has declined with $57 \%$ of days in person at the $25^{\text {th }}$ percentile of share high needs and $45 \%$ in person at the $75^{\text {th }}$ percentile.

We also hypothesized that the students from schools with a larger share of high needs students might respond more slowly to the provision of more in person days, as opposed to simply having lower responsiveness overall. We did explore models that included lags to allow for such a delayed response to new in person offering, but we did not find evidence of such behavior. The data appears more consistent with simply a lower response rate among students in high needs schools to the provision of hybrid or in-person learning opportunities.

Table C5. District-reported learning models by grade level in May 2020
District Inventory Q5. As of May 1, 2020, what did learning look like when students from the following grade levels were learning from home?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Fully asynchronous without technology | 5 | 2.6 | 2 | 6.3 | 2 | 1.6 | 1 | 2.9 |
|  | Fully asynchronous with technology | 30 | 15.5 | 5 | 15.6 | 23 | 18.0 | 2 | 5.9 |
|  | Partially synchronous | 100 | 51.5 | 14 | 43.8 | 74 | 57.8 | 12 | 35.3 |
|  | Fully synchronous | 59 | 30.4 | 11 | 34.4 | 29 | 22.7 | 19 | 55.9 |
|  | Total N | 194 | 100.0 | 32 | 100.0 | 128 | 100.0 | 34 | 100.0 |
| Middle School | Fully asynchronous without technology | 3 | 1.6 | 1 | 3.2 | 1 | . 8 | 1 | 2.6 |
|  | Fully asynchronous with technology | 29 | 15.4 | 4 | 12.9 | 22 | 18.5 | 3 | 7.9 |
|  | Partially synchronous | 86 | 45.7 | 15 | 48.4 | 61 | 51.3 | 10 | 26.3 |
|  | Fully synchronous | 70 | 37.2 | 11 | 35.5 | 35 | 29.4 | 24 | 63.2 |
|  | Total N | 188 | 100.0 | 31 | 100.0 | 119 | 100.0 | 38 | 100.0 |
| High School | Fully asynchronous without technology | 2 | 1.2 | 1 | 3.3 | 1 | 1.0 | 0 | . 0 |
|  | Fully asynchronous with technology | 28 | 16.3 | 4 | 13.3 | 18 | 18.4 | 6 | 13.6 |
|  | Partially synchronous | 72 | 41.9 | 13 | 43.3 | 45 | 45.9 | 14 | 31.8 |
|  | Fully synchronous | 70 | 40.7 | 12 | 40.0 | 34 | 34.7 | 24 | 54.5 |
|  | Total N | 172 | 100.0 | 30 | 100.0 | 98 | 100.0 | 44 | 100.0 |

Please note that the response options were listed as follows: Fully asynchronous without technology: assignments were distributed in print format and no online/electronic learning materials were provided; Fully asynchronous with technology: students had no classes conducted in real time through video conferencing (for example, Google Meet or Zoom), but onlinelelectronic learning materials were provided (e.g., online activities, instructional videos, etc.); Partially synchronous: students had at least one class meeting conducted in real time through video conferencing (for example, Google Meet or Zoom); Fully synchronous: the majority of students' classes took place in real time, through video conferencing (for example, Google Meet or Zoom)

Table C6. Teacher-reported use of learning models by grade level in spring 2020
Teacher Survey Q6. Which of the following models most closely describes how you taught the majority of your students in the first months of the COVID-19 pandemic? (March-June 2020). Please select all that apply.

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Fully in-person instruction | 18 | 1.9 | 8 | 2.0 | 10 | 1.8 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 24 | 2.5 | 16 | 4.0 | 8 | 1.4 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 17 | 1.8 | 10 | 2.5 | 7 | 1.2 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 467 | 48.7 | 173 | 43.6 | 294 | 52.3 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 487 | 50.8 | 212 | 53.4 | 275 | 48.9 |
|  | Unable to continue instruction | 25 | 2.6 | 18 | 4.5 | 7 | 1.2 |
|  | Total N | 959 | 100.0 | 397 | 100.0 | 562 | 100.0 |
| Middle school | Fully in-person instruction | 8 | 1.4 | 3 | 1.7 | 5 | 1.3 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 10 | 1.8 | 2 | 1.1 | 8 | 2.1 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 7 | 1.3 | 4 | 2.3 | 3 | . 8 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 265 | 47.8 | 82 | 46.9 | 183 | 48.3 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 295 | 53.2 | 92 | 52.6 | 203 | 53.6 |
|  | Unable to continue instruction | 6 | 1.1 | 3 | 1.7 | 3 | . 8 |
|  | Total N | 554 | 100.0 | 175 | 100.0 | 379 | 100.0 |
| High school | Fully in-person instruction | 25 | 2.9 | 15 | 5.4 | 10 | 1.7 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 18 | 2.1 | 7 | 2.5 | 11 | 1.8 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 10 | 1.1 | 6 | 2.2 | 4 | . 7 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 407 | 46.7 | 141 | 51.1 | 266 | 44.6 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 468 | 53.7 | 126 | 45.7 | 342 | 57.4 |
|  | Unable to continue instruction | 11 | 1.3 | 4 | 1.4 | 7 | 1.2 |
|  | Total N | 872 | 100.0 | 276 | 100.0 | 596 | 100.0 |
| Multiple levels, ungraded, or unknown | Fully in-person instruction | 6 | 1.8 | 4 | 3.7 | 2 | . 9 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 11 | 3.4 | 8 | 7.4 | 3 | 1.4 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 4 | 1.2 | 2 | 1.9 | 2 | . 9 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 173 | 52.7 | 53 | 49.1 | 120 | 54.5 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 144 | 43.9 | 44 | 40.7 | 100 | 45.5 |
|  | Unable to continue instruction | 12 | 3.7 | 5 | 4.6 | 7 | 3.2 |
|  | Total N | 328 | 100.0 | 108 | 100.0 | 220 | 100.0 |

Please note that the response options were listed as follows: Fully in-person instruction; Hybrid model where I provided in-person instruction and remote instruction concurrently (i.e., at the same time); Hybrid model, where I provided in-person instruction and remote instruction at different times (not concurrently); Fully remote instruction, where my students received at least one synchronous/real-time class each school day (for example, classes via zoom); Fully remote instruction, where my students received less than one synchronous/real-time class each school day (i.e., instruction via paper workbooks or asynchronous videos); I was unable to continue instruction.

Table C7. District-reported learning models for fully remote students by grade level during the 2020-21 school year District Inventory Q29. During the 2020-21 school year, what did learning look like for fully remote students at the following grade levels?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Fully asynchronous without technology | 3 | 1.6 | 0 | . 0 | 2 | 1.6 | 1 | 3.3 |
|  | Fully asynchronous with technology | 9 | 4.8 | 2 | 6.1 | 5 | 4.0 | 2 | 6.7 |
|  | Partially synchronous | 75 | 40.1 | 12 | 36.4 | 51 | 41.1 | 12 | 40.0 |
|  | Fully synchronous | 100 | 53.5 | 19 | 57.6 | 66 | 53.2 | 15 | 50.0 |
|  | Total | 187 | 100.0 | 33 | 100.0 | 124 | 100.0 | 30 | 100.0 |
| Middle School | Fully asynchronous without technology | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 2.9 |
|  | Fully asynchronous with technology | 9 | 5.0 | 0 | . 0 | 7 | 6.1 | 2 | 5.7 |
|  | Partially synchronous | 57 | 31.7 | 10 | 32.3 | 37 | 32.5 | 10 | 28.6 |
|  | Fully synchronous | 113 | 62.8 | 21 | 67.7 | 70 | 61.4 | 22 | 62.9 |
|  | Total | 180 | 100.0 | 31 | 100.0 | 114 | 100.0 | 35 | 100.0 |
| High School | Fully asynchronous without technology | 2 | 1.2 | 1 | 3.2 | 0 | . 0 | 1 | 2.3 |
|  | Fully asynchronous with technology | 4 | 2.3 | 0 | . 0 | 3 | 3.1 | 1 | 2.3 |
|  | Partially synchronous | 47 | 27.3 | 8 | 25.8 | 26 | 26.8 | 13 | 29.5 |
|  | Fully synchronous | 119 | 69.2 | 22 | 71.0 | 68 | 70.1 | 29 | 65.9 |
|  | Total | 172 | 100.0 | 31 | 100.0 | 97 | 100.0 | 44 | 100.0 |

Please note that the response options were listed as follows: Fully asynchronous without technology: assignments were distributed in print format and no online/electronic learning materials were provided; Fully asynchronous with technology: students had no classes conducted in real time through video conferencing (for example, Google Meet or Zoom), but onlinelelectronic learning materials were provided (e.g., online activities, instructional videos, etc.); Partially synchronous: students had at least one class meeting conducted in real time through video conferencing (for example, Google Meet or Zoom); Fully synchronous: the majority of students' classes took place in real time, through video conferencing (for example, Google Meet or Zoom)

Table C8. District-reported learning models for hybrid students by grade level during the 2020-21 school year
District Inventory Q34. During the 2020-21 school year, what did learning look like for hybrid students from the following grade levels?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Fully asynchronous without technology | 3 | 2.0 | 2 | 6.9 | 0 | . 0 | 1 | 4.5 |
|  | Fully asynchronous with technology | 13 | 8.7 | 3 | 10.3 | 9 | 9.1 | 1 | 4.5 |
|  | Partially synchronous | 72 | 48.0 | 14 | 48.3 | 48 | 48.5 | 10 | 45.5 |
|  | Fully synchronous | 62 | 41.3 | 10 | 34.5 | 42 | 42.4 | 10 | 45.5 |
|  | Total | 150 | 100.0 | 29 | 100.0 | 99 | 100.0 | 22 | 100.0 |
| Middle School | Fully asynchronous without technology | 2 | 1.3 | 1 | 3.7 | 0 | . 0 | 1 | 3.6 |
|  | Fully asynchronous with technology | 11 | 7.0 | 2 | 7.4 | 7 | 6.8 | 2 | 7.1 |
|  | Partially synchronous | 56 | 35.4 | 9 | 33.3 | 36 | 35.0 | 11 | 39.3 |
|  | Fully synchronous | 89 | 56.3 | 15 | 55.6 | 60 | 58.3 | 14 | 50.0 |
|  | Total | 158 | 100.0 | 27 | 100.0 | 103 | 100.0 | 28 | 100.0 |
| High School | Fully asynchronous without technology | 2 | 1.3 | 1 | 3.7 | 0 | . 0 | 1 | 2.9 |
|  | Fully asynchronous with technology | 8 | 5.2 | 1 | 3.7 | 4 | 4.3 | 3 | 8.8 |
|  | Partially synchronous | 46 | 30.1 | 9 | 33.3 | 24 | 26.1 | 13 | 38.2 |
|  | Fully synchronous | 97 | 63.4 | 16 | 59.3 | 64 | 69.6 | 17 | 50.0 |
|  | Total | 153 | 100.0 | 27 | 100.0 | 92 | 100.0 | 34 | 100.0 |

Please note that the response options were listed as follows: Fully asynchronous without technology: assignments were distributed in print format and no online/electronic learning materials were provided; Fully asynchronous with technology: students had no classes conducted in real time through video conferencing (for example, Google Meet or Zoom), but online/electronic learning materials were provided (e.g., online activities, instructional videos, etc.); Partially synchronous: students had at least one class meeting conducted in real time through video conferencing (for example, Google Meet or Zoom); Fully synchronous: the majority of students' classes took place in real time, through video conferencing (for example, Google Meet or Zoom)

Table C9. Teacher-reported use of learning models by grade level in school year 2020-21
Teacher Survey Q9. Which of the following models did you use to teach your students during the 2020-21 school year? Please select all that apply.

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Fully in-person instruction | 285 | 28.7 | 81 | 19.6 | 204 | 35.1 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 644 | 64.8 | 262 | 63.4 | 382 | 65.7 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 305 | 30.7 | 138 | 33.4 | 167 | 28.7 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 298 | 30.0 | 136 | 32.9 | 162 | 27.9 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 44 | 4.4 | 17 | 4.1 | 27 | 4.6 |
|  | Total N | 994 | 100.0 | 413 | 100.0 | 581 | 100.0 |
| Middle school | Fully in-person instruction | 136 | 23.8 | 31 | 16.8 | 105 | 27.1 |
|  | Hybrid model, with in-person instruction and remote instruction th the same time | 487 | 85.1 | 144 | 78.3 | 343 | 88.4 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 108 | 18.9 | 39 | 21.2 | 69 | 17.8 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 150 | 26.2 | 57 | 31.0 | 93 | 24.0 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 23 | 4.0 | 5 | 2.7 | 18 | 4.6 |
|  | Total N | 572 | 100.0 | 184 | 100.0 | 388 | 100.0 |
| High school | Fully in-person instruction | 171 | 19.6 | 44 | 16.1 | 127 | 21.2 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 754 | 86.6 | 210 | 76.9 | 544 | 91.0 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 161 | 18.5 | 66 | 24.2 | 95 | 15.9 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 265 | 30.4 | 99 | 36.3 | 166 | 27.8 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 35 | 4.0 | 12 | 4.4 | 23 | 3.8 |
|  | Total N | 871 | 100.0 | 273 | 100.0 | 598 | 100.0 |
| Multiple levels, ungraded, or unknown | Fully in-person instruction | 72 | 21.1 | 15 | 13.5 | 57 | 24.8 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 237 | 69.5 | 82 | 73.9 | 155 | 67.4 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 109 | 32.0 | 38 | 34.2 | 71 | 30.9 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 86 | 25.2 | 29 | 26.1 | 57 | 24.8 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 23 | 6.7 | 6 | 5.4 | 17 | 7.4 |
|  | Total N | 341 | 100.0 | 111 | 100.0 | 230 | 100.0 |

Please note that the response options were listed as follows for learning models used during 2020-21 school year: Fully in-person instruction; Hybrid model where I provided in-person instruction and remote instruction concurrently (i.e., at the same time); Hybrid model, where I provided in-person instruction and remote instruction at different times (not concurrently); Fully remote instruction, where my students received at least one synchronous/real-time class each school day (for example, classes via zoom); Fully remote instruction, where my students received less than one synchronous/real-time class each school day (i.e., instruction via paper workbooks or asynchronous videos).

Table C10. Teacher-reported percentage of students by grade level in each learning model in 2020-21
Teacher Survey Q10. Approximately what percentage of your students attended school in each of the following ways for the majority of the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
| Elementary school | fully in-person learning | 994 | 44.5 | (38.0) | 413 | 34.0 | (34.6) | 581 | 52.0 | (38.5) |
|  | hybrid learning | 994 | 31.1 | (35.5) | 413 | 36.0 | (35.0) | 581 | 27.6 | (35.5) |
|  | fully remote learning | 994 | 24.4 | (28.6) | 413 | 30.0 | (30.0) | 581 | 20.4 | (26.8) |
| Middle school | fully in-person learning | 572 | 33.5 | (34.4) | 184 | 26.5 | (31.2) | 388 | 36.9 | (35.4) |
|  | hybrid learning | 572 | 45.3 | (34.9) | 184 | 43.5 | (31.3) | 388 | 46.2 | (36.4) |
|  | fully remote learning | 572 | 21.2 | (21.7) | 184 | 30.0 | (26.2) | 388 | 17.0 | (17.7) |
| High school | fully in-person learning | 871 | 21.8 | (28.3) | 273 | 17.6 | (24.7) | 598 | 23.8 | (29.6) |
|  | hybrid learning | 871 | 50.1 | (33.0) | 273 | 39.6 | (31.5) | 598 | 54.9 | (32.5) |
|  | fully remote learning | 871 | 28.0 | (26.6) | 273 | 42.8 | (32.2) | 598 | 21.3 | (20.4) |
| Multiple levels, ungraded, or unknown | fully in-person learning | 341 | 41.9 | (35.8) | 111 | 32.8 | (31.6) | 230 | 46.3 | (36.9) |
|  | hybrid learning | 341 | 33.3 | (33.5) | 111 | 35.7 | (30.0) | 230 | 32.1 | (35.0) |
|  | fully remote learning | 341 | 24.8 | (25.9) | 111 | 31.5 | (27.2) | 230 | 21.6 | (24.6) |

Please note, mean percent describes the mean of each participating district's reported value.

Research Question 1b. What general curricular student learning outcomes were targeted?
Table C11. District-reported primary goal for core academic subjects in spring 2020
District Inventory Q6. During spring 2020, what was the district's primary learning goal for core academic subjects when students from the following grade levels were learning from home? Please select the best answer for each grade level.

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Maintain contact with students | 41 | 21.0 | 7 | 21.9 | 23 | 17.7 | 11 | 33.3 |
|  | Minimize learning loss | 54 | 27.7 | 10 | 31.3 | 33 | 25.4 | 11 | 33.3 |
|  | Continue on-grade learning | 99 | 50.8 | 15 | 46.9 | 74 | 56.9 | 10 | 30.3 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in core academic subjects | 1 | . 5 | 0 | . 0 | 0 | . 0 | 1 | 3.0 |
|  | Total | 195 | 100.0 | 32 | 100.0 | 130 | 100.0 | 33 | 100.0 |
| Middle School | Maintain contact with students | 38 | 20.1 | 8 | 25.8 | 19 | 15.8 | 11 | 28.9 |
|  | Minimize learning loss | 47 | 24.9 | 9 | 29.0 | 27 | 22.5 | 11 | 28.9 |
|  | Continue on-grade learning | 102 | 54.0 | 14 | 45.2 | 73 | 60.8 | 15 | 39.5 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in core academic subjects | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 2.6 |
|  | Total | 189 | 100.0 | 31 | 100.0 | 120 | 100.0 | 38 | 100.0 |
| High School | Maintain contact with students | 35 | 20.1 | 7 | 23.3 | 15 | 15.2 | 13 | 28.9 |
|  | Minimize learning loss | 43 | 24.7 | 8 | 26.7 | 21 | 21.2 | 14 | 31.1 |
|  | Continue on-grade learning | 95 | 54.6 | 15 | 50.0 | 62 | 62.6 | 18 | 40.0 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in core academic subjects | 1 | . 6 | 0 | . 0 | 1 | 1.0 | 0 | . 0 |
|  | Total | 174 | 100.0 | 30 | 100.0 | 99 | 100.0 | 45 | 100.0 |

Table C12. District-reported primary goal for music, art, health \& PE in spring 2020
District Inventory Q7. During spring 2020, what was the district's primary learning goal for music, art, health, and PE classes when students from the following grade levels were learning from home? Please select the best answer for each grade level.

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Maintain contact with students | 71 | 37.2 | 13 | 41.9 | 42 | 33.1 | 16 | 48.5 |
|  | Minimize learning loss | 24 | 12.6 | 5 | 16.1 | 14 | 11.0 | 5 | 15.2 |
|  | Continue on-grade learning | 56 | 29.3 | 6 | 19.4 | 43 | 33.9 | 7 | 21.2 |
|  | Provide enrichment opportunities for selfmotivated students | 34 | 17.8 | 7 | 22.6 | 25 | 19.7 | 2 | 6.1 |
|  | Remote learning did not occur in these areas | 6 | 3.1 | 0 | . 0 | 3 | 2.4 | 3 | 9.1 |
|  | Total | 191 | 100.0 | 31 | 100.0 | 127 | 100.0 | 33 | 100.0 |
| Middle School | Maintain contact with students | 60 | 32.6 | 12 | 40.0 | 33 | 28.4 | 15 | 39.5 |
|  | Minimize learning loss | 31 | 16.8 | 5 | 16.7 | 15 | 12.9 | 11 | 28.9 |
|  | Continue on-grade learning | 61 | 33.2 | 6 | 20.0 | 48 | 41.4 | 7 | 18.4 |
|  | Provide enrichment opportunities for selfmotivated students | 28 | 15.2 | 7 | 23.3 | 19 | 16.4 | 2 | 5.3 |
|  | Remote learning did not occur in these areas | 4 | 2.2 | 0 | . 0 | 1 | . 9 | 3 | 7.9 |
|  | Total | 184 | 100.0 | 30 | 100.0 | 116 | 100.0 | 38 | 100.0 |
| High School | Maintain contact with students | 56 | 32.9 | 11 | 37.9 | 27 | 28.1 | 18 | 40.0 |
|  | Minimize learning loss | 30 | 17.6 | 5 | 17.2 | 13 | 13.5 | 12 | 26.7 |
|  | Continue on-grade learning | 64 | 37.6 | 7 | 24.1 | 48 | 50.0 | 9 | 20.0 |
|  | Provide enrichment opportunities for selfmotivated students | 14 | 8.2 | 6 | 20.7 | 7 | 7.3 | 1 | 2.2 |
|  | Remote learning did not occur in these areas | 6 | 3.5 | 0 | . 0 | 1 | 1.0 | 5 | 11.1 |
|  | Total | 170 | 100.0 | 29 | 100.0 | 96 | 100.0 | 45 | 100.0 |

Table C13. District-reported primary goal for special services in spring 2020
District Inventory Q8. During spring 2020, what was the district's primary goal for special services (special education services and English Learner services) when eligible students from the following grade levels were learning from home? Please select the best answer for each grade level.

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Maintain contact with students | 39 | 20.0 | 7 | 21.9 | 21 | 16.3 | 11 | 32.4 |
|  | Minimize learning loss | 66 | 33.8 | 13 | 40.6 | 43 | 33.3 | 10 | 29.4 |
|  | Continue on-grade learning | 89 | 45.6 | 12 | 37.5 | 65 | 50.4 | 12 | 35.3 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in these areas | 1 | . 5 | 0 | . 0 | 0 | . 0 | 1 | 2.9 |
|  | Total | 195 | 100.0 | 32 | 100.0 | 129 | 100.0 | 34 | 100.0 |
| Middle School | Maintain contact with students | 38 | 20.1 | 7 | 22.6 | 19 | 16.0 | 12 | 30.8 |
|  | Minimize learning loss | 64 | 33.9 | 13 | 41.9 | 40 | 33.6 | 11 | 28.2 |
|  | Continue on-grade learning | 86 | 45.5 | 11 | 35.5 | 60 | 50.4 | 15 | 38.5 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in these areas | 1 | . 5 | 0 | . 0 | 0 | . 0 | 1 | 2.6 |
|  | Total | 189 | 100.0 | 31 | 100.0 | 119 | 100.0 | 39 | 100.0 |
| High School | Maintain contact with students | 39 | 22.5 | 6 | 20.0 | 18 | 18.4 | 15 | 33.3 |
|  | Minimize learning loss | 59 | 34.1 | 12 | 40.0 | 33 | 33.7 | 14 | 31.1 |
|  | Continue on-grade learning | 75 | 43.4 | 12 | 40.0 | 47 | 48.0 | 16 | 35.6 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Remote learning did not occur in these areas | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Total | 173 | 100.0 | 30 | 100.0 | 98 | 100.0 | 45 | 100.0 |

Table C14. District-reported primary goal (overall) for fully remote students in 2020-21
District Inventory Q30. During the 2020-21 school year, what was the district's primary goal for teachers of fully remote students at each of the following levels?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Maintain contact with students | 12 | 6.3 | 1 | 3.0 | 7 | 5.6 | 4 | 13.3 |
|  | Minimize learning loss | 26 | 13.8 | 5 | 15.2 | 14 | 11.1 | 7 | 23.3 |
|  | Continue on-grade learning | 142 | 75.1 | 26 | 78.8 | 99 | 78.6 | 17 | 56.7 |
|  | Provide enrichment opportunities for selfmotivated students | 1 | . 5 | 0 | . 0 | 0 | . 0 | 1 | 3.3 |
|  | Other (please describe): | 8 | 4.2 | 1 | 3.0 | 6 | 4.8 | 1 | 3.3 |
|  | Total | 189 | 100.0 | 33 | 100.0 | 126 | 100.0 | 30 | 100.0 |
| Middle School | Maintain contact with students | 10 | 5.5 | 1 | 3.2 | 5 | 4.3 | 4 | 11.4 |
|  | Minimize learning loss | 24 | 13.2 | 6 | 19.4 | 13 | 11.2 | 5 | 14.3 |
|  | Continue on-grade learning | 143 | 78.6 | 24 | 77.4 | 95 | 81.9 | 24 | 68.6 |
|  | Provide enrichment opportunities for selfmotivated students | 1 | . 5 | 0 | . 0 | 0 | . 0 | 1 | 2.9 |
|  | Other (please describe): | 4 | 2.2 | 0 | . 0 | 3 | 2.6 | 1 | 2.9 |
|  | Total | 182 | 100.0 | 31 | 100.0 | 116 | 100.0 | 35 | 100.0 |
| High School | Maintain contact with students | 18 | 10.4 | 1 | 3.2 | 9 | 9.2 | 8 | 18.2 |
|  | Minimize learning loss | 25 | 14.5 | 6 | 19.4 | 10 | 10.2 | 9 | 20.5 |
|  | Continue on-grade learning | 125 | 72.3 | 23 | 74.2 | 77 | 78.6 | 25 | 56.8 |
|  | Provide enrichment opportunities for selfmotivated students | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | Other (please describe): | 5 | 2.9 | 1 | 3.2 | 2 | 2.0 | 2 | 4.5 |
|  | Total | 173 | 100.0 | 31 | 100.0 | 98 | 100.0 | 44 | 100.0 |

Table C15. District-reported primary goal (overall) for hybrid students in 2020-21
District Inventory Q35. During the 2020-21 school year, what was the district's primary goal teachers of hybrid students at the following levels on days when they were learning from home?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Maintain contact with students | 8 | 4.9 | 1 | 3.1 | 2 | 1.9 | 5 | 20.0 |
|  | Minimize learning loss | 24 | 14.6 | 6 | 18.8 | 12 | 11.2 | 6 | 24.0 |
|  | Continue on-grade learning | 108 | 65.9 | 21 | 65.6 | 78 | 72.9 | 9 | 36.0 |
|  | Provide enrichment opportunities for selfmotivated students | 2 | 1.2 | 0 | . 0 | 0 | . 0 | 2 | 8.0 |
|  | Other (please describe): | 22 | 13.4 | 4 | 12.5 | 15 | 14.0 | 3 | 12.0 |
|  | Total | 164 | 100.0 | 32 | 100.0 | 107 | 100.0 | 25 | 100.0 |
| Middle School | Maintain contact with students | 11 | 6.6 | 1 | 3.3 | 5 | 4.7 | 5 | 16.7 |
|  | Minimize learning loss | 25 | 15.0 | 7 | 23.3 | 12 | 11.2 | 6 | 20.0 |
|  | Continue on-grade learning | 116 | 69.5 | 19 | 63.3 | 83 | 77.6 | 14 | 46.7 |
|  | Provide enrichment opportunities for selfmotivated students | 2 | 1.2 | 0 | . 0 | 0 | . 0 | 2 | 6.7 |
|  | Other (please describe): | 13 | 7.8 | 3 | 10.0 | 7 | 6.5 | 3 | 10.0 |
|  | Total | 167 | 100.0 | 30 | 100.0 | 107 | 100.0 | 30 | 100.0 |
| High School | Maintain contact with students | 12 | 7.5 | 1 | 3.3 | 6 | 6.6 | 5 | 13.2 |
|  | Minimize learning loss | 22 | 13.8 | 5 | 16.7 | 9 | 9.9 | 8 | 21.1 |
|  | Continue on-grade learning | 114 | 71.7 | 21 | 70.0 | 74 | 81.3 | 19 | 50.0 |
|  | Provide enrichment opportunities for selfmotivated students | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 2.6 |
|  | Other (please describe): | 10 | 6.3 | 3 | 10.0 | 2 | 2.2 | 5 | 13.2 |
|  | Total | 159 | 100.0 | 30 | 100.0 | 91 | 100.0 | 38 | 100.0 |

Table C16. District-reported elementary school assessment practices prior to COVID-19
District Inventory Q42e_1. What data did your district use to assess how elementary students were doing prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 179 | 93.7 | 33 | 100.0 | 117 | 92.9 | 29 | 90.6 |
| Their completed classroom tasks or assignments | 181 | 94.8 | 30 | 90.9 | 123 | 97.6 | 28 | 87.5 |
| Their responses to a student survey (excluding social and emotional assessments) | 82 | 42.9 | 12 | 36.4 | 61 | 48.4 | 9 | 28.1 |
| Their performance on a social and emotional assessment | 48 | 25.1 | 8 | 24.2 | 22 | 17.5 | 18 | 56.3 |
| Their performance on classroom quizzes or tests | 173 | 90.6 | 30 | 90.9 | 122 | 96.8 | 21 | 65.6 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 168 | 88.0 | 30 | 90.9 | 116 | 92.1 | 22 | 68.8 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 167 | 87.4 | 30 | 90.9 | 116 | 92.1 | 21 | 65.6 |
| Other (please describe): | 16 | 8.4 | 3 | 9.1 | 7 | 5.6 | 6 | 18.8 |
| Total N | 191 | 100.0 | 33 | 100.0 | 126 | 100.0 | 32 | 100.0 |

Table C17. District-reported middle school assessment practices prior to COVID-19
District Inventory Q42m_1. What data did your district use to assess how middle school students were doing prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 179 | 97.3 | 31 | 100.0 | 114 | 98.3 | 34 | 91.9 |
| Their completed classroom tasks or assignments | 175 | 95.1 | 28 | 90.3 | 113 | 97.4 | 34 | 91.9 |
| Their responses to a student survey (excluding social and emotional assessments) | 73 | 39.7 | 12 | 38.7 | 53 | 45.7 | 8 | 21.6 |
| Their performance on a social and emotional assessment | 48 | 26.1 | 8 | 25.8 | 24 | 20.7 | 16 | 43.2 |
| Their performance on classroom quizzes or tests | 168 | 91.3 | 29 | 93.5 | 113 | 97.4 | 26 | 70.3 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 146 | 79.3 | 28 | 90.3 | 94 | 81.0 | 24 | 64.9 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 144 | 78.3 | 28 | 90.3 | 92 | 79.3 | 24 | 64.9 |
| Other (please describe): | 17 | 9.2 | 3 | 9.7 | 7 | 6.0 | 7 | 18.9 |
| Total N | 184 | 100.0 | 31 | 100.0 | 116 | 100.0 | 37 | 100.0 |

Table C18. District-reported high school assessment practices prior to COVID-19
District Inventory Q42h_1. What data did your district use to assess how high school students were doing prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 168 | 97.1 | 31 | 100.0 | 95 | 96.9 | 42 | 95.5 |
| Their completed classroom tasks or assignments | 163 | 94.2 | 27 | 87.1 | 96 | 98.0 | 40 | 90.9 |
| Their responses to a student survey (excluding social and emotional assessments) | 75 | 43.4 | 15 | 48.4 | 51 | 52.0 | 9 | 20.5 |
| Their performance on a social and emotional assessment | 42 | 24.3 | 7 | 22.6 | 23 | 23.5 | 12 | 27.3 |
| Their performance on classroom quizzes or tests | 152 | 87.9 | 27 | 87.1 | 95 | 96.9 | 30 | 68.2 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 122 | 70.5 | 25 | 80.6 | 74 | 75.5 | 23 | 52.3 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 120 | 69.4 | 25 | 80.6 | 72 | 73.5 | 23 | 52.3 |
| Other (please describe): | 16 | 9.2 | 3 | 9.7 | 5 | 5.1 | 8 | 18.2 |
| Total N | 173 | 100.0 | 31 | 100.0 | 98 | 100.0 | 44 | 100.0 |

Table C19. District-reported elementary school assessment practices in spring 2020
District Inventory Q42e_2. What data did your district use to assess how elementary students were doing during spring 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent |
| Their attendance in class | 170 | 91.9 | 27 | 90.0 | 115 | 93.5 | 28 | 87.5 |
| Their completed classroom tasks or assignments | 168 | 90.8 | 28 | 93.3 | 115 | 93.5 | 25 | 78.1 |
| Their responses to a student survey (excluding social and emotional assessments) | 69 | 37.3 | 9 | 30.0 | 52 | 42.3 | 8 | 25.0 |
| Their performance on a social and emotional assessment | 44 | 23.8 | 9 | 30.0 | 23 | 18.7 | 12 | 37.5 |
| Their performance on classroom quizzes or tests | 128 | 69.2 | 21 | 70.0 | 90 | 73.2 | 17 | 53.1 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 78 | 42.2 | 12 | 40.0 | 54 | 43.9 | 12 | 37.5 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 77 | 41.6 | 12 | 40.0 | 54 | 43.9 | 11 | 34.4 |
| Other (please describe): | 12 | 6.5 | 2 | 6.7 | 4 | 3.3 | 6 | 18.8 |
| Total N | 185 | 100.0 | 30 | 100.0 | 123 | 100.0 | 32 | 100.0 |

Table C20. District-reported middle school assessment practices in spring 2020
District Inventory Q42m_2. What data did your district use to assess how middle school students were doing during spring 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 162 | 91.0 | 25 | 86.2 | 104 | 92.9 | 33 | 89.2 |
| Their completed classroom tasks or assignments | 164 | 92.1 | 26 | 89.7 | 107 | 95.5 | 31 | 83.8 |
| Their responses to a student survey (excluding social and emotional assessments) | 71 | 39.9 | 12 | 41.4 | 50 | 44.6 | 9 | 24.3 |
| Their performance on a social and emotional assessment | 41 | 23.0 | 7 | 24.1 | 21 | 18.8 | 13 | 35.1 |
| Their performance on classroom quizzes or tests | 132 | 74.2 | 21 | 72.4 | 89 | 79.5 | 22 | 59.5 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 75 | 42.1 | 12 | 41.4 | 49 | 43.8 | 14 | 37.8 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 74 | 41.6 | 12 | 41.4 | 48 | 42.9 | 14 | 37.8 |
| Other (please describe): | 14 | 7.9 | 2 | 6.9 | 5 | 4.5 | 7 | 18.9 |
| Total N | 178 | 100.0 | 29 | 100.0 | 112 | 100.0 | 37 | 100.0 |

Table C21. District-reported high school assessment practices in spring 2020
District Inventory Q42h_2. What data did your district use to assess how high school students were doing during spring 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 152 | 91.0 | 25 | 89.3 | 88 | 92.6 | 39 | 88.6 |
| Their completed classroom tasks or assignments | 156 | 93.4 | 26 | 92.9 | 93 | 97.9 | 37 | 84.1 |
| Their responses to a student survey (excluding social and emotional assessments) | 72 | 43.1 | 14 | 50.0 | 49 | 51.6 | 9 | 20.5 |
| Their performance on a social and emotional assessment | 34 | 20.4 | 5 | 17.9 | 17 | 17.9 | 12 | 27.3 |
| Their performance on classroom quizzes or tests | 126 | 75.4 | 21 | 75.0 | 78 | 82.1 | 27 | 61.4 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 63 | 37.7 | 11 | 39.3 | 36 | 37.9 | 16 | 36.4 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 62 | 37.1 | 11 | 39.3 | 35 | 36.8 | 16 | 36.4 |
| Other (please describe): | 11 | 6.6 | 1 | 3.6 | 3 | 3.2 | 7 | 15.9 |
| Total N | 167 | 100.0 | 28 | 100.0 | 95 | 100.0 | 44 | 100.0 |

Table C22. District-reported elementary school assessment practices in 2020-21
District Inventory Q42e_3. What data did your district use to assess how elementary students were doing during school year 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 182 | 95.3 | 33 | 100.0 | 120 | 95.2 | 29 | 90.6 |
| Their completed classroom tasks or assignments | 180 | 94.2 | 31 | 93.9 | 122 | 96.8 | 27 | 84.4 |
| Their responses to a student survey (excluding social and emotional assessments) | 96 | 50.3 | 16 | 48.5 | 70 | 55.6 | 10 | 31.3 |
| Their performance on a social and emotional assessment | 79 | 41.4 | 17 | 51.5 | 47 | 37.3 | 15 | 46.9 |
| Their performance on classroom quizzes or tests | 168 | 88.0 | 29 | 87.9 | 118 | 93.7 | 21 | 65.6 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 167 | 87.4 | 31 | 93.9 | 114 | 90.5 | 22 | 68.8 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 167 | 87.4 | 31 | 93.9 | 115 | 91.3 | 21 | 65.6 |
| Other (please describe): | 19 | 9.9 | 5 | 15.2 | 8 | 6.3 | 6 | 18.8 |
| Overall | 191 | 100.0 | 33 | 100.0 | 126 | 100.0 | 32 | 100.0 |

Table C23. District-reported middle school assessment practices in 2020-21
District Inventory Q42m_3. What data did your district use to assess how middle school students were doing during 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 179 | 97.3 | 29 | 93.5 | 115 | 99.1 | 35 | 94.6 |
| Their completed classroom tasks or assignments | 175 | 95.1 | 28 | 90.3 | 114 | 98.3 | 33 | 89.2 |
| Their responses to a student survey (excluding social and emotional assessments) | 93 | 50.5 | 19 | 61.3 | 62 | 53.4 | 12 | 32.4 |
| Their performance on a social and emotional assessment | 72 | 39.1 | 13 | 41.9 | 42 | 36.2 | 17 | 45.9 |
| Their performance on classroom quizzes or tests | 167 | 90.8 | 28 | 90.3 | 112 | 96.6 | 27 | 73.0 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 148 | 80.4 | 29 | 93.5 | 95 | 81.9 | 24 | 64.9 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 147 | 79.9 | 29 | 93.5 | 94 | 81.0 | 24 | 64.9 |
| Other (please describe): | 17 | 9.2 | 4 | 12.9 | 6 | 5.2 | 7 | 18.9 |
| Overall | 184 | 100.0 | 31 | 100.0 | 116 | 100.0 | 37 | 100.0 |

Table C24. District-reported high school assessment practices in 2020-21
District Inventory Q42h_3. What data did your district use to assess how high school students were doing during 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their attendance in class | 169 | 97.1 | 30 | 96.8 | 96 | 97.0 | 43 | 97.7 |
| Their completed classroom tasks or assignments | 161 | 92.5 | 29 | 93.5 | 95 | 96.0 | 37 | 84.1 |
| Their responses to a student survey (excluding social and emotional assessments) | 93 | 53.4 | 21 | 67.7 | 60 | 60.6 | 12 | 27.3 |
| Their performance on a social and emotional assessment | 63 | 36.2 | 11 | 35.5 | 37 | 37.4 | 15 | 34.1 |
| Their performance on classroom quizzes or tests | 152 | 87.4 | 28 | 90.3 | 94 | 94.9 | 30 | 68.2 |
| Diagnostic or benchmark schoolwide assessments in English language arts | 127 | 73.0 | 28 | 90.3 | 76 | 76.8 | 23 | 52.3 |
| Diagnostic or benchmark schoolwide assessments in mathematics | 126 | 72.4 | 28 | 90.3 | 75 | 75.8 | 23 | 52.3 |
| Other (please describe): | 16 | 9.2 | 4 | 12.9 | 4 | 4.0 | 8 | 18.2 |
| Overall | 174 | 100.0 | 31 | 100.0 | 99 | 100.0 | 44 | 100.0 |

Table C25. Teacher-reported elementary school assessment practices in 2020-21
Teacher Survey Q26. What information was available to you during the 2020-21 school year to assess how your students were doing? Please select all that apply. (Elementary teachers)

|  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their participation in class | 803 | 92.7 | 331 | 89.9 | 472 | 94.8 |
| Their work on assignments or exit tickets in my class | 753 | 87.0 | 313 | 85.1 | 440 | 88.4 |
| Their responses to a student survey (excluding socialemotional assessments) | 283 | 32.7 | 106 | 28.8 | 177 | 35.5 |
| Their performance on a social and emotional assessment | 193 | 22.3 | 77 | 20.9 | 116 | 23.3 |
| Their performance on classroom quizzes or tests | 597 | 68.9 | 247 | 67.1 | 350 | 70.3 |
| Their scores on diagnostic or benchmark schoolwide assessments in English language arts | 561 | 64.8 | 239 | 64.9 | 322 | 64.7 |
| Their scores on diagnostic or benchmark schoolwide assessments in mathematics | 544 | 62.8 | 231 | 62.8 | 313 | 62.9 |
| Their attendance | 790 | 91.2 | 345 | 93.8 | 445 | 89.4 |
| Input/communication from parents | 585 | 67.6 | 236 | 64.1 | 349 | 70.1 |
| Other (please describe): | 31 | 3.6 | 13 | 3.5 | 18 | 3.6 |
| Total N | 866 | 100.0 | 368 | 100.0 | 498 | 100.0 |

Table C26. Teacher-reported middle school assessment practices in 2020-21
Teacher Survey Q26. What information was available to you during the 2020-21 school year to assess how your students were doing? Please select all that apply. (Middle school teachers)

|  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their participation in class | 473 | 91.5 | 155 | 95.1 | 318 | 89.8 |
| Their work on assignments or exit tickets in my class | 483 | 93.4 | 151 | 92.6 | 332 | 93.8 |
| Their responses to a student survey (excluding socialemotional assessments) | 292 | 56.5 | 88 | 54.0 | 204 | 57.6 |
| Their performance on a social and emotional assessment | 150 | 29.0 | 53 | 32.5 | 97 | 27.4 |
| Their performance on classroom quizzes or tests | 455 | 88.0 | 141 | 86.5 | 314 | 88.7 |
| Their scores on diagnostic or benchmark schoolwide assessments in English language arts | 273 | 52.8 | 79 | 48.5 | 194 | 54.8 |
| Their scores on diagnostic or benchmark schoolwide assessments in mathematics | 239 | 46.2 | 70 | 42.9 | 169 | 47.7 |
| Their attendance | 476 | 92.1 | 153 | 93.9 | 323 | 91.2 |
| Input/communication from parents | 333 | 64.4 | 105 | 64.4 | 228 | 64.4 |
| Other (please describe): | 25 | 4.8 | 10 | 6.1 | 15 | 4.2 |
| Total N | 517 | 100.0 | 163 | 100.0 | 354 | 100.0 |

Table C27. Teacher-reported high school assessment practices in 2020-21
Teacher Survey Q26. What information was available to you during the 2020-21 school year to assess how your students were doing? Please select all that apply. (High school teachers)

|  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their participation in class | 694 | 86.9 | 212 | 86.9 | 482 | 86.8 |
| Their work on assignments or exit tickets in my class | 721 | 90.2 | 215 | 88.1 | 506 | 91.2 |
| Their responses to a student survey (excluding socialemotional assessments) | 444 | 55.6 | 132 | 54.1 | 312 | 56.2 |
| Their performance on a social and emotional assessment | 175 | 21.9 | 58 | 23.8 | 117 | 21.1 |
| Their performance on classroom quizzes or tests | 695 | 87.0 | 201 | 82.4 | 494 | 89.0 |
| Their scores on diagnostic or benchmark schoolwide assessments in English language arts | 182 | 22.8 | 59 | 24.2 | 123 | 22.2 |
| Their scores on diagnostic or benchmark schoolwide assessments in mathematics | 158 | 19.8 | 48 | 19.7 | 110 | 19.8 |
| Their attendance | 738 | 92.4 | 223 | 91.4 | 515 | 92.8 |
| Input/communication from parents | 438 | 54.8 | 123 | 50.4 | 315 | 56.8 |
| Other (please describe): | 43 | 5.4 | 19 | 7.8 | 24 | 4.3 |
| Total N | 799 | 100.0 | 244 | 100.0 | 555 | 100.0 |

Table C28. Teacher-reported assessment practices in 2020-21 (mixed-level)
Teacher Survey Q26. What information was available to you during the 2020-21 school year to assess how your students were doing? Please select all that apply. (Teachers who selected multiple levels, no levels, or "ungraded")

|  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Their participation in class | 264 | 89.2 | 92 | 92.0 | 172 | 87.8 |
| Their work on assignments or exit tickets in my class | 254 | 85.8 | 82 | 82.0 | 172 | 87.8 |
| Their responses to a student survey (excluding socialemotional assessments) | 128 | 43.2 | 35 | 35.0 | 93 | 47.4 |
| Their performance on a social and emotional assessment | 76 | 25.7 | 27 | 27.0 | 49 | 25.0 |
| Their performance on classroom quizzes or tests | 233 | 78.7 | 75 | 75.0 | 158 | 80.6 |
| Their scores on diagnostic or benchmark schoolwide assessments in English language arts | 120 | 40.5 | 39 | 39.0 | 81 | 41.3 |
| Their scores on diagnostic or benchmark schoolwide assessments in mathematics | 115 | 38.9 | 36 | 36.0 | 79 | 40.3 |
| Their attendance | 267 | 90.2 | 91 | 91.0 | 176 | 89.8 |
| Input/communication from parents | 181 | 61.1 | 52 | 52.0 | 129 | 65.8 |
| Other (please describe): | 8 | 2.7 | 3 | 3.0 | 5 | 2.6 |
| Total N | 296 | 100.0 | 100 | 100.0 | 196 | 100.0 |

Of the approximately 100 teachers who used the "other" open-text option to describe other information available to them during the 2020-21 school year to assess how their students were doing, the most-reported information source was the students themselves. Students were communicating their concerns digitally with their teachers through email, Google classroom chats, text messages, and Microsoft Teams. Furthermore, many teachers ensured that they had individual conversations (check-ins, advisory sessions, one-onone conversations, etc.) with their students both in person and over Zoom to assess students' needs informally and allow for individual connection. Teachers also obtained information about how their students were doing indirectly. For example, some teachers observed the way students expressed themselves in their artwork or writing (i.e., journal entries), as well as their behavior and demeanor while engaging in lessons or interacting with their peers. Finally, some teachers reported that communication with other staff (via team meetings, SRBI meeting, IEPs, online gradebooks, etc.) was an important source of information about how their student were doing.

Table C29. District-reported use of an early warning system for elementary school students prior to COVID-19
District Inventory Q43e_1. Did your district use an early warning system (i.e., a system based on student-level data) prior to the COVID-19 pandemic to detect elementary students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 157 | 92.4 | 28 | 93.3 | 111 | 93.3 | 18 | 85.7 |
| Chronic absenteeism | 162 | 95.3 | 30 | 100.0 | 115 | 96.6 | 17 | 81.0 |
| Emotional/behavioral health issues | 131 | 77.1 | 22 | 73.3 | 91 | 76.5 | 18 | 85.7 |
| School violence | 85 | 50.0 | 16 | 53.3 | 57 | 47.9 | 12 | 57.1 |
| Suicide risk | 92 | 54.1 | 17 | 56.7 | 62 | 52.1 | 13 | 61.9 |
| Total N | 170 | 100.0 | 30 | 100.0 | 119 | 100.0 | 21 | 100.0 |

Table C30. District-reported use of an early warning system for elementary school students during spring 2020
District Inventory Q43e_2. Did your district use an early warning system (i.e., a system based on student-level data) during the spring of 2020 to detect elementary students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 119 | 77.3 | 21 | 87.5 | 84 | 77.1 | 14 | 66.7 |
| Chronic absenteeism | 134 | 87.0 | 22 | 91.7 | 94 | 86.2 | 18 | 85.7 |
| Emotional/behavioral health issues | 111 | 72.1 | 17 | 70.8 | 79 | 72.5 | 15 | 71.4 |
| School violence | 51 | 33.1 | 8 | 33.3 | 36 | 33.0 | 7 | 33.3 |
| Suicide risk | 69 | 44.8 | 12 | 50.0 | 46 | 42.2 | 11 | 52.4 |
| Total N | 154 | 100.0 | 24 | 100.0 | 109 | 100.0 | 21 | 100.0 |

Table C31. District-reported use of an early warning system for elementary school students during school year 2020-21
District Inventory Q43e_3. Did your district use an early warning system (i.e., a system based on student-level data) during the 2020-
21 school year to detect elementary students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 155 | 91.7 | 27 | 90.0 | 110 | 93.2 | 18 | 85.7 |
| Chronic absenteeism | 159 | 94.1 | 30 | 100.0 | 112 | 94.9 | 17 | 81.0 |
| Emotional/behavioral health issues | 144 | 85.2 | 26 | 86.7 | 100 | 84.7 | 18 | 85.7 |
| School violence | 86 | 50.9 | 16 | 53.3 | 59 | 50.0 | 11 | 52.4 |
| Suicide risk | 98 | 58.0 | 17 | 56.7 | 68 | 57.6 | 13 | 61.9 |
| Overall | 169 | 100.0 | 30 | 100.0 | 118 | 100.0 | 21 | 100.0 |

Table C32. District-reported use of an early warning system for middle school students prior to COVID-19
District Inventory Q43m_1. Did your district use an early warning system (i.e., a system based on student-level data) prior to the COVID-19 pandemic to detect middle school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 144 | 93.5 | 27 | 96.4 | 99 | 94.3 | 18 | 85.7 |
| Chronic absenteeism | 149 | 96.8 | 28 | 100.0 | 104 | 99.0 | 17 | 81.0 |
| Emotional/behavioral health issues | 118 | 76.6 | 18 | 64.3 | 82 | 78.1 | 18 | 85.7 |
| School violence | 82 | 53.2 | 17 | 60.7 | 53 | 50.5 | 12 | 57.1 |
| Suicide risk | 91 | 59.1 | 18 | 64.3 | 60 | 57.1 | 13 | 61.9 |
| Total N | 154 | 100.0 | 28 | 100.0 | 105 | 100.0 | 21 | 100.0 |

Table C33. District-reported use of an early warning system for middle school students during spring 2020
District Inventory Q43m_2. Did your district use an early warning system (i.e., a system based on student-level data) during the spring of 2020 to detect middle school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 111 | 77.1 | 21 | 84.0 | 76 | 77.6 | 14 | 66.7 |
| Chronic absenteeism | 126 | 87.5 | 22 | 88.0 | 86 | 87.8 | 18 | 85.7 |
| Emotional/behavioral health issues | 103 | 71.5 | 17 | 68.0 | 71 | 72.4 | 15 | 71.4 |
| School violence | 50 | 34.7 | 8 | 32.0 | 35 | 35.7 | 7 | 33.3 |
| Suicide risk | 71 | 49.3 | 13 | 52.0 | 47 | 48.0 | 11 | 52.4 |
| Total N | 144 | 100.0 | 25 | 100.0 | 98 | 100.0 | 21 | 100.0 |

Table C34. District-reported use of an early warning system for middle school students during school year 2020-21
District Inventory Q43m_3. Did your district use an early warning system (i.e., a system based on student-level data) during the 2020-21 school year to detect middle school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid <br> Percent | Valid Count | Valid Percent |
| Academic failure | 142 | 92.2 | 26 | 92.9 | 98 | 93.3 | 18 | 85.7 |
| Chronic absenteeism | 146 | 94.8 | 28 | 100.0 | 101 | 96.2 | 17 | 81.0 |
| Emotional/behavioral health issues | 129 | 83.8 | 22 | 78.6 | 89 | 84.8 | 18 | 85.7 |
| School violence | 82 | 53.2 | 16 | 57.1 | 55 | 52.4 | 11 | 52.4 |
| Suicide risk | 98 | 63.6 | 19 | 67.9 | 66 | 62.9 | 13 | 61.9 |
| Overall | 154 | 100.0 | 28 | 100.0 | 105 | 100.0 | 21 | 100.0 |

Table C35. District-reported use of an early warning system for high school students prior to COVID-19
District Inventory Q43h_1. Did your district use an early warning system (i.e., a system based on student-level data) prior to the COVID-19 pandemic to detect high school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid <br> Count | Valid Percent |
| Academic failure | 148 | 93.1 | 28 | 93.3 | 90 | 95.7 | 30 | 85.7 |
| Chronic absenteeism | 152 | 95.6 | 30 | 100.0 | 93 | 98.9 | 29 | 82.9 |
| Emotional/behavioral health issues | 119 | 74.8 | 20 | 66.7 | 70 | 74.5 | 29 | 82.9 |
| School violence | 87 | 54.7 | 17 | 56.7 | 53 | 56.4 | 17 | 48.6 |
| Suicide risk | 103 | 64.8 | 17 | 56.7 | 65 | 69.1 | 21 | 60.0 |
| Total N | 159 | 100.0 | 30 | 100.0 | 94 | 100.0 | 35 | 100.0 |

Table C36. District-reported use of an early warning system for high school students during spring 2020
District Inventory Q43h_2. Did your district use an early warning system (i.e., a system based on student-level data) during the spring of 2020 to detect high school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid <br> Percent | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 132 | 88.6 | 21 | 80.8 | 83 | 93.3 | 28 | 82.4 |
| Chronic absenteeism | 132 | 88.6 | 23 | 88.5 | 81 | 91.0 | 28 | 82.4 |
| Emotional/behavioral health issues | 115 | 77.2 | 20 | 76.9 | 66 | 74.2 | 29 | 85.3 |
| School violence | 57 | 38.3 | 10 | 38.5 | 36 | 40.4 | 11 | 32.4 |
| Suicide risk | 91 | 61.1 | 15 | 57.7 | 57 | 64.0 | 19 | 55.9 |
| Total N | 149 | 100.0 | 26 | 100.0 | 89 | 100.0 | 34 | 100.0 |

Table C37. District-reported use of an early warning system for high school students during school year 2020-21
District Inventory Q43h_3. Did your district use an early warning system (i.e., a system based on student-level data) during the 202021 school year to detect high school students experiencing the following risks?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Academic failure | 147 | 92.5 | 27 | 90.0 | 89 | 94.7 | 31 | 88.6 |
| Chronic absenteeism | 149 | 93.7 | 30 | 100.0 | 90 | 95.7 | 29 | 82.9 |
| Emotional/behavioral health issues | 130 | 81.8 | 23 | 76.7 | 77 | 81.9 | 30 | 85.7 |
| School violence | 91 | 57.2 | 20 | 66.7 | 55 | 58.5 | 16 | 45.7 |
| Suicide risk | 112 | 70.4 | 20 | 66.7 | 71 | 75.5 | 21 | 60.0 |
| Overall | 159 | 100.0 | 30 | 100.0 | 94 | 100.0 | 35 | 100.0 |

Table C38. District-reported elementary school grading practices prior to the COVID-19 pandemic
District Inventory Q44e_1. On what basis did your elementary teachers report students' progress prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 22 | 11.8 | 5 | 16.1 | 14 | 11.1 | 3 | 10.3 |
| Proficiency | 159 | 85.5 | 27 | 87.1 | 113 | 89.7 | 19 | 65.5 |
| Letter grades | 69 | 37.1 | 14 | 45.2 | 39 | 31.0 | 16 | 55.2 |
| Grading was suspended | 4 | 2.2 | 0 | . 0 | 3 | 2.4 | 1 | 3.4 |
| Other (please describe): | 11 | 5.9 | 2 | 6.5 | 5 | 4.0 | 4 | 13.8 |
| Total N | 186 | 100.0 | 31 | 100.0 | 126 | 100.0 | 29 | 100.0 |

Table C39. District-reported elementary school grading practices in spring 2020
District Inventory Q44e_2. On what basis did your elementary teachers report students' progress during the spring of 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 60 | 32.6 | 17 | 53.1 | 36 | 29.3 | 7 | 24.1 |
| Proficiency | 85 | 46.2 | 11 | 34.4 | 58 | 47.2 | 16 | 55.2 |
| Letter grades | 34 | 18.5 | 5 | 15.6 | 19 | 15.4 | 10 | 34.5 |
| Grading was suspended | 58 | 31.5 | 9 | 28.1 | 45 | 36.6 | 4 | 13.8 |
| Other (please describe): | 20 | 10.9 | 6 | 18.8 | 9 | 7.3 | 5 | 17.2 |
| Total N | 184 | 100.0 | 32 | 100.0 | 123 | 100.0 | 29 | 100.0 |

Table C40. District-reported elementary school grading practices in school year 2020-21
District Inventory Q44e_3. On what basis did your elementary teachers report students' progress during 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 19 | 10.3 | 5 | 15.6 | 11 | 8.9 | 3 | 10.3 |
| Proficiency | 159 | 85.9 | 27 | 84.4 | 113 | 91.1 | 19 | 65.5 |
| Letter grades | 67 | 36.2 | 14 | 43.8 | 37 | 29.8 | 16 | 55.2 |
| Grading was suspended | 4 | 2.2 | 0 | . 0 | 4 | 3.2 | 0 | . 0 |
| Other (please describe): | 13 | 7.0 | 3 | 9.4 | 5 | 4.0 | 5 | 17.2 |
| Overall | 185 | 100.0 | 32 | 100.0 | 124 | 100.0 | 29 | 100.0 |

Table C41. District-reported middle school grading practices prior to the COVID-19 pandemic
District Inventory Q44m_1. On what basis did your middle school teachers report students' progress prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 34 | 19.3 | 7 | 25.9 | 21 | 18.4 | 6 | 17.1 |
| Proficiency | 81 | 46.0 | 13 | 48.1 | 49 | 43.0 | 19 | 54.3 |
| Letter grades | 138 | 78.4 | 25 | 92.6 | 89 | 78.1 | 24 | 68.6 |
| Grading was suspended | 3 | 1.7 | 0 | . 0 | 2 | 1.8 | 1 | 2.9 |
| Other (please describe): | 9 | 5.1 | 1 | 3.7 | 3 | 2.6 | 5 | 14.3 |
| Total N | 176 | 100.0 | 27 | 100.0 | 114 | 100.0 | 35 | 100.0 |

Table C42. District-reported middle school grading practices in spring 2020
District Inventory Q44m_2. On what basis did your middle school teachers report students' progress during the spring of 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 91 | 51.1 | 21 | 72.4 | 61 | 53.0 | 9 | 26.5 |
| Proficiency | 54 | 30.3 | 9 | 31.0 | 28 | 24.3 | 17 | 50.0 |
| Letter grades | 78 | 43.8 | 16 | 55.2 | 46 | 40.0 | 16 | 47.1 |
| Grading was suspended | 36 | 20.2 | 0 | . 0 | 31 | 27.0 | 5 | 14.7 |
| Other (please describe): | 16 | 9.0 | 2 | 6.9 | 7 | 6.1 | 7 | 20.6 |
| Total N | 178 | 100.0 | 29 | 100.0 | 115 | 100.0 | 34 | 100.0 |

Table C43. District-reported middle school grading practices in school year 2020-21
District Inventory Q44m_3. On what basis did your middle school teachers report students' progress during 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 38 | 21.1 | 9 | 30.0 | 24 | 20.9 | 5 | 14.3 |
| Proficiency | 83 | 46.1 | 13 | 43.3 | 50 | 43.5 | 20 | 57.1 |
| Letter grades | 142 | 78.9 | 26 | 86.7 | 90 | 78.3 | 26 | 74.3 |
| Grading was suspended | 6 | 3.3 | 0 | . 0 | 6 | 5.2 | 0 | . 0 |
| Other (please describe): | 11 | 6.1 | 2 | 6.7 | 3 | 2.6 | 6 | 17.1 |
| Overall | 180 | 100.0 | 30 | 100.0 | 115 | 100.0 | 35 | 100.0 |

Table C44. District-reported high school grading practices prior to the COVID-19 pandemic
District Inventory Q44h_1. On what basis did your high school teachers report students' progress prior to COVID-19?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 37 | 22.3 | 7 | 25.0 | 20 | 20.6 | 10 | 24.4 |
| Proficiency | 50 | 30.1 | 12 | 42.9 | 21 | 21.6 | 17 | 41.5 |
| Letter grades | 149 | 89.8 | 26 | 92.9 | 93 | 95.9 | 30 | 73.2 |
| Grading was suspended | 3 | 1.8 | 0 | . 0 | 2 | 2.1 | 1 | 2.4 |
| Other (please describe): | 10 | 6.0 | 1 | 3.6 | 4 | 4.1 | 5 | 12.2 |
| Total N | 166 | 100.0 | 28 | 100.0 | 97 | 100.0 | 41 | 100.0 |

Table C45. District-reported high school grading practices in spring 2020
District Inventory Q44h_2. On what basis did your high school teachers report students' progress during the spring of 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 102 | 60.4 | 25 | 80.6 | 60 | 61.2 | 17 | 42.5 |
| Proficiency | 43 | 25.4 | 8 | 25.8 | 17 | 17.3 | 18 | 45.0 |
| Letter grades | 91 | 53.8 | 15 | 48.4 | 56 | 57.1 | 20 | 50.0 |
| Grading was suspended | 21 | 12.4 | 1 | 3.2 | 17 | 17.3 | 3 | 7.5 |
| Other (please describe): | 14 | 8.3 | 2 | 6.5 | 6 | 6.1 | 6 | 15.0 |
| Total N | 169 | 100.0 | 31 | 100.0 | 98 | 100.0 | 40 | 100.0 |

Table C46. District-reported high school grading practices in school year 2020-21
District Inventory 44h_3. On what basis did your high school teachers report students' progress during 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Pass/fail | 46 | 27.1 | 12 | 38.7 | 26 | 26.5 | 8 | 19.5 |
| Proficiency | 55 | 32.4 | 12 | 38.7 | 23 | 23.5 | 20 | 48.8 |
| Letter grades | 156 | 91.8 | 27 | 87.1 | 95 | 96.9 | 34 | 82.9 |
| Grading was suspended | 4 | 2.4 | 0 | . 0 | 4 | 4.1 | 0 | . 0 |
| Other (please describe): | 11 | 6.5 | 2 | 6.5 | 4 | 4.1 | 5 | 12.2 |
| Overall | 170 | 100.0 | 31 | 100.0 | 98 | 100.0 | 41 | 100.0 |

Research Question 1c. What did administrators and teachers say about the challenges of and strategies for different learning formats?

Table C47. District-reported student disengagement by grade level in May 2020
District Inventory Q27. As of May 1, 2020, approximately what percentage of students were accessing remote learning less than half
the time for the following grade levels?

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | Mean |  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary School | 181 | 32.0 | (29.0) | 31 | 29.5 | (23.0) | 121 | 29.7 | (30.2) | 29 | 44.1 | (27.2) |
| Middle School | 179 | 34.7 | (29.8) | 31 | 36.8 | (24.2) | 115 | 31.5 | (31.2) | 33 | 44.2 | (28.1) |
| High School | 165 | 36.3 | (29.3) | 31 | 40.8 | (24.2) | 93 | 32.6 | (30.2) | 41 | 41.5 | (30.2) |

Please note, mean percent describes the mean of each participating district's reported value.

Table C48. District-reported reasons by grade level for student disengagement in May 2020
District Inventory Q28. As of May 1, 2020, of students accessing remote learning less than half the time, what were the most common reasons given for the following grade levels?

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | Mean |  |  | Mean |  |  | Mean |  |  | Mean |  |  |
| Elementary School |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 152 | 2.7 | (1.3) | 30 | 2.2 | (1.2) | 102 | 2.9 | (1.4) | 20 | 2.4 | (1.3) |
| No technology device (laptop, Chromebook, iPad) | 152 | 3.4 | (1.2) | 30 | 3.4 | (1.4) | 102 | 3.6 | (1.2) | 20 | 2.7 | (1.0) |
| Hardware issues (camera, mic, etc.) | 152 | 2.8 | (1.0) | 30 | 2.9 | (1.0) | 102 | 2.7 | (.9) | 20 | 3.1 | (1.0) |
| Incomplete/incorrect instructions | 152 | 3.7 | (1.2) | 30 | 3.6 | (1.1) | 102 | 3.6 | (1.2) | 20 | 4.0 | (1.1) |
| Other (please describe): | 152 | 2.5 | (1.8) | 30 | 2.9 | (1.9) | 102 | 2.2 | (1.8) | 20 | 2.9 | (2.0) |
| Middle School |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 149 | 2.8 | (1.3) | 27 | 2.8 | (1.2) | 98 | 2.9 | (1.3) | 24 | 2.5 | (1.2) |
| No technology device (laptop, Chromebook, iPad) | 149 | 3.4 | (1.2) | 27 | 3.6 | (1.3) | 98 | 3.5 | (1.2) | 24 | 3.1 | (1.2) |
| Hardware issues (camera, mic, etc.) | 149 | 2.8 | (1.0) | 27 | 2.8 | (1.0) | 98 | 2.7 | (1.0) | 24 | 3.0 | (1.0) |
| Incomplete/incorrect instructions | 149 | 3.8 | (1.1) | 27 | 3.6 | (1.1) | 98 | 3.7 | (1.1) | 24 | 3.9 | (1.2) |
| Other (please describe): | 149 | 2.2 | (1.8) | 27 | 2.2 | (1.8) | 98 | 2.1 | (1.7) | 24 | 2.4 | (1.9) |
| High School |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 146 | 2.7 | (1.3) | 28 | 2.8 | (1.3) | 84 | 2.8 | (1.3) | 34 | 2.3 | (1.3) |
| No technology device (laptop, Chromebook, iPad) | 146 | 3.5 | (1.2) | 28 | 3.5 | (1.2) | 84 | 3.7 | (1.2) | 34 | 3.2 | (1.1) |
| Hardware issues (camera, mic, etc.) | 146 | 2.9 | (1.0) | 28 | 2.9 | (1.0) | 84 | 2.8 | (1.0) | 34 | 3.0 | (1.1) |
| Incomplete/incorrect instructions | 146 | 3.7 | (1.1) | 28 | 3.7 | (1.1) | 84 | 3.6 | (1.1) | 34 | 4.0 | (1.0) |
| Other (please describe): | 146 | 2.2 | (1.8) | 28 | 2.2 | (1.8) | 84 | 2.1 | (1.7) | 34 | 2.5 | (1.8) |

Please note, districts were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 5 .
Districts listed many other reasons why students were accessing remote learning less than half the time in May 2020. For elementary students, the primary reason (beyond the multiple-choice options offered) was inadequate parental support and/or supervision available; this was an issue reported by 76 districts. In many cases, parents were busy (working, taking care of other children, etc.) and couldn't supervise their children's online learning to ensure attendance and participation. In other cases, students were in some form of daycare or with other guardians, such as grandparents. As a result, these students weren't accessing remote instruction because their
caregiver didn't have the technology expertise to help them or weren't able to supervise their learning. A few districts reported that parents didn't want their children to participate in online learning and didn't cooperate for that reason.

The other factor most frequently reported by districts was that elementary students were simply disengaged from remote learning and unmotivated to participate. Districts reported that it was difficult for students to focus on remote instruction, and the short attention span of elementary students meant that many students needed substantial parent/caregiver support to engage with online learning. There were also some students who struggled to engage with remote learning because they had special needs and/or learning disabilities and were not receiving the necessary support to learn virtually. Finally, two districts reported disengagement due to language barriers between the school and the family.

For middle school students who were not accessing remote learning in the spring of 2020, the most common reason given by districts that elected to provide an additional answer was inadequate support/supervision from parents/caregivers to ensure that students were attending and participating virtually. As for elementary students, districts reported that some parents/caregivers were unable to monitor their middle school students' engagement with remote learning because they were busy taking care of other children. Some districts mentioned that some middle school students themselves were taking care of younger siblings and thus were unable to attend school at times. A general disengagement and lack of motivation among students was reported in conjunction with the lack of parent/caregiver support to keep students on track.

For high school students, student disengagement and lack of motivation were the primary reason beyond the multiple-choice options that districts said students were failing to access remote learning in the spring of 2020. Many districts reported that students refused to attend remote instruction or disengaged for a multitude of reasons. These include mental health problems, as some districts reported increases in student anxiety and depression, lack of motivation to engage with the new learning format, and social-emotional issues. This was compounded by inadequate parent/caregiver discipline or support to ensure that students were attending and participating in virtual schooling. An additional reason given for high school students not accessing online learning was a lack of housing stability. Furthermore, many high school students had to take on additional familial and/or job responsibilities when the pandemic began. Districts reported that high school students were employed and were working instead of attending school; some districts specifically noted that their high school students were working to provide additional income for their families. High school students also often acted as secondary caregivers and were disengaged from online learning because they were taking care of their younger siblings. Thus, there were a plethora of reasons that districts reported for the apathy and disengagement of high school students at the beginning of the pandemic.

Table C49. Teacher-reported rates of student disengagement by grade level in spring 2020
Teacher Survey Q7f and Q7g. When students were learning remotely during spring 2020 (start of COVID-pandemic), approximately what percent of your students were doing each of the following?


Please note, mean percent describes the mean of each participating teacher's reported value.

Table C50. Teacher-reported reasons for student disengagement by grade level in spring 2020
Teacher Survey Q8. For those of your students who were unable to access remote learning at least half the time in spring 2020, what do you think were the most common reasons?

|  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |

[^3]Table C51. District-reported rates of student disengagement during the 2020-21 school year
District Inventory Q32emh. During the 2020-21 school year, approximately what percentage of fully remote students accessed instruction from home less than half the time?

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  |  | Mean |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary | 158 | 20.2 | (18.7) | 30 | 22.5 | (15.0) | 104 | 17.4 | (18.0) | 24 | 29.6 | (22.6) |
| School |  |  |  |  |  |  |  |  |  |  |  |  |
| Middle School | 160 | 23.3 | (20.2) | 28 | 27.7 | (18.9) | 103 | 19.3 | (16.4) | 29 | 33.1 | (28.3) |
| High School | 155 | 24.9 | (21.4) | 31 | 30.8 | (21.7) | 85 | 21.2 | (16.6) | 39 | 28.5 | (28.2) |

Please note, mean percentage describes the mean of each participating district's reported value.

Table C52. District-reported reasons by grade level for student disengagement during 2020-21
District Inventory Q33emh. For those fully remote students who did not consistently access instruction from home during the 2020-21 school year, what were the most common reasons given for each of the following grade levels?

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N | Mean Ranking | (SD) | Mean |  |  | Mean |  |  | Mean |  |  |
| Elementary |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 146 | 2.8 | (1.4) | 29 | 2.8 | (1.3) | 99 | 2.8 | (1.4) | 18 | 2.3 | (1.3) |
| No technology device (laptop, Chromebook, iPad) | 146 | 3.6 | (1.2) | 29 | 4.0 | (.9) | 99 | 3.6 | (1.2) | 18 | 2.8 | (1.0) |
| Hardware issues (camera, mic, etc.) | 146 | 2.8 | (1.0) | 29 | 2.8 | (1.2) | 99 | 2.7 | (1.0) | 18 | 3.2 | (1.1) |
| Incomplete/incorrect instructions | 146 | 3.5 | (1.1) | 29 | 3.1 | (1.2) | 99 | 3.6 | (1.1) | 18 | 3.9 | (1.1) |
| Other (please describe): | 146 | 2.3 | (1.8) | 29 | 2.4 | (1.8) | 99 | 2.2 | (1.8) | 18 | 2.8 | (2.0) |
| Middle School |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 149 | 2.7 | (1.2) | 28 | 2.7 | (1.0) | 97 | 2.7 | (1.3) | 24 | 2.4 | (1.1) |
| No technology device (laptop, Chromebook, iPad) | 149 | 3.6 | (1.1) | 28 | 3.9 | (1.0) | 97 | 3.6 | (1.2) | 24 | 3.3 | (1.1) |
| Hardware issues (camera, mic, etc.) | 149 | 2.8 | (1.0) | 28 | 2.7 | (1.3) | 97 | 2.8 | (1.0) | 24 | 3.1 | (1.0) |
| Incomplete/incorrect instructions | 149 | 3.8 | (1.1) | 28 | 3.5 | (1.2) | 97 | 3.8 | (1.1) | 24 | 4.0 | (1.1) |
| Other (please describe): | 149 | 2.2 | (1.8) | 28 | 2.1 | (1.8) | 97 | 2.1 | (1.8) | 24 | 2.2 | (1.8) |
| High School |  |  |  |  |  |  |  |  |  |  |  |  |
| No/limited WiFi | 144 | 2.7 | (1.2) | 28 | 2.8 | (1.1) | 84 | 2.9 | (1.2) | 32 | 2.3 | (1.1) |
| No technology device (laptop, Chromebook, iPad) | 144 | 3.6 | (1.1) | 28 | 3.8 | (1.0) | 84 | 3.7 | (1.1) | 32 | 3.2 | (1.2) |
| Hardware issues (camera, mic, etc.) | 144 | 2.8 | (1.1) | 28 | 2.9 | (1.4) | 84 | 2.7 | (1.0) | 32 | 3.0 | (1.0) |
| Incomplete/incorrect instructions | 144 | 3.8 | (1.1) | 28 | 3.6 | (1.2) | 84 | 3.7 | (1.2) | 32 | 4.1 | (.9) |
| Other (please describe): | 144 | 2.1 | (1.8) | 28 | 2.0 | (1.7) | 84 | 2.0 | (1.7) | 32 | 2.4 | (1.9) |

Districts used the "other" open-text option to describe a variety of reasons that students were accessing remote learning less than half the time during the 2020/21 school year. Similar to district responses for spring 2020 (see Table C48 above), districts reported that inadequate parent/caregiver support and supervision was the main factor affecting student disengagement. Again, some districts reported that parents were unavailable to help their elementary students access remote learning or ensure that they were attending because parents were working or taking care of other children and couldn't devote time to managing online learning. A commonly reported issue was that students weren't under the care of their parents but rather grandparents, older siblings, or daycare providers and thus didn't have the support needed to access virtual instruction or materials. Other familial problems that districts reported were housing instability and mental or physical health concerns in the family. Many districts reported that in 2020-21, some elementary students were experiencing behavioral issues, felt disengaged from remote learning, or lacked the motivation and focus to participate in this format. Some districts reported that parents simply refused to cooperate with remote learning, especially because they didn't want their child participating in that amount of online work.

For middle school students who were accessing remote learning less than half of the time in the 2020-21 school year, districts that elected to provide additional reasons beyond the multiple-choice options reported two major reasons for students not accessing remote instruction: insufficient parental supervision/encouragement and disengagement of students from remote learning. Some districts simply mentioned that parents were not providing adequate support or supervision for their students, whereas others elaborated that parents were often working or caring for other children and couldn't devote time to supporting remote learning. The other issue reported was that students were unmotivated to learn in a remote format and thus disengaged from virtual learning altogether.

A number of districts elected to provide other reasons beyond the multiple choice options for why high school students were accessing remote learning less than half of the time during the 2020-21 school year. The primary explanation for high school students not accessing remote instruction was that they were unmotivated and disengaged from this learning format. Many districts reported that their students had experienced mental health issues, such as increases in depression and anxiety, and struggled with social-emotional problems. Districts said that students and their families also reported concerns about their physical health. Familial reasons for students not attending virtual instruction were also prevalent. Some parents elected to not have their students participate in remote learning, or they didn't support/supervise their students and ensure that they were attending. Other students were taking on additional responsibilities to help their families during the pandemic, including providing childcare for their siblings or working a job to provide extra income. Thus, general disengagement was the main reason that students did not attend remote instruction, but parental/familial factors played an influential role in this decision.

Table C53. Teacher-reported rates of student disengagement by grade level among fully remote learners in 2020-21
Teacher Survey Q11f \& Q11g. You indicated that some of your students attended school remotely for the majority of 2020-21. Over the 2020-21 school year, approximately what percent of your fully remote students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
| Elementary school | missing school more than half the time | 724 | 25.7 | (26.2) | 318 | 31.8 | (26.3) | 406 | 21.0 | (25.2) |
|  | showing some evidence of digital cheating | 688 | 12.7 | (20.6) | 294 | 15.8 | (22.5) | 394 | 10.4 | (18.7) |
| Middle school | missing school more than half the time | 483 | 31.0 | (24.7) | 160 | 33.8 | (24.1) | 323 | 29.7 | (24.9) |
|  | showing some evidence of digital cheating | 471 | 26.1 | (26.7) | 155 | 25.7 | (26.2) | 316 | 26.3 | (26.9) |
| High school | missing school more than half the time | 757 | 35.0 | (24.8) | 238 | 41.2 | (23.9) | 519 | 32.2 | (24.7) |
|  | showing some evidence of digital cheating | 748 | 39.6 | (31.4) | 230 | 36.1 | (29.3) | 518 | 41.1 | (32.3) |
| Multiple levels, ungraded, or unknown | missing school more than half the time | 274 | 34.0 | (26.8) | 96 | 41.8 | (26.0) | 178 | 29.8 | (26.5) |
|  | showing some evidence of digital cheating | 249 | 22.0 | (27.6) | 87 | 19.2 | (23.9) | 162 | 23.5 | (29.3) |

Please note, mean percent describes the mean of each participating district's reported value.
Table C54. Teacher-reported rates of student disengagement by grade level among hybrid learners in 2020-21
Teacher Survey Q12f \& Q12g. You indicated that some of your students were hybrid-scheduled to attend school in-person on some days and remotely on other days-for the majority of 2020-21. Over the 2020-21 school year, approximately what percent of your hybrid students were doing each of the following?

|  |  |  |  |  |  |  | Distri | Type |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | N | Mean <br> Percent | (SD) | Mean |  |  | Mean |  |  |
| Elementary school | missing school more than half the time | 577 | 22.8 | (21.6) | 269 | 28.4 | (21.9) | 308 | 17.9 | (20.2) |
|  | showing some evidence of digital cheating | 533 | 10.9 | (18.8) | 240 | 13.6 | (21.2) | 293 | 8.6 | (16.3) |
| Middle school | missing school more than half the time | 453 | 26.3 | (21.0) | 147 | 29.3 | (20.6) | 306 | 24.9 | (21.0) |
|  | showing some evidence of digital cheating | 446 | 23.2 | (23.3) | 144 | 22.3 | (23.7) | 302 | 23.6 | (23.2) |
| High school | missing school more than half the time | 733 | 29.9 | (22.4) | 218 | 36.2 | (23.9) | 515 | 27.3 | (21.2) |
|  | showing some evidence of digital cheating | 729 | 37.4 | (29.3) | 214 | 32.6 | (27.5) | 515 | 39.4 | (29.8) |
| Multiple levels, ungraded, or unknown | missing school more than half the time | 237 | 31.5 | (24.9) | 86 | 35.9 | (22.8) | 151 | 29.0 | (25.8) |
|  | showing some evidence of digital cheating | 221 | 19.0 | (23.8) | 81 | 15.4 | (20.5) | 140 | 21.0 | (25.4) |

Please note, mean percent describes the mean of each participating district's reported value.

Table C55. Teacher-reported rates of student disengagement by grade level among fully in-person learners in 2020-21 TS Q13d and Q13e. You indicated that some of your students attended school in person for the majority of the 2020-21 school year. Over the 2020-21 school year, approximately what percent of your fully in-person students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary school | missing school more than half the time | 643 | 16.0 | (19.1) | 237 | 23.2 | (21.5) | 406 | 11.8 | (16.2) |
|  | showing some evidence of digital cheating | 595 | 5.6 | (12.4) | 212 | 8.0 | (15.6) | 383 | 4.3 | (10.1) |
| Middle school | missing school more than half the time | 361 | 18.7 | (18.3) | 105 | 23.0 | (20.3) | 256 | 16.9 | (17.1) |
|  | showing some evidence of digital cheating | 352 | 18.0 | (20.9) | 104 | 20.0 | (22.7) | 248 | 17.1 | (20.1) |
| High school | missing school more than half the time | 498 | 23.7 | (22.1) | 144 | 30.3 | (22.8) | 354 | 21.0 | (21.3) |
|  | showing some evidence of digital cheating | 492 | 27.5 | (27.0) | 141 | 28.7 | (26.8) | 351 | 27.0 | (27.1) |
| Multiple levels, ungraded, or unknown | missing school more than half the time | 241 | 25.3 | (23.0) | 73 | 32.5 | (25.1) | 168 | 22.1 | (21.3) |
|  | showing some evidence of digital cheating | 221 | 16.8 | (23.0) | 69 | 18.7 | (25.1) | 152 | 16.0 | (22.0) |

Please note, mean percent describes the mean of each participating district's reported value.

Table C56. Teacher-reported reasons for student disengagement by grade level in 2020-21
Teacher Survey Q14. For your fully remote and/or hybrid students who accessed remote learning less than half the time during the 2020-21 school year, what do you think were the most common reasons?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Ranking | (SD) | N | Ranking | (SD) | N | Ranking | (SD) |
| Elementary school | no/limited Wi-Fi | 690 | 3.2 | (1.5) | 346 | 3.2 | (1.5) | 344 | 3.3 | (1.5) |
|  | no technology device | 690 | 4.9 | (1.4) | 346 | 4.8 | (1.4) | 344 | 5.0 | (1.4) |
|  | hardware issues | 690 | 3.7 | (1.3) | 346 | 3.8 | (1.2) | 344 | 3.7 | (1.3) |
|  | incomplete/incorrect connection instructions | 690 | 4.7 | (1.3) | 346 | 4.8 | (1.3) | 344 | 4.7 | (1.3) |
|  | inadequate adult supervision | 690 | 1.7 | (1.2) | 346 | 1.7 | (1.3) | 344 | 1.6 | (1.2) |
|  | other family responsibilities | 690 | 3.6 | (1.8) | 346 | 3.5 | (1.8) | 344 | 3.7 | (1.9) |
|  | other reasons | 690 | 6.1 | (1.9) | 346 | 6.2 | (1.8) | 344 | 6.0 | (2.0) |
| Middle school | no/limited Wi-Fi | 514 | 3.4 | (1.4) | 170 | 3.1 | (1.3) | 344 | 3.6 | (1.4) |
|  | no technology device | 514 | 5.2 | (1.3) | 170 | 4.9 | (1.4) | 344 | 5.3 | (1.3) |
|  | hardware issues | 514 | 4.1 | (1.2) | 170 | 4.4 | (1.2) | 344 | 4.0 | (1.2) |
|  | incomplete/incorrect connection instructions | 514 | 5.1 | (1.3) | 170 | 5.2 | (1.3) | 344 | 5.1 | (1.3) |
|  | inadequate adult supervision | 514 | 1.5 | (1.0) | 170 | 1.6 | (1.1) | 344 | 1.5 | (.9) |
|  | other family responsibilities | 514 | 3.0 | (1.5) | 170 | 2.9 | (1.4) | 344 | 3.1 | (1.6) |
|  | other reasons | 514 | 5.5 | (2.3) | 170 | 5.9 | (2.0) | 344 | 5.4 | (2.4) |
| High school | no/limited Wi-Fi | 793 | 3.4 | (1.5) | 261 | 3.0 | (1.4) | 532 | 3.6 | (1.5) |
|  | no technology device | 793 | 5.0 | (1.4) | 261 | 4.7 | (1.5) | 532 | 5.1 | (1.4) |
|  | hardware issues | 793 | 4.2 | (1.3) | 261 | 4.4 | (1.3) | 532 | 4.2 | (1.3) |
|  | incomplete/incorrect connection instructions | 793 | 5.3 | (1.3) | 261 | 5.2 | (1.3) | 532 | 5.3 | (1.3) |
|  | inadequate adult supervision | 793 | 2.2 | (1.5) | 261 | 2.5 | (1.6) | 532 | 2.0 | (1.4) |
|  | other family responsibilities | 793 | 2.8 | (1.6) | 261 | 2.5 | (1.6) | 532 | 3.0 | (1.6) |
|  | other reasons | 793 | 5.1 | (2.6) | 261 | 5.7 | (2.3) | 532 | 4.9 | (2.7) |
| Multiple levels, ungraded, or unknown | no/limited Wi-Fi | 287 | 3.3 | (1.5) | 104 | 3.0 | (1.5) | 183 | 3.4 | (1.6) |
|  | no technology device | 287 | 5.0 | (1.4) | 104 | 4.6 | (1.5) | 183 | 5.2 | (1.4) |
|  | hardware issues | 287 | 3.9 | (1.3) | 104 | 3.9 | (1.3) | 183 | 3.9 | (1.3) |
|  | incomplete/incorrect connection instructions | 287 | 5.0 | (1.4) | 104 | 5.1 | (1.3) | 183 | 4.9 | (1.4) |
|  | inadequate adult supervision | 287 | 1.9 | (1.4) | 104 | 2.1 | (1.6) | 183 | 1.8 | (1.3) |
|  | other family responsibilities | 287 | 3.3 | (1.7) | 104 | 3.0 | (1.7) | 183 | 3.4 | (1.7) |
|  | other reasons | 287 | 5.6 | (2.3) | 104 | 6.2 | (1.8) | 183 | 5.3 | (2.5) |

[^4]Table C57. District-reported changes in digital cheating by grade level
District Inventory Q45emh_2. How problematic was digital cheating during the pandemic compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less of a problem | 19 | 11.0 | 7 | 21.2 | 10 | 8.5 | 2 | 8.7 |
|  | Somewhat less of a problem | 13 | 7.5 | 2 | 6.1 | 9 | 7.7 | 2 | 8.7 |
|  | About the same | 100 | 57.8 | 13 | 39.4 | 69 | 59.0 | 18 | 78.3 |
|  | Somewhat more of a problem | 33 | 19.1 | 5 | 15.2 | 27 | 23.1 | 1 | 4.3 |
|  | Much more of a problem | 8 | 4.6 | 6 | 18.2 | 2 | 1.7 | 0 | . 0 |
|  | Total N | 173 | 100.0 | 33 | 100.0 | 117 | 100.0 | 23 | 100.0 |
| Middle School | Much less of a problem | 9 | 5.3 | 1 | 3.1 | 6 | 5.5 | 2 | 6.9 |
|  | Somewhat less of a problem | 10 | 5.8 | 4 | 12.5 | 4 | 3.6 | 2 | 6.9 |
|  | About the same | 80 | 46.8 | 10 | 31.3 | 48 | 43.6 | 22 | 75.9 |
|  | Somewhat more of a problem | 51 | 29.8 | 11 | 34.4 | 37 | 33.6 | 3 | 10.3 |
|  | Much more of a problem | 21 | 12.3 | 6 | 18.8 | 15 | 13.6 | 0 | . 0 |
|  | Total N | 171 | 100.0 | 32 | 100.0 | 110 | 100.0 | 29 | 100.0 |
| High School | Much less of a problem | 5 | 3.1 | 0 | . 0 | 4 | 4.2 | 1 | 2.9 |
|  | Somewhat less of a problem | 8 | 4.9 | 3 | 9.7 | 2 | 2.1 | 3 | 8.6 |
|  | About the same | 64 | 39.5 | 9 | 29.0 | 32 | 33.3 | 23 | 65.7 |
|  | Somewhat more of a problem | 54 | 33.3 | 12 | 38.7 | 35 | 36.5 | 7 | 20.0 |
|  | Much more of a problem | 31 | 19.1 | 7 | 22.6 | 23 | 24.0 | 1 | 2.9 |
|  | Total N | 162 | 100.0 | 31 | 100.0 | 96 | 100.0 | 35 | 100.0 |

Table C58. Teacher-reported changes in digital cheating by grade level
Teacher Survey Q25_2. Based on your experience, how problematic was digital cheating for your students during the pandemic, compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Much less of a problem | 30 | 5.7 | 9 | 3.7 | 21 | 7.3 |
|  | Somewhat less of a problem | 8 | 1.5 | 6 | 2.5 | 2 | . 7 |
|  | About the same | 195 | 36.8 | 75 | 31.1 | 120 | 41.5 |
|  | Somewhat more of a problem | 181 | 34.2 | 83 | 34.4 | 98 | 33.9 |
|  | Much more of a problem | 116 | 21.9 | 68 | 28.2 | 48 | 16.6 |
|  | Total N | 530 | 100.0 | 241 | 100.0 | 289 | 100.0 |
| Middle school | Much less of a problem | 2 | . 4 | 0 | . 0 | 2 | . 6 |
|  | Somewhat less of a problem | 10 | 2.0 | 6 | 4.0 | 4 | 1.1 |
|  | About the same | 137 | 27.6 | 43 | 28.9 | 94 | 27.0 |
|  | Somewhat more of a problem | 177 | 35.6 | 47 | 31.5 | 130 | 37.4 |
|  | Much more of a problem | 171 | 34.4 | 53 | 35.6 | 118 | 33.9 |
|  | Total N | 497 | 100.0 | 149 | 100.0 | 348 | 100.0 |
| High school | Much less of a problem | 9 | 1.1 | 3 | 1.3 | 6 | 1.1 |
|  | Somewhat less of a problem | 6 | . 8 | 2 | . 8 | 4 | . 7 |
|  | About the same | 131 | 16.6 | 60 | 25.2 | 71 | 12.8 |
|  | Somewhat more of a problem | 217 | 27.4 | 59 | 24.8 | 158 | 28.6 |
|  | Much more of a problem | 428 | 54.1 | 114 | 47.9 | 314 | 56.8 |
|  | Total N | 791 | 100.0 | 238 | 100.0 | 553 | 100.0 |
| Multiple levels, ungraded, or unknown | Much less of a problem | 4 | 1.7 | 1 | 1.3 | 3 | 1.9 |
|  | Somewhat less of a problem | 3 | 1.3 | 0 | . 0 | 3 | 1.9 |
|  | About the same | 75 | 31.5 | 29 | 36.7 | 46 | 28.9 |
|  | Somewhat more of a problem | 88 | 37.0 | 29 | 36.7 | 59 | 37.1 |
|  | Much more of a problem | 68 | 28.6 | 20 | 25.3 | 48 | 30.2 |
|  | Total N | 238 | 100.0 | 79 | 100.0 | 159 | 100.0 |

Table C59. Teacher-reported of changes in school/homework avoidance by grade level
Teacher Survey Q25_1. Based on your experience, how problematic was school/homework avoidance for your students during the pandemic, compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Much less of a problem | 13 | 1.5 | 6 | 1.6 | 7 | 1.4 |
|  | Somewhat less of a problem | 18 | 2.0 | 8 | 2.2 | 10 | 1.9 |
|  | About the same | 201 | 22.7 | 66 | 17.8 | 135 | 26.3 |
|  | Somewhat more of a problem | 311 | 35.2 | 117 | 31.6 | 194 | 37.7 |
|  | Much more of a problem | 341 | 38.6 | 173 | 46.8 | 168 | 32.7 |
|  | Total N | 884 | 100.0 | 370 | 100.0 | 514 | 100.0 |
| Middle school | Much less of a problem | 2 | . 4 | 2 | 1.2 | 0 | . 0 |
|  | Somewhat less of a problem | 5 | . 9 | 1 | . 6 | 4 | 1.1 |
|  | About the same | 50 | 9.4 | 17 | 10.1 | 33 | 9.0 |
|  | Somewhat more of a problem | 148 | 27.7 | 44 | 26.2 | 104 | 28.4 |
|  | Much more of a problem | 329 | 61.6 | 104 | 61.9 | 225 | 61.5 |
|  | Total N | 534 | 100.0 | 168 | 100.0 | 366 | 100.0 |
| High school | Much less of a problem | 4 | . 5 | 0 | . 0 | 4 | . 7 |
|  | Somewhat less of a problem | 11 | 1.3 | 5 | 2.0 | 6 | 1.0 |
|  | About the same | 69 | 8.4 | 28 | 11.2 | 41 | 7.1 |
|  | Somewhat more of a problem | 232 | 28.1 | 59 | 23.5 | 173 | 30.1 |
|  | Much more of a problem | 509 | 61.7 | 159 | 63.3 | 350 | 61.0 |
|  | Total N | 825 | 100.0 | 251 | 100.0 | 574 | 100.0 |
| Multiple levels, ungraded, or unknown | Much less of a problem | 4 | 1.3 | 2 | 2.0 | 2 | 1.0 |
|  | Somewhat less of a problem | 4 | 1.3 | 2 | 2.0 | 2 | 1.0 |
|  | About the same | 37 | 12.1 | 11 | 10.8 | 26 | 12.7 |
|  | Somewhat more of a problem | 89 | 29.1 | 26 | 25.5 | 63 | 30.9 |
|  | Much more of a problem | 172 | 56.2 | 61 | 59.8 | 111 | 54.4 |
|  | Total N | 306 | 100.0 | 102 | 100.0 | 204 | 100.0 |

## Table C60. Teacher-reported challenges and benefits of different learning formats

Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?
Respondents used the open-ended question at the end of the teacher survey to share their perspectives on the challenges and benefits of different learning models. Teacher survey respondents said that for many students, remote learning was not an effective format for an extended period of time. Remote learning was particularly challenging for courses or subjects that have components of hands-on learning and movement. On the other hand, teacher survey respondents reported that remote learning worked well for a small subset of students who were highly motivated, had strong parental support, or had behavioral or mental health challenges. Teachers believed that remote learning could be an effective form of instruction with adequate resources, like stable internet and laptops. Many suggested the use of remote learning for snow days in lieu of extending the school year through the summer.

Teacher survey respondents reported that a major challenge of in-person learning was stress about getting sick. In addition, the transition back to in-person learning after being out of the classroom for an extended period of time was challenging for students and teachers alike. Returning to the pre-pandemic norm of in-person teaching was also difficult because of COVID-related constraints. For example, teachers reported that it was difficult to provide "support to struggling students from $6+$ feet away." Some respondents indicated that scheduling changes (for example, longer blocks) that were introduced during remote learning made instruction more difficult after the return to in-person learning. However, many teacher survey respondents said believed that in-person learning was better overall for students. Teachers said that in-person learning provided fewer chances for students to avoid doing work and more opportunities for student socialization and connection to other school services. Teacher survey participants reported that students performed better academically and emotionally when learning in person. Many respondents emphasized in-person learning should be the instructional format of choice as long as a safe school environment could be maintained.

Overall, teacher survey respondents overwhelmingly reported that hybrid instruction was the least effective instructional format. In the case of dual instruction (hybrid instruction where a teacher delivers instruction to in-person and remote students simultaneously), many respondents stated it was hard to focus on both groups of learners at the same time. They felt like they were "neglecting one group while trying to balance everyone's needs." Others compared hybrid learning to working two jobs at the same time. One teacher said "you would not expect a teacher to teach in two classrooms (across the hall from each other) at the same time while physically in the building with students. Yet, that is what we were doing while teaching with our hybrid model." Teachers said they could not do their job effectively in the hybrid model, which added to the stress they already felt. However, some teachers reported that they appreciated some components of alternating hybrid models (hybrid instruction where teachers instruct students in-person at some times and remotely at other times), for example, hybrid models with one or more fully remote day, which provided planning time.

Research Question 1d. How did approaches to remote learning change over time, and how did these changes affect teachers and students?

Table C61. District-reported virtual learning opportunities for elementary students prior to the COVID-19 pandemic
District Inventory: Q4_1e - Q4_3e. Which of the following accurately describes learning opportunities for your district's elementary school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Some students were learning virtually (for example, through online platforms or video conferencing) | 17 | 8.8 | 3 | 9.4 | 10 | 7.7 | 4 | 12.9 |
| Some teachers were teaching virtually | 9 | 4.7 | 1 | 3.1 | 5 | 3.8 | 3 | 9.7 |
| The district had the capability to manage \& deliver virtual/remote learning | 35 | 18.1 | 5 | 15.6 | 25 | 19.2 | 5 | 16.1 |
| None of the above | 150 | 77.7 | 25 | 78.1 | 99 | 76.2 | 26 | 83.9 |
| Total N | 193 | 100.0 | 32 | 100.0 | 130 | 100.0 | 31 | 100.0 |

Table C62. District-reported virtual learning opportunities for middle school students prior to the COVID-19 pandemic District Inventory: Q4_1m - Q4_3m. Which of the following accurately describes learning opportunities for your district's middle school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Some students were learning virtually (for example, through online platforms or video conferencing) | 19 | 10.1 | 4 | 12.9 | 11 | 9.0 | 4 | 11.1 |
| Some teachers were teaching virtually | 9 | 4.8 | 1 | 3.2 | 5 | 4.1 | 3 | 8.3 |
| The district had the capability to manage \& deliver virtual/remote learning | 48 | 25.4 | 5 | 16.1 | 36 | 29.5 | 7 | 19.4 |
| None of the above | 135 | 71.4 | 23 | 74.2 | 83 | 68.0 | 29 | 80.6 |
| Total N | 189 | 100.0 | 31 | 100.0 | 122 | 100.0 | 36 | 100.0 |

Table C63. District-reported virtual learning opportunities for high school students prior to the COVID-19 pandemic
District Inventory: Q4h_1-Q4h_3. Which of the following accurately describes learning opportunities for your district's high school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Some students were learning virtually (for example, through online platforms or video conferencing) | 52 | 30.1 | 13 | 43.3 | 33 | 32.7 | 6 | 14.3 |
| Some teachers were teaching virtually | 18 | 10.4 | 1 | 3.3 | 12 | 11.9 | 5 | 11.9 |
| The district had the capability to manage \& deliver virtual/remote learning | 55 | 31.8 | 9 | 30.0 | 36 | 35.6 | 10 | 23.8 |
| None of the above | 93 | 53.8 | 13 | 43.3 | 49 | 48.5 | 31 | 73.8 |
| Total N | 173 | 100.0 | 30 | 100.0 | 101 | 100.0 | 42 | 100.0 |

Table C64. Teacher-reported pre-COVID teaching experience by grade level with learning models
Teacher Survey Q5. Which of the following models had you used to teach students before the COVID-19 pandemic? Please select all that apply.

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Fully in-person instruction | 992 | 99.6 | 410 | 99.5 | 582 | 99.7 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 10 | 1.0 | 6 | 1.5 | 4 | . 7 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 4 | . 4 | 2 | . 5 | 2 | . 3 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 4 | . 4 | 2 | . 5 | 2 | . 3 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 4 | . 4 | 3 | . 7 | 1 | . 2 |
|  | Total N | 996 | 100.0 | 412 | 100.0 | 584 | 100.0 |
| Middle school | Fully in-person instruction | 563 | 99.8 | 178 | 100.0 | 385 | 99.7 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 1 | . 2 | 1 | . 6 | 0 | . 0 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 2 | . 4 | 1 | . 6 | 1 | . 3 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 3 | . 5 | 1 | . 6 | 2 | . 5 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 6 | 1.1 | 2 | 1.1 | 4 | 1.0 |
|  | Total N | 564 | 100.0 | 178 | 100.0 | 386 | 100.0 |
| High school | Fully in-person instruction | 875 | 99.7 | 271 | 99.6 | 604 | 99.7 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 9 | 1.0 | 5 | 1.8 | 4 | . 7 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | $6$ | . 7 | 4 | 1.5 | 2 | . 3 |
|  | Fully remote instruction, where students received at least one real-time class each school day | $4$ | $.5$ | 3 | 1.1 | $1$ | $.2$ |
|  | Fully remote instruction, where students received less than one real-time class each school day | $6$ | . 7 | 3 | 1.1 | 3 | . 5 |
|  | Total N | 878 | 100.0 | 272 | 100.0 | 606 | 100.0 |
| Multiple levels, ungraded, or unknown | Fully in-person instruction | 332 | 98.5 | 108 | 98.2 | 224 | 98.7 |
|  | Hybrid model, with in-person instruction and remote instruction at the same time | 4 | 1.2 | 3 | 2.7 | 1 | . 4 |
|  | Hybrid model, with in-person instruction and remote instruction at different times | 4 | 1.2 | 1 | . 9 | 3 | 1.3 |
|  | Fully remote instruction, where students received at least one real-time class each school day | 5 | 1.5 | 2 | 1.8 | 3 | 1.3 |
|  | Fully remote instruction, where students received less than one real-time class each school day | 5 | 1.5 | 0 | . 0 | 5 | 2.2 |
|  | Total N | 337 | 100.0 | 110 | 100.0 | 227 | 100.0 |

[^5] synchronous/real-time class each school day (i.e., instruction via paper workbooks or asynchronous videos).

Table C65. District-reported improvements to remote learning for elementary students
District Inventory Q36e. In what ways did remote learning improve for elementary students from 2019-20 to 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent |
| It did not change | 2 | 1.1 | 0 | . 0 | 0 | . 0 | 2 | 7.1 |
| Better learning management system in place | 116 | 62.7 | 23 | 69.7 | 78 | 62.9 | 15 | 53.6 |
| Better apps in place | 133 | 71.9 | 24 | 72.7 | 92 | 74.2 | 17 | 60.7 |
| Improved accessibility for students | 127 | 68.6 | 28 | 84.8 | 80 | 64.5 | 19 | 67.9 |
| Teacher fluency with remote learning technologies | 178 | 96.2 | 32 | 97.0 | 121 | 97.6 | 25 | 89.3 |
| Teachers' integration of recommended apps/tools | 160 | 86.5 | 30 | 90.9 | 109 | 87.9 | 21 | 75.0 |
| Improved technical support for teachers | 123 | 66.5 | 26 | 78.8 | 80 | 64.5 | 17 | 60.7 |
| Increased implementation of on-grade curriculum | 108 | 58.4 | 22 | 66.7 | 76 | 61.3 | 10 | 35.7 |
| Other (please describe): | 17 | 9.2 | 4 | 12.1 | 13 | 10.5 | 0 | . 0 |
| Overall | 185 | 100.0 | 33 | 100.0 | 124 | 100.0 | 28 | 100.0 |

Of the 17 districts that used the open-text option to describe other ways that remote learning for elementary students improved from 2019-2020 to 2020-2021, responses primarily focused on changes in learning format, better understanding of remote learning models, and integration of parent/teacher feedback. Several districts reported that in the 2020-21 school year, there was a shift to more synchronous learning as opposed to completely asynchronous/remote learning. This shift was accompanied by better instructional strategies to benefit both students and staff, such as more breaks in instructional time and better screen-time expectations. Some districts also reported that in the 2020-21 school year, they completely separated remote and in-person learners and assigned different teachers to these respective virtual and in-person classrooms, thus maximizing the effectiveness of the teachers' instructional time. Furthermore, a heightened understanding and more realistic expectations for student learning over remote platforms emerged as districts became more accustomed to this learning format. They recognized that the development of both social-emotional and academic skills is different when it occurs through remote learning platforms, and staff began to gain a better understanding of how to support student learning during the 2020-21 year. Districts reported that they conducted listening sessions with teachers, parents, and students and used their feedback to inform improvements in remote learning.

Table C66. District-reported improvements to remote learning for middle school students
District Inventory Q36m. In what ways did remote learning improve for middle school students from 2019-20 to 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| It did not change | 2 | 1.1 | 0 | . 0 | 0 | . 0 | 2 | 6.1 |
| Better learning management system in place | 108 | 60.0 | 23 | 74.2 | 68 | 58.6 | 17 | 51.5 |
| Better apps in place | 130 | 72.2 | 27 | 87.1 | 84 | 72.4 | 19 | 57.6 |
| Improved accessibility for students | 115 | 63.9 | 24 | 77.4 | 73 | 62.9 | 18 | 54.5 |
| Teacher fluency with remote learning technologies | 170 | 94.4 | 30 | 96.8 | 111 | 95.7 | 29 | 87.9 |
| Teacher's integration of recommended apps/tools | 154 | 85.6 | 28 | 90.3 | 102 | 87.9 | 24 | 72.7 |
| Improved technical support for teachers | 119 | 66.1 | 23 | 74.2 | 78 | 67.2 | 18 | 54.5 |
| Increased implementation of on-grade curriculum | 99 | 55.0 | 20 | 64.5 | 70 | 60.3 | 9 | 27.3 |
| Other (please describe): | 12 | 6.7 | 2 | 6.5 | 9 | 7.8 | 1 | 3.0 |
| Overall | 180 | 100.0 | 31 | 100.0 | 116 | 100.0 | 33 | 100.0 |

Of the 12 districts that used the open-text option to describe other ways that remote learning for middle school students improved from 2019-2020 to 2020-2021, responses primarily focused on changes in learning format, better understanding of remote learning models, better access to a variety of approved online platforms, and a better understanding of supporting SEL during remote learning. Several districts reported that in the 2020-21 school year, there was a shift to more in-person learning for those that were previously hybrid and to more synchronous learning for those who were still learning remotely. This shift was accompanied by better instructional strategies to benefit both students and staff, such as more breaks in instructional time and more reasonable screen-time expectations. Furthermore, a heightened understanding and more realistic expectations for student learning over remote platforms emerged as districts became more accustomed to this learning format. They recognized that the development of both social-emotional and academic skills is different when it occurs through remote learning platforms, and staff began to gain a better understanding of how to support students' learning during the 2020-21 year.

Table C67. District-reported improvements to remote learning for high school students
District Inventory Q36h. In what ways did remote learning improve for high school students from 2019-20 to 2020-21?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| It did not change | 2 | 1.2 | 0 | . 0 | 0 | . 0 | 2 | 4.7 |
| Better learning management system in place | 102 | 59.3 | 25 | 80.6 | 52 | 53.1 | 25 | 58.1 |
| Better apps in place | 120 | 69.8 | 28 | 90.3 | 71 | 72.4 | 21 | 48.8 |
| Improved accessibility for students | 115 | 66.9 | 26 | 83.9 | 65 | 66.3 | 24 | 55.8 |
| Teacher fluency with remote learning technologies | 162 | 94.2 | 30 | 96.8 | 96 | 98.0 | 36 | 83.7 |
| Teacher's integration of recommended apps/tools | 146 | 84.9 | 29 | 93.5 | 88 | 89.8 | 29 | 67.4 |
| Improved technical support for teachers | 116 | 67.4 | 24 | 77.4 | 69 | 70.4 | 23 | 53.5 |
| Increased implementation of on-grade curriculum | 91 | 52.9 | 20 | 64.5 | 59 | 60.2 | 12 | 27.9 |
| Other (please describe): | 8 | 4.7 | 1 | 3.2 | 6 | 6.1 | 1 | 2.3 |
| Overall | 172 | 100.0 | 31 | 100.0 | 98 | 100.0 | 43 | 100.0 |

Of the 8 districts that used the open-text option to describe other ways that remote learning for high school students improved from 2019-2020 to 2020-2021, responses largely focused on adjustments to the learning format and attempts to increase student engagement and accountability. Districts reported that instructional formats changed between spring 2020 and fall 2020, and over the 2020-21 school year. An increase in synchronous learning was repeatedly mentioned as schools sought to improve the effectiveness of remote learning models. Districts reported schedule adjustments, such as transitioning hybrid students to in-person learning and separating in-person learners from fully remote learnings by creating a remote academy. Districts also reported that they allocated more time to teachers in the 2020-21 school year for training, planning, and meeting with remote students. Several districts discussed attempts to increase student engagement and accountability. One district reported that they tried to require teachers and students to have their cameras on during instructional time, but that this effort was met with resistance from the staff. Another district reported that they improved student accountability by improving their attendance tracking.

Table C68. Teacher-reported improvements to remote/hybrid instruction for elementary school students
Teacher Survey Q23. In what ways did your approach to remote/hybrid instruction improve from 2019-20 to 2020-21? (Elementary teachers)

|  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| I became more knowledgeable about available learning technologies | 691 | 88.0 | 284 | 86.3 | 407 | 89.3 |
| I became more comfortable using available learning technologies | 723 | 92.1 | 301 | 91.5 | 422 | 92.5 |
| I became more knowledgeable about the effective integration of learning technologies | 519 | 66.1 | 207 | 62.9 | 312 | 68.4 |
| I now consider accessibility by all students when selecting learning technologies | 351 | 44.7 | 139 | 42.2 | 212 | 46.5 |
| I became more comfortable designing lessons that could be completed remotely | 602 | 76.7 | 241 | 73.3 | 361 | 79.2 |
| I became more comfortable communicating with students when they were learning from home | 571 | 72.7 | 234 | 71.1 | 337 | 73.9 |
| I became more comfortable communicating with the parents of remote/hybrid students | 530 | 67.5 | 226 | 68.7 | 304 | 66.7 |
| Other (please describe): | 34 | 4.3 | 13 | 4.0 | 21 | 4.6 |
| Total N | 785 | 100.0 | 329 | 100.0 | 456 | 100.0 |

Table C69. Teacher-reported improvements to remote/hybrid instruction for middle school students
Teacher Survey Q23. In what ways did your approach to remote/hybrid instruction improve from 2019-20 to 2020-21? (Middle school teachers)

|  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| I became more knowledgeable about available learning technologies | 435 | 86.3 | 134 | 84.8 | 301 | 87.0 |
| I became more comfortable using available learning technologies | 445 | 88.3 | 140 | 88.6 | 305 | 88.2 |
| I became more knowledgeable about the effective integration of learning technologies | 337 | 66.9 | 106 | 67.1 | 231 | 66.8 |
| I now consider accessibility by all students when selecting learning technologies | 254 | 50.4 | 82 | 51.9 | 172 | 49.7 |
| I became more comfortable designing lessons that could be completed remotely | 407 | 80.8 | 126 | 79.7 | 281 | 81.2 |
| I became more comfortable communicating with students when they were learning from home | 351 | 69.6 | 113 | 71.5 | 238 | 68.8 |
| I became more comfortable communicating with the parents of remote/hybrid students | 268 | 53.2 | 86 | 54.4 | 182 | 52.6 |
| Other (please describe): | 21 | 4.2 | 9 | 5.7 | 12 | 3.5 |
| Total N | 504 | 100.0 | 158 | 100.0 | 346 | 100.0 |

Table C70. Teacher-reported improvements to remote/hybrid instruction for high school students
Teacher Survey Q23. In what ways did your approach to remote/hybrid instruction improve from 2019-20 to 2020-21? (High school teachers)

|  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| I became more knowledgeable about available learning technologies | 634 | 83.0 | 185 | 80.1 | 449 | 84.2 |
| I became more comfortable using available learning technologies | 662 | 86.6 | 196 | 84.8 | 466 | 87.4 |
| I became more knowledgeable about the effective integration of learning technologies | 513 | 67.1 | 151 | 65.4 | 362 | 67.9 |
| I now consider accessibility by all students when selecting learning technologies | 331 | 43.3 | 114 | 49.4 | 217 | 40.7 |
| I became more comfortable designing lessons that could be completed remotely | 605 | 79.2 | 184 | 79.7 | 421 | 79.0 |
| I became more comfortable communicating with students when they were learning from home | 490 | 64.1 | 150 | 64.9 | 340 | 63.8 |
| I became more comfortable communicating with the parents of remote/hybrid students | 326 | 42.7 | 103 | 44.6 | 223 | 41.8 |
| Other (please describe): | 44 | 5.8 | 13 | 5.6 | 31 | 5.8 |
| Total N | 764 | 100.0 | 231 | 100.0 | 533 | 100.0 |

Table C71. Teacher-reported improvements to remote/hybrid instruction for students (mixed-level teachers)
Teacher Survey Q23. In what ways did your approach to remote/hybrid instruction improve from 2019-20 to 2020-21? (Teachers who selected multiple levels, no levels, or "ungraded")

|  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| I became more knowledgeable about available learning technologies | 250 | 90.9 | 75 | 87.2 | 175 | 92.6 |
| I became more comfortable using available learning technologies | 246 | 89.5 | 74 | 86.0 | 172 | 91.0 |
| I became more knowledgeable about the effective integration of learning technologies | 187 | 68.0 | 57 | 66.3 | 130 | 68.8 |
| I now consider accessibility by all students when selecting learning technologies | 150 | 54.5 | 43 | 50.0 | 107 | 56.6 |
| I became more comfortable designing lessons that could be completed remotely | 215 | 78.2 | 66 | 76.7 | 149 | 78.8 |
| I became more comfortable communicating with students when they were learning from home | 188 | 68.4 | 63 | 73.3 | 125 | 66.1 |
| I became more comfortable communicating with the parents of remote/hybrid students | 158 | 57.5 | 51 | 59.3 | 107 | 56.6 |
| Other (please describe): | 17 | 6.2 | 6 | 7.0 | 11 | 5.8 |
| Total N | 275 | 100.0 | 86 | 100.0 | 189 | 100.0 |

Of all the teachers who used the open-text option to share other ways their approach to remote/hybrid instruction improved from 2019-20 to 2020-21, a substantial number of teachers reported that remote teaching remained extremely challenging. At the same time, many teachers were able to describe specific ways that remote/hybrid instruction had improved, including increased familiarity with the learning format and available technologies, along with a better understanding of how to engage students virtually. Teachers reported that they had become more comfortable using apps and technology tools like Zoom and learning management platforms like Google Classroom, as well as troubleshooting when technology issues arose. Teachers reported that they learned better strategies for monitoring and increasing student engagement, such as how to monitor student devices, how to implement small group work and breakout rooms, and how to create individual connections with their students virtually. Teachers said they had improved at creating engaging digital content for their students; by the end of 2020-21, teachers had spent a great deal of time adapting their lessons and resources to a virtual format. As they gained experience with remote teaching, teacher reported that they could better provide personalized instruction and feedback to students virtually. Teachers also reported that they developed more realistic expectations for
the benefits and limitations of how students learn virtually; for example, several teachers mentioned that they adjusted the focus or pace of instruction. Remote learning enabled teachers to gain a better understanding of students' home life and more appreciation for the value of interpersonal interactions, whether in-person or virtual; many reported that they embedded social-emotional learning into their online lessons. Many teachers reported that collaboration with peers was invaluable as they worked to improve remote/hybrid instruction, especially when formal professional development was inadequate or inaccessible. Teachers also said they learned to be extremely adaptable in their teaching.

Multiple teachers reported that technology access for all students in the 2020-21 school year was a game-changer for remote learning. Other teachers reported policy changes that allowed them to require participation in synchronous classes, meaning that there was more accountability for student participation in remote instruction. Outside of student-related improvements, several teachers said that they strived to better manage expectations for themselves and maintain a healthier work-life balance. However, of the 116 teachers that used the open-text option, 22 reported that there were no improvements in their approach to remote/hybrid learning. Some of these teachers said that they were extremely overwhelmed, frustrated, and burned out; some noted that this frustration stemmed from inadequate support or unrealistic expectations from their district or school leaders, while others mentioned decreased student and parental engagement in the 2020-21 school year.

Table C72. Teacher-reported changes by grade level in the proportion of the curriculum they were able to cover Teacher Survey Q15. Of the curriculum content you would have typically covered across the school year before the pandemic, approximately what proportion were you able to cover in the following time periods?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  |  | Mean |  | Mean |  |  | Mean |  |  |
|  |  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary school | 2019-20 | 928 | 68.5 | (17.6) | 380 | 65.4 | (19.5) | 548 | 70.6 | (15.8) |
|  | 2020-21 | 963 | 72.9 | (18.5) | 398 | 69.2 | (19.3) | 565 | 75.6 | (17.5) |
|  | 2021-22 | 902 | 88.0 | (14.4) | 377 | 86.6 | (14.6) | 525 | 89.1 | (14.2) |
| Middle school | 2019-20 | 541 | 72.0 | (17.5) | 170 | 71.1 | (19.1) | 371 | 72.4 | (16.8) |
|  | 2020-21 | 560 | 72.1 | (18.2) | 178 | 69.2 | (19.4) | 382 | 73.4 | (17.5) |
|  | 2021-22 | 532 | 85.0 | (15.9) | 166 | 84.2 | (15.9) | 366 | 85.4 | (15.9) |
| High school | 2019-20 | 853 | 72.9 | (17.2) | 266 | 70.3 | (18.9) | 587 | 74.1 | (16.2) |
|  | 2020-21 | 850 | 69.2 | (17.3) | 262 | 65.9 | (18.2) | 588 | 70.6 | (16.7) |
|  | 2021-22 | 830 | 83.6 | (15.0) | 250 | 80.8 | (16.3) | 580 | 84.7 | (14.3) |
| Multiple levels, ungraded, or unknown | 2019-20 | 313 | 65.9 | (21.5) | 102 | 62.1 | (24.1) | 211 | 67.7 | (20.0) |
|  | 2020-21 | 325 | 65.9 | (20.5) | 104 | 58.3 | (22.4) | 221 | 69.5 | (18.6) |
|  | 2021-22 | 305 | 84.6 | (16.6) | 100 | 79.7 | (20.6) | 205 | 86.9 | (13.6) |

Please note, mean percent describes the mean of each participating district's reported value.

## Table C73. Teacher-reported changes in different learning models

Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?
Many teacher survey respondents used the open-ended question at the end of the survey to reflect on changes in learning models between the 2019-2020 and 2020-2021 school years. Teachers reported that at the start of the 2020-21 school year, they felt the impact of minimal learning near the end of the 2019-2020 school year. When school re-opened with hybrid or fully in-person models, some teachers said that their schools had no plan for instruction. Other teachers reported that once in-person instruction began, they began to feel more prepared and found that learning was much more effective. Teachers also reported that having even a small amount of inperson learning during the 2020-2021 academic year improved students' mental health.

Teacher survey respondents reflected on many changes in learning models that occurred during the 2020-2021 school year. One teacher described starting the year in person, then switching to non-concurrent hybrid, then to remote, then to concurrent hybrid. Teachers reported that the constant changes between learning models were exhausting and stressful. Teachers also noted that teachers and students were constantly moving in and out of quarantine during the 2020-2021 academic year, which was very disruptive to learning. Students were often at different stages in learning material, and teachers found it challenging to monitor each student's academic progress.

## Appendix D: Supports for students (Research Goal 2)

Research Question 2a. What do administrators and teachers say about the pandemic's effects on students and their families?

Table D1. Teacher-reported student academic behaviors by grade level in 2020
Teacher Survey Q7a - Q7e. When students were learning remotely during spring 2020 (start of COVID-pandemic), approximately what percent of your students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
| Elementary school | progressing with grade-level learning | 921 | 45.9 | (25.0) | 374 | 38.7 | (24.0) | 547 | 50.8 | (24.5) |
|  | completing the majority of your assignments | 921 | 50.7 | (24.4) | 372 | 43.3 | (23.1) | 549 | 55.7 | (24.0) |
|  | in contact with you nearly every day | 918 | 54.6 | (30.0) | 372 | 48.1 | (28.2) | 546 | 59.0 | (30.4) |
|  | completing advanced or enrichment content | 872 | 13.0 | (18.6) | 343 | 12.6 | (18.1) | 529 | 13.2 | (18.9) |
|  | performing better than they had in person | 849 | 9.0 | (14.9) | 333 | 9.2 | (16.1) | 516 | 8.8 | (14.1) |
| Middle school | progressing with grade-level learning | 542 | 51.5 | (25.3) | 170 | 46.0 | (24.9) | 372 | 54.1 | (25.0) |
|  | completing the majority of your assignments | 543 | 55.2 | (24.5) | 170 | 48.2 | (25.7) | 373 | 58.4 | (23.3) |
|  | in contact with you nearly every day | 537 | 46.6 | (29.5) | 168 | 46.8 | (30.3) | 369 | 46.5 | (29.2) |
|  | completing advanced or enrichment content | 508 | 14.4 | (20.5) | 160 | 13.8 | (22.4) | 348 | 14.7 | (19.6) |
|  | performing better than they had in person | 510 | 13.1 | (15.6) | 158 | 14.9 | (17.3) | 352 | 12.3 | (14.8) |
| High school | progressing with grade-level learning | 840 | 52.6 | (25.9) | 256 | 47.8 | (24.9) | 584 | 54.7 | (26.1) |
|  | completing the majority of your assignments | 841 | 55.4 | (24.8) | 257 | 48.7 | (23.4) | 584 | 58.4 | (24.8) |
|  | in contact with you nearly every day | 839 | 41.9 | (30.6) | 256 | 40.6 | (28.2) | 583 | 42.4 | (31.6) |
|  | completing advanced or enrichment content | 815 | 18.3 | (24.7) | 250 | 17.2 | (22.7) | 565 | 18.8 | (25.5) |
|  | performing better than they had in person | 820 | 15.1 | (19.7) | 253 | 13.4 | (17.4) | 567 | 15.9 | (20.6) |
| Multiple levels, ungraded, or unknown | progressing with grade-level learning | 311 | 45.0 | (26.4) | 100 | 39.0 | (25.6) | 211 | 47.9 | (26.4) |
|  | completing the majority of your assignments | 311 | 46.9 | (25.0) | 100 | 42.0 | (24.1) | 211 | 49.2 | (25.2) |
|  | in contact with you nearly every day | 307 | 44.5 | (31.3) | 99 | 41.7 | (30.2) | 208 | 45.9 | (31.8) |
|  | completing advanced or enrichment content | 286 | 12.7 | (20.3) | 93 | 14.9 | (22.6) | 193 | 11.6 | (19.1) |
|  | performing better than they had in person | 290 | 11.8 | (15.8) | 94 | 10.9 | (14.8) | 196 | 12.2 | (16.2) |

Please note, mean percent describes the mean of each participating district's reported value.

Table D2. Teacher-reported academic behaviors of fully remote students by grade level in 2020-21
Teacher Survey Q11a-Q11e. You indicated that some of your students attended school remotely for the majority of the 2020-21 school year. Over the 2020-21 school year, approximately what percent of your fully in-person students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary school | progressing with grade-level learning | 761 | 48.0 | (30.5) | 329 | 41.9 | (29.2) | 432 | 52.7 | (30.7) |
|  | completing the majority of your assignments | 761 | 52.2 | (29.8) | 329 | 46.7 | (28.3) | 432 | 56.3 | (30.2) |
|  | in contact with you nearly every day | 747 | 60.7 | (34.6) | 323 | 56.8 | (33.0) | 424 | 63.6 | (35.6) |
|  | completing advanced or enrichment content | 709 | 16.4 | (25.1) | 299 | 14.1 | (21.0) | 410 | 18.1 | (27.5) |
|  | performing better than they had in person | 699 | 12.6 | (22.6) | 308 | 12.9 | (22.4) | 391 | 12.4 | (22.9) |
| Middle school | progressing with grade-level learning | 485 | 45.4 | (27.8) | 160 | 42.9 | (26.5) | 325 | 46.7 | (28.4) |
|  | completing the majority of your assignments | 485 | 49.2 | (27.0) | 160 | 46.6 | (26.3) | 325 | 50.5 | (27.3) |
|  | in contact with you nearly every day | 482 | 51.4 | (31.4) | 159 | 50.5 | (30.5) | 323 | 51.9 | (31.8) |
|  | completing advanced or enrichment content | 460 | 11.9 | (18.7) | 153 | 15.0 | (21.9) | 307 | 10.4 | (16.6) |
|  | performing better than they had in person | 451 | 12.1 | (18.5) | 148 | 14.4 | (17.9) | 303 | 11.0 | (18.7) |
| High school | progressing with grade-level learning | 764 | 45.8 | (27.1) | 237 | 42.8 | (25.4) | 527 | 47.1 | (27.7) |
|  | completing the majority of your assignments | 765 | 49.9 | (25.6) | 238 | 46.6 | (24.1) | 527 | 51.5 | (26.1) |
|  | in contact with you nearly every day | 758 | 44.6 | (30.8) | 236 | 42.8 | (29.1) | 522 | 45.3 | (31.6) |
|  | completing advanced or enrichment content | 732 | 16.4 | (23.7) | 229 | 15.5 | (20.9) | 503 | 16.9 | (24.9) |
|  | performing better than they had in person | 736 | 15.6 | (22.1) | 230 | 15.3 | (19.6) | 506 | 15.8 | (23.1) |
| Multiple levels, ungraded, or unknown | progressing with grade-level learning | 280 | 43.4 | (29.5) | 94 | 35.6 | (27.0) | 186 | 47.3 | (30.1) |
|  | completing the majority of your assignments | 282 | 47.2 | (27.9) | 95 | 39.8 | (26.1) | 187 | 50.9 | (28.1) |
|  | in contact with you nearly every day | 274 | 48.9 | (33.8) | 93 | 40.4 | (31.3) | 181 | 53.3 | (34.3) |
|  | completing advanced or enrichment content | 257 | 12.6 | (20.3) | 86 | 10.9 | (14.9) | 171 | 13.5 | (22.6) |
|  | performing better than they had in person | 258 | 15.0 | (21.8) | 89 | 13.0 | (16.9) | 169 | 16.1 | (24.0) |

[^6]Table D3. District-reported academic behaviors of fully remote students by grade level during the 2020-21 school year District Inventory Q31emh. During the 2020-21 school year, approximately what percentage of fully remote students were...

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N | Mean Percent | (SD) | N | Mean Percent | (SD) | N | Mean <br> Percent | (SD) | N | Mean Percent | (SD) |
| Elementary <br> In contact with their teacher every day | 187 | 80.9 | (22.9) | 32 | 77.8 | (17.3) | 126 | 83.5 | (22.4) | 29 | 72.8 | (28.3) |
| Working on grade-level content | 183 | 82.4 | (23.3) | 32 | 81.2 | (18.9) | 125 | 87.3 | (18.3) | 26 | 60.0 | (34.8) |
| Completing advanced or enrichment content | 148 | 34.2 | (30.9) | 26 | 21.2 | (17.9) | 105 | 35.4 | (31.5) | 17 | 47.1 | (36.5) |
| Middle School In contact with their teacher every day | 180 | 77.6 | (23.3) | 30 | 68.0 | (18.4) | 116 | 81.8 | (22.4) | 34 | 71.8 | (27.0) |
| Working on grade-level content | 176 | 81.6 | (23.3) | 30 | 80.7 | (20.8) | 115 | 87.7 | (16.6) | 31 | 60.0 | (33.0) |
| Completing advanced or enrichment content | 149 | 34.5 | (28.0) | 27 | 18.5 | (12.5) | 102 | 38.3 | (29.3) | 20 | 37.0 | (29.9) |
| High School |  |  |  |  |  |  |  |  |  |  |  |  |
| In contact with their teacher every day | 171 | 74.9 | (23.8) | 31 | 67.1 | (18.8) | 97 | 80.5 | (21.9) | 43 | 67.9 | (27.9) |
| Working on grade-level content | 164 | 79.7 | (22.7) | 31 | 80.6 | (18.9) | 97 | 85.7 | (18.0) | 36 | 62.8 | (28.3) |
| Completing advanced or enrichment content | 140 | 34.7 | (26.3) | 29 | 23.4 | (20.9) | 88 | 39.3 | (27.9) | 23 | 31.3 | (22.0) |

Please note, mean percentage describes the mean of each participating district's reported value.

Table D4. Teacher-reported academic behaviors of hybrid students by grade level in 2020-21
Teacher Survey Q12a and Q12e. You indicated that some of your students were hybrid for the majority of the 2020-21 school year. Over the 2020-21 school year, approximately what percent of your fully in-person students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary school | progressing with grade-level learning | 595 | 56.1 | (24.8) | 273 | 50.9 | (24.4) | 322 | 60.5 | (24.2) |
|  | completing the majority of your assignments | 594 | 58.1 | (25.0) | 273 | 52.8 | (24.1) | 321 | 62.6 | (25.0) |
|  | in contact with you nearly every day | 589 | 67.0 | (30.1) | 271 | 61.5 | (28.8) | 318 | 71.6 | (30.5) |
|  | completing advanced or enrichment content | 558 | 15.8 | (21.5) | 253 | 16.0 | (19.8) | 305 | 15.7 | (22.8) |
|  | performing better than they had in person | 555 | 10.2 | (18.0) | 254 | 11.4 | (19.2) | 301 | 9.2 | (17.0) |
| Middle school | progressing with grade-level learning | 455 | 58.4 | (23.6) | 147 | 55.2 | (24.2) | 308 | 59.9 | (23.2) |
|  | completing the majority of your assignments | 454 | 60.9 | (22.2) | 147 | 57.2 | (22.3) | 307 | 62.6 | (22.0) |
|  | in contact with you nearly every day | 453 | 63.4 | (28.8) | 147 | 61.5 | (28.2) | 306 | 64.3 | (29.1) |
|  | completing advanced or enrichment content | 436 | 16.9 | (20.9) | 140 | 19.0 | (23.6) | 296 | 15.9 | (19.5) |
|  | performing better than they had in person | 436 | 13.7 | (17.7) | 142 | 16.8 | (19.5) | 294 | 12.2 | (16.7) |
| High school | progressing with grade-level learning | 741 | 59.6 | (22.5) | 217 | 54.1 | (23.3) | 524 | 61.8 | (21.7) |
|  | completing the majority of your assignments | 741 | 62.4 | (21.5) | 218 | 56.1 | (22.3) | 523 | 65.0 | (20.6) |
|  | in contact with you nearly every day | 738 | 57.7 | (29.8) | 216 | 52.0 | (29.5) | 522 | 60.1 | (29.6) |
|  | completing advanced or enrichment content | 717 | 22.3 | (25.8) | 213 | 22.0 | (23.3) | 504 | 22.5 | (26.8) |
|  | performing better than they had in person | 717 | 15.9 | (21.0) | 215 | 16.9 | (22.4) | 502 | 15.5 | (20.4) |
| Multiple levels, ungraded, or unknown | progressing with grade-level learning | 237 | 50.9 | (27.2) | 86 | 45.5 | (27.3) | 151 | 54.0 | (26.7) |
|  | completing the majority of your assignments | 238 | 53.5 | (25.9) | 87 | 52.0 | (26.8) | 151 | 54.4 | (25.4) |
|  | in contact with you nearly every day | 233 | 54.8 | (32.8) | 84 | 52.9 | (31.3) | 149 | 56.0 | (33.7) |
|  | completing advanced or enrichment content | 218 | 17.2 | (25.1) | 78 | 22.1 | (27.8) | 140 | 14.6 | (23.2) |
|  | performing better than they had in person | 223 | 15.0 | (21.9) | 80 | 17.6 | (21.9) | 143 | 13.5 | (21.8) |

Table D5. Teacher-reported academic behaviors of fully in-person students by grade level in 2020-21
Teacher Survey Q13a and Q13e. You indicated that some of your students attended school fully in-person for the majority of the 202021 school year. Over the 2020-21 school year, approximately what percent of your fully in-person students were doing each of the following?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary school | progressing with grade-level learning | 671 | 72.9 | (22.0) | 243 | 66.0 | (24.0) | 428 | 76.8 | (19.7) |
|  | completing the majority of your assignments | 670 | 80.8 | (19.3) | 243 | 74.7 | (21.4) | 427 | 84.2 | (17.1) |
|  | completing advanced or enrichment content | 649 | 28.1 | (28.4) | 228 | 23.8 | (25.7) | 421 | 30.4 | (29.6) |
| Middle school | progressing with grade-level learning | 366 | 70.4 | (22.8) | 107 | 67.1 | (24.0) | 259 | 71.7 | (22.1) |
|  | completing the majority of your assignments | 366 | 73.3 | (20.4) | 107 | 71.8 | (20.0) | 259 | 73.9 | (20.5) |
|  | completing advanced or enrichment content | 351 | 25.4 | (26.0) | 104 | 27.4 | (28.2) | 247 | 24.5 | (25.1) |
| High school | progressing with grade-level learning | 504 | 71.5 | (21.9) | 144 | 66.5 | (23.7) | 360 | 73.5 | (20.8) |
|  | completing the majority of your assignments | 504 | 73.5 | (21.1) | 144 | 68.9 | (22.8) | 360 | 75.3 | (20.2) |
|  | completing advanced or enrichment content | 495 | 30.2 | (29.3) | 142 | 29.2 | (29.0) | 353 | 30.6 | (29.5) |
| Multiple levels, ungraded, or unknown | progressing with grade-level learning | 244 | 66.3 | (27.1) | 73 | 58.2 | (28.8) | 171 | 69.8 | (25.7) |
|  | completing the majority of your assignments | 245 | 71.1 | (24.6) | 74 | 64.6 | (27.6) | 171 | 73.9 | (22.7) |
|  | completing advanced or enrichment content | 227 | 25.8 | (30.0) | 69 | 28.3 | (31.0) | 158 | 24.7 | (29.6) |

Please note, mean percent describes the mean of each participating district's reported value.

Table D6. Teacher-reported school support by grade level for student learning in 2020-21
Teacher Survey Q24_2. In your opinion, how adequately did your school support students ' academic learning during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Support was extremely inadequate | 61 | 7.1 | 37 | 10.2 | 24 | 4.8 |
|  | Support was somewhat inadequate | 177 | 20.5 | 88 | 24.2 | 89 | 17.9 |
|  | Support was neither adequate nor inadequate | 129 | 15.0 | 64 | 17.6 | 65 | 13.1 |
|  | Support was somewhat adequate | 381 | 44.2 | 141 | 38.7 | 240 | 48.2 |
|  | Support was extremely adequate | 114 | 13.2 | 34 | 9.3 | 80 | 16.1 |
|  | Total N | 862 | 100.0 | 364 | 100.0 | 498 | 100.0 |
| Middle school | Support was extremely inadequate | 37 | 7.2 | 20 | 12.3 | 17 | 4.8 |
|  | Support was somewhat inadequate | 116 | 22.6 | 37 | 22.7 | 79 | 22.5 |
|  | Support was neither adequate nor inadequate | 86 | 16.7 | 28 | 17.2 | 58 | 16.5 |
|  | Support was somewhat adequate | 207 | 40.3 | 58 | 35.6 | 149 | 42.5 |
|  | Support was extremely adequate | 68 | 13.2 | 20 | 12.3 | 48 | 13.7 |
|  | Total N | 514 | 100.0 | 163 | 100.0 | 351 | 100.0 |
| High school | Support was extremely inadequate | 68 | 8.5 | 28 | 11.5 | 40 | 7.2 |
|  | Support was somewhat inadequate | 208 | 26.1 | 77 | 31.6 | 131 | 23.7 |
|  | Support was neither adequate nor inadequate | 145 | 18.2 | 44 | 18.0 | 101 | 18.3 |
|  | Support was somewhat adequate | 314 | 39.4 | 77 | 31.6 | 237 | 42.9 |
|  | Support was extremely adequate | 62 | 7.8 | 18 | 7.4 | 44 | 8.0 |
|  | Total N | 797 | 100.0 | 244 | 100.0 | 553 | 100.0 |
| Multiple levels, ungraded, or unknown | Support was extremely inadequate | 22 | 7.5 | 12 | 12.0 | 10 | 5.2 |
|  | Support was somewhat inadequate | 57 | 19.4 | 18 | 18.0 | 39 | 20.1 |
|  | Support was neither adequate nor inadequate | 54 | 18.4 | 18 | 18.0 | 36 | 18.6 |
|  | Support was somewhat adequate | 130 | 44.2 | 40 | 40.0 | 90 | 46.4 |
|  | Support was extremely adequate | 31 | 10.5 | 12 | 12.0 | 19 | 9.8 |
|  | Total N | 294 | 100.0 | 100 | 100.0 | 194 | 100.0 |

Table D7. District-reported changes in student behavior by grade level: cyberbullying
District Inventory Q45emh_1. How problematic was cyberbullying during the pandemic compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less of a problem | 23 | 12.8 | 7 | 21.9 | 14 | 11.4 | 2 | 8.0 |
|  | Somewhat less of a problem | 20 | 11.1 | 4 | 12.5 | 13 | 10.6 | 3 | 12.0 |
|  | About the same | 95 | 52.8 | 12 | 37.5 | 70 | 56.9 | 13 | 52.0 |
|  | Somewhat more of a problem | 28 | 15.6 | 3 | 9.4 | 22 | 17.9 | 3 | 12.0 |
|  | Much more of a problem | 14 | 7.8 | 6 | 18.8 | 4 | 3.3 | 4 | 16.0 |
|  | Total N | 180 | 100.0 | 32 | 100.0 | 123 | 100.0 | 25 | 100.0 |
| Middle School | Much less of a problem | 11 | 6.3 | 1 | 3.1 | 8 | 7.1 | 2 | 6.5 |
|  | Somewhat less of a problem | 18 | 10.3 | 5 | 15.6 | 10 | 8.9 | 3 | 9.7 |
|  | About the same | 91 | 52.0 | 14 | 43.8 | 60 | 53.6 | 17 | 54.8 |
|  | Somewhat more of a problem | 39 | 22.3 | 6 | 18.8 | 29 | 25.9 | 4 | 12.9 |
|  | Much more of a problem | 16 | 9.1 | 6 | 18.8 | 5 | 4.5 | 5 | 16.1 |
|  | Total N | 175 | 100.0 | 32 | 100.0 | 112 | 100.0 | 31 | 100.0 |
| High School | Much less of a problem | 9 | 5.5 | 0 | . 0 | 7 | 7.3 | 2 | 5.4 |
|  | Somewhat less of a problem | 15 | 9.1 | 4 | 12.9 | 8 | 8.3 | 3 | 8.1 |
|  | About the same | 80 | 48.8 | 14 | 45.2 | 44 | 45.8 | 22 | 59.5 |
|  | Somewhat more of a problem | 46 | 28.0 | 8 | 25.8 | 31 | 32.3 | 7 | 18.9 |
|  | Much more of a problem | 14 | 8.5 | 5 | 16.1 | 6 | 6.3 | 3 | 8.1 |
|  | Total N | 164 | 100.0 | 31 | 100.0 | 96 | 100.0 | 37 | 100.0 |

Table D8. Teacher-reported changes in student behavior by grade level: cyberbullying
Teacher Survey Q25_3. Based on your experience, how problematic was cyberbullying for your students during the pandemic, compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Much less of a problem | 39 | 7.8 | 19 | 8.1 | 20 | 7.5 |
|  | Somewhat less of a problem | 12 | 2.4 | 6 | 2.6 | 6 | 2.3 |
|  | About the same | 215 | 42.9 | 91 | 38.7 | 124 | 46.6 |
|  | Somewhat more of a problem | 149 | 29.7 | 77 | 32.8 | 72 | 27.1 |
|  | Much more of a problem | 86 | 17.2 | 42 | 17.9 | 44 | 16.5 |
|  | Total N | 501 | 100.0 | 235 | 100.0 | 266 | 100.0 |
| Middle school | Much less of a problem | 6 | 1.3 | 5 | 3.5 | 1 | . 3 |
|  | Somewhat less of a problem | 14 | 3.0 | 6 | 4.2 | 8 | 2.5 |
|  | About the same | 177 | 38.1 | 46 | 31.9 | 131 | 40.8 |
|  | Somewhat more of a problem | 126 | 27.1 | 34 | 23.6 | 92 | 28.7 |
|  | Much more of a problem | 142 | 30.5 | 53 | 36.8 | 89 | 27.7 |
|  | Total N | 465 | 100.0 | 144 | 100.0 | 321 | 100.0 |
| High school | Much less of a problem | 10 | 1.7 | 3 | 1.7 | 7 | 1.8 |
|  | Somewhat less of a problem | 28 | 4.9 | 12 | 6.6 | 16 | 4.1 |
|  | About the same | 266 | 46.5 | 84 | 46.4 | 182 | 46.5 |
|  | Somewhat more of a problem | 156 | 27.3 | 47 | 26.0 | 109 | 27.9 |
|  | Much more of a problem | 112 | 19.6 | 35 | 19.3 | 77 | 19.7 |
|  | Total N | 572 | 100.0 | 181 | 100.0 | 391 | 100.0 |
| Multiple levels, ungraded, or unknown | Much less of a problem | 6 | 2.8 | 5 | 6.3 | 1 | . 7 |
|  | Somewhat less of a problem | 8 | 3.8 | 2 | 2.5 | 6 | 4.5 |
|  | About the same | 81 | 38.0 | 29 | 36.7 | 52 | 38.8 |
|  | Somewhat more of a problem | 69 | 32.4 | 24 | 30.4 | 45 | 33.6 |
|  | Much more of a problem | 49 | 23.0 | 19 | 24.1 | 30 | 22.4 |
|  | Total N | 213 | 100.0 | 79 | 100.0 | 134 | 100.0 |

Table D9. District-reported changes in student behavior by grade level: excessive screen time
District Inventory Q45emh_4r. How problematic was excessive screen time during the pandemic compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less of a problem | 2 | 1.1 | 0 | . 0 | 2 | 1.7 | 0 | . 0 |
|  | Somewhat less of a problem | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 3.4 |
|  | About the same | 20 | 10.9 | 3 | 9.1 | 12 | 9.9 | 5 | 17.2 |
|  | Somewhat more of a problem | 72 | 39.3 | 12 | 36.4 | 50 | 41.3 | 10 | 34.5 |
|  | Much more of a problem | 87 | 47.5 | 18 | 54.5 | 56 | 46.3 | 13 | 44.8 |
|  | Total N | 183 | 100.0 | 33 | 100.0 | 121 | 100.0 | 29 | 100.0 |
| Middle School | Much less of a problem | 1 | . 6 | 0 | . 0 | 1 | . 9 | 0 | . 0 |
|  | Somewhat less of a problem | 2 | 1.1 | 0 | . 0 | 1 | . 9 | 1 | 3.0 |
|  | About the same | 21 | 12.0 | 2 | 6.3 | 13 | 11.8 | 6 | 18.2 |
|  | Somewhat more of a problem | 69 | 39.4 | 14 | 43.8 | 47 | 42.7 | 8 | 24.2 |
|  | Much more of a problem | 82 | 46.9 | 16 | 50.0 | 48 | 43.6 | 18 | 54.5 |
|  | Total N | 175 | 100.0 | 32 | 100.0 | 110 | 100.0 | 33 | 100.0 |
| High School | Much less of a problem | 1 | . 6 | 0 | . 0 | 1 | 1.0 | 0 | . 0 |
|  | Somewhat less of a problem | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | About the same | 20 | 12.0 | 3 | 9.7 | 11 | 11.5 | 6 | 15.4 |
|  | Somewhat more of a problem | 65 | 39.2 | 13 | 41.9 | 39 | 40.6 | 13 | 33.3 |
|  | Much more of a problem | 80 | 48.2 | 15 | 48.4 | 45 | 46.9 | 20 | 51.3 |
|  | Total N | 166 | 100.0 | 31 | 100.0 | 96 | 100.0 | 39 | 100.0 |

Table D10. Teacher-reported changes in student behavior by grade level: excessive screen time
Teacher Survey Q25_5r. Based on your experience, how problematic was excessive screen time for your students during the pandemic, compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Much less of a problem | 6 | . 7 | 4 | 1.1 | 2 | . 4 |
|  | Somewhat less of a problem | 8 | . 9 | 2 | . 5 | 6 | 1.2 |
|  | About the same | 49 | 5.6 | 20 | 5.5 | 29 | 5.7 |
|  | Somewhat more of a problem | 215 | 24.6 | 81 | 22.3 | 134 | 26.2 |
|  | Much more of a problem | 597 | 68.2 | 257 | 70.6 | 340 | 66.5 |
|  | Total N | 875 | 100.0 | 364 | 100.0 | 511 | 100.0 |
| Middle school | Much less of a problem | 2 | . 4 | 1 | . 6 | 1 | . 3 |
|  | Somewhat less of a problem | 4 | . 8 | 0 | . 0 | 4 | 1.1 |
|  | About the same | 34 | 6.5 | 11 | 6.7 | 23 | 6.4 |
|  | Somewhat more of a problem | 102 | 19.4 | 30 | 18.3 | 72 | 19.9 |
|  | Much more of a problem | 383 | 73.0 | 122 | 74.4 | 261 | 72.3 |
|  | Total N | 525 | 100.0 | 164 | 100.0 | 361 | 100.0 |
| High school | Much less of a problem | 7 | . 9 | 2 | . 9 | 5 | . 9 |
|  | Somewhat less of a problem | 3 | . 4 | 1 | . 4 | 2 | . 4 |
|  | About the same | 58 | 7.4 | 13 | 5.7 | 45 | 8.2 |
|  | Somewhat more of a problem | 157 | 20.1 | 45 | 19.6 | 112 | 20.4 |
|  | Much more of a problem | 555 | 71.2 | 169 | 73.5 | 386 | 70.2 |
|  | Total N | 780 | 100.0 | 230 | 100.0 | 550 | 100.0 |
| Multiple levels, ungraded, or unknown | Much less of a problem | 4 | 1.4 | 2 | 2.1 | 2 | 1.1 |
|  | Somewhat less of a problem | 2 | . 7 | 1 | 1.1 | 1 | . 5 |
|  | About the same | 23 | 8.1 | 8 | 8.4 | 15 | 7.9 |
|  | Somewhat more of a problem | 66 | 23.2 | 19 | 20.0 | 47 | 24.7 |
|  | Much more of a problem | 190 | 66.7 | 65 | 68.4 | 125 | 65.8 |
|  | Total N | 285 | 100.0 | 95 | 100.0 | 190 | 100.0 |

Table D11. District-reported changes in student behavior by grade level: lack of connection to school
District Inventory Q45_5r. How problematic was lack of connection to school during the pandemic compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less of a problem | 1 | . 5 | 0 | . 0 | 1 | . 8 | 0 | . 0 |
|  | Somewhat less of a problem | 4 | 2.1 | 0 | . 0 | 3 | 2.4 | 1 | 3.4 |
|  | About the same | 18 | 9.6 | 3 | 9.1 | 10 | 8.0 | 5 | 17.2 |
|  | Somewhat more of a problem | 83 | 44.4 | 10 | 30.3 | 67 | 53.6 | 6 | 20.7 |
|  | Much more of a problem | 81 | 43.3 | 20 | 60.6 | 44 | 35.2 | 17 | 58.6 |
|  | Total N | 187 | 100.0 | 33 | 100.0 | 125 | 100.0 | 29 | 100.0 |
| Middle School | Much less of a problem | 2 | 1.1 | 0 | . 0 | 2 | 1.7 | 0 | . 0 |
|  | Somewhat less of a problem | 4 | 2.2 | 0 | . 0 | 2 | 1.7 | 2 | 5.7 |
|  | About the same | 14 | 7.7 | 1 | 3.1 | 7 | 6.0 | 6 | 17.1 |
|  | Somewhat more of a problem | 83 | 45.4 | 12 | 37.5 | 63 | 54.3 | 8 | 22.9 |
|  | Much more of a problem | 80 | 43.7 | 19 | 59.4 | 42 | 36.2 | 19 | 54.3 |
|  | Total N | 183 | 100.0 | 32 | 100.0 | 116 | 100.0 | 35 | 100.0 |
| High School | Much less of a problem | 1 | . 6 | 0 | . 0 | 1 | 1.0 | 0 | . 0 |
|  | Somewhat less of a problem | 2 | 1.2 | 0 | . 0 | 0 | . 0 | 2 | 4.9 |
|  | About the same | 16 | 9.4 | 2 | 6.5 | 6 | 6.1 | 8 | 19.5 |
|  | Somewhat more of a problem | 67 | 39.4 | 10 | 32.3 | 49 | 50.0 | 8 | 19.5 |
|  | Much more of a problem | 84 | 49.4 | 19 | 61.3 | 42 | 42.9 | 23 | 56.1 |
|  | Total N | 170 | 100.0 | 31 | 100.0 | 98 | 100.0 | 41 | 100.0 |

Table D12. Teacher-reported changes in student behavior by grade level: lack of connection to school
Teacher Survey Q25_6r. Based on your experience, how problematic was lack of connection to school for your students during the pandemic, compared to before the pandemic?


Table D13. District-reported changes in student behavior by grade level: sexting
District Inventory Q45emh_3r. How problematic was sexting during the pandemic compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid <br> Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less of a problem | 27 | 16.6 | 9 | 29.0 | 16 | 14.7 | 2 | 8.7 |
|  | Somewhat less of a problem | 10 | 6.1 | 1 | 3.2 | 7 | 6.4 | 2 | 8.7 |
|  | About the same | 109 | 66.9 | 15 | 48.4 | 79 | 72.5 | 15 | 65.2 |
|  | Somewhat more of a problem | 9 | 5.5 | 2 | 6.5 | 6 | 5.5 | 1 | 4.3 |
|  | Much more of a problem | 8 | 4.9 | 4 | 12.9 | 1 | . 9 | 3 | 13.0 |
|  | Total N | 163 | 100.0 | 31 | 100.0 | 109 | 100.0 | 23 | 100.0 |
| Middle School | Much less of a problem | 13 | 7.9 | 2 | 6.5 | 9 | 8.7 | 2 | 6.7 |
|  | Somewhat less of a problem | 12 | 7.3 | 3 | 9.7 | 7 | 6.7 | 2 | 6.7 |
|  | About the same | 108 | 65.5 | 17 | 54.8 | 70 | 67.3 | 21 | 70.0 |
|  | Somewhat more of a problem | 23 | 13.9 | 6 | 19.4 | 15 | 14.4 | 2 | 6.7 |
|  | Much more of a problem | 9 | 5.5 | 3 | 9.7 | 3 | 2.9 | 3 | 10.0 |
|  | Total N | 165 | 100.0 | 31 | 100.0 | 104 | 100.0 | 30 | 100.0 |
| High School | Much less of a problem | 7 | 4.5 | 1 | 3.2 | 5 | 5.5 | 1 | 2.9 |
|  | Somewhat less of a problem | 12 | 7.7 | 1 | 3.2 | 8 | 8.8 | 3 | 8.8 |
|  | About the same | 102 | 65.4 | 19 | 61.3 | 59 | 64.8 | 24 | 70.6 |
|  | Somewhat more of a problem | 27 | 17.3 | 7 | 22.6 | 16 | 17.6 | 4 | 11.8 |
|  | Much more of a problem | 8 | 5.1 | 3 | 9.7 | 3 | 3.3 | 2 | 5.9 |
|  | Total N | 156 | 100.0 | 31 | 100.0 | 91 | 100.0 | 34 | 100.0 |

Table D14. Teacher-reported services provided to IEP students by grade level
Teacher Survey Q16. During the 2020-21 school year, to what extent do you believe your students with IEPs received the services specified in their IEPs?


Table D15. Teacher-reported services provided to EL students by grade level
Teacher Survey Q17. During the 2020-21 school year, to what extent do you believe your English learner (EL) students received the services normally provided?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Not at all | 90 | 13.7 | 54 | 19.6 | 36 | 9.4 |
|  | Somewhat | 315 | 47.8 | 142 | 51.6 | 173 | 45.1 |
|  | Mostly | 183 | 27.8 | 62 | 22.5 | 121 | 31.5 |
|  | Completely | 71 | 10.8 | 17 | 6.2 | 54 | 14.1 |
|  | Total N | 659 | 100.0 | 275 | 100.0 | 384 | 100.0 |
| Middle school | Not at all | 49 | 13.0 | 20 | 16.1 | 29 | 11.5 |
|  | Somewhat | 211 | 56.1 | 77 | 62.1 | 134 | 53.2 |
|  | Mostly | 94 | 25.0 | 24 | 19.4 | 70 | 27.8 |
|  | Completely | 22 | 5.9 | 3 | 2.4 | 19 | 7.5 |
|  | Total N | 376 | 100.0 | 124 | 100.0 | 252 | 100.0 |
| High school | Not at all | 92 | 15.6 | 29 | 16.7 | 63 | 15.2 |
|  | Somewhat | 338 | 57.5 | 113 | 64.9 | 225 | 54.3 |
|  | Mostly | 119 | 20.2 | 26 | 14.9 | 93 | 22.5 |
|  | Completely | 39 | 6.6 | 6 | 3.4 | 33 | 8.0 |
|  | Total N | 588 | 100.0 | 174 | 100.0 | 414 | 100.0 |
| Multiple levels, ungraded, or unknown | Not at all | 31 | 13.5 | 13 | 16.0 | 18 | 12.1 |
|  | Somewhat | 120 | 52.2 | 44 | 54.3 | 76 | 51.0 |
|  | Mostly | 54 | 23.5 | 16 | 19.8 | 38 | 25.5 |
|  | Completely | 25 | 10.9 | 8 | 9.9 | 17 | 11.4 |
|  | Total N | 230 | 100.0 | 81 | 100.0 | 149 | 100.0 |

Table D16. Teacher-reported changes in resources/supports needed by elementary students
Teacher Survey Q27_1r to Q27_11r. Based on your experience, how much of a need did your students have for the following resources/supports during the pandemic compared to before the pandemic? (Elementary teachers)

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| One-on-one meetings with me | 582 | 4.1 | (.9) | 240 | 4.1 | (1.0) | 342 | 4.1 | (.9) |
| Free tutoring (1:1 or small group) | 523 | 4.1 | (.9) | 221 | 4.2 | (.9) | 302 | 4.1 | (.9) |
| Meetings with reading specialist | 494 | 4.0 | (.9) | 201 | 4.0 | (.9) | 293 | 3.9 | (.9) |
| Meetings with math specialist | 486 | 4.0 | (.9) | 194 | 4.1 | (.9) | 292 | 3.9 | (.9) |
| Extra online materials for students to use on their own | 553 | 4.0 | (.9) | 228 | 4.0 | (1.0) | 325 | 4.0 | (.9) |
| Special courses | 292 | 3.7 | (1.0) | 131 | 3.8 | (1.0) | 161 | 3.6 | (1.0) |
| Technology devices | 583 | 4.4 | (.9) | 245 | 4.5 | (.9) | 338 | 4.4 | (.9) |
| Improved Wi-Fi access | 579 | 4.4 | (.9) | 247 | 4.5 | (.8) | 332 | 4.3 | (.9) |
| Food assistance | 503 | 4.2 | (.9) | 227 | 4.4 | (.8) | 276 | 4.1 | (.9) |
| Behavioral health services | 535 | 4.4 | (.8) | 218 | 4.4 | (.8) | 317 | 4.4 | (.8) |
| Other | 87 | 4.3 | (1.0) | 41 | 4.4 | (.9) | 46 | 4.2 | (1.0) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table D17. Teacher-reported changes in resources/supports needed by middle school students
Teacher Survey Q27_1r to Q27_11r. Based on your experience, how much of a need did your students have for the following resources/supports during the pandemic compared to before the pandemic? (Middle school teachers)

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| One-on-one meetings with me | 340 | 3.9 | (.9) | 111 | 4.0 | (1.0) | 229 | 3.9 | (.9) |
| Free tutoring (1:1 or small group) | 316 | 3.9 | (1.0) | 101 | 3.9 | (1.0) | 215 | 3.9 | (.9) |
| Meetings with reading specialist | 240 | 3.7 | (.9) | 66 | 3.9 | (1.1) | 174 | 3.7 | (.9) |
| Meetings with math specialist | 239 | 3.8 | (.9) | 66 | 4.0 | (1.0) | 173 | 3.8 | (.9) |
| Extra online materials for students to use on their own | 319 | 3.8 | (1.0) | 103 | 3.7 | (1.0) | 216 | 3.8 | (.9) |
| Special courses | 217 | 3.8 | (.9) | 69 | 4.0 | (.9) | 148 | 3.7 | (.9) |
| Technology devices | 337 | 4.2 | (.9) | 112 | 4.3 | (.9) | 225 | 4.2 | (1.0) |
| Improved Wi-Fi access | 332 | 4.4 | (.8) | 114 | 4.5 | (.7) | 218 | 4.4 | (.8) |
| Food assistance | 296 | 4.1 | (.9) | 108 | 4.4 | (.9) | 188 | 4.0 | (.9) |
| Behavioral health services | 314 | 4.4 | (.8) | 105 | 4.5 | (.9) | 209 | 4.4 | (.8) |
| Other | 49 | 4.2 | (.9) | 15 | 4.3 | (1.0) | 34 | 4.1 | (.9) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table D18. Teacher-reported changes in resources/supports needed by high school students
Teacher Survey Q27_1r to Q27_11r. Based on your experience, how much of a need did your students have for the following resources/supports during the pandemic compared to before the pandemic? (High school teachers)

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| One-on-one meetings with me | 522 | 3.8 | (1.0) | 149 | 3.9 | (1.1) | 373 | 3.8 | (1.0) |
| Free tutoring (1:1 or small group) | 475 | 3.9 | (.9) | 134 | 3.9 | (1.0) | 341 | 3.8 | (.9) |
| Meetings with reading specialist | 246 | 3.6 | (1.0) | 68 | 3.9 | (1.1) | 178 | 3.5 | (.9) |
| Meetings with math specialist | 241 | 3.7 | (1.0) | 70 | 4.0 | (1.0) | 171 | 3.6 | (1.0) |
| Extra online materials for students to use on their own | 471 | 3.8 | (1.0) | 132 | 3.8 | (1.0) | 339 | 3.8 | (.9) |
| Special courses | 399 | 4.2 | (.9) | 128 | 4.4 | (.8) | 271 | 4.2 | (.9) |
| Technology devices | 523 | 4.2 | (1.0) | 150 | 4.3 | (1.0) | 373 | 4.2 | (1.0) |
| Improved Wi-Fi access | 523 | 4.3 | (.9) | 149 | 4.5 | (.8) | 374 | 4.3 | (.9) |
| Food assistance | 408 | 4.2 | (.8) | 135 | 4.4 | (.8) | 273 | 4.1 | (.9) |
| Behavioral health services | 453 | 4.5 | (.8) | 130 | 4.6 | (.7) | 323 | 4.4 | (.8) |
| Other | 78 | 3.9 | (1.1) | 27 | 4.0 | (1.1) | 51 | 3.9 | (1.1) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table D19. Teacher-reported changes in resources/supports needed by students (mixed-level)
Teacher Survey Q27_1r to Q27_11r. Based on your experience, how much of a need did your students have for the following resources/supports during the pandemic compared to before the pandemic? (Teachers who selected multiple levels, no levels, or "ungraded")

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| One-on-one meetings with me | 200 | 3.9 | (1.0) | 67 | 3.9 | (1.1) | 133 | 4.0 | (1.0) |
| Free tutoring (1:1 or small group) | 183 | 4.0 | (1.0) | 66 | 4.0 | (1.0) | 117 | 4.0 | (1.0) |
| Meetings with reading specialist | 129 | 3.8 | (1.0) | 43 | 3.8 | (1.1) | 86 | 3.8 | (.9) |
| Meetings with math specialist | 134 | 3.9 | (1.0) | 44 | 3.9 | (1.0) | 90 | 3.8 | (.9) |
| Extra online materials for students to use on their own | 185 | 3.9 | (.9) | 60 | 3.7 | (1.1) | 125 | 4.0 | (.8) |
| Special courses | 133 | 4.0 | (1.0) | 47 | 3.9 | (1.0) | 86 | 4.0 | (1.0) |
| Technology devices | 198 | 4.3 | (1.0) | 66 | 4.4 | (1.0) | 132 | 4.3 | (1.0) |
| Improved Wi-Fi access | 198 | 4.4 | (.9) | 67 | 4.6 | (.8) | 131 | 4.3 | (1.0) |
| Food assistance | 166 | 4.1 | (.9) | 59 | 4.2 | (1.0) | 107 | 4.0 | (.9) |
| Behavioral health services | 176 | 4.4 | (.9) | 61 | 4.2 | (1.1) | 115 | 4.5 | (.7) |
| Other | 31 | 3.8 | (1.1) | 12 | 3.7 | (1.3) | 19 | 3.8 | (1.0) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.
Of the approximately 150 teachers who used the "other" open-text option to share resources and supports needed by students during the pandemic, the most common theme was support for students' social-emotional development, including an increased focus on social-emotional learning. Many teachers mentioned that students needed connections with teachers and peers, time to socialize with their peers, and opportunities develop their interpersonal skills. Teachers reported that students needed support with mental health and motivation. Many teachers also said their school needed additional staff to support students social-emotionally as well as academically, both during the school day and outside school hours.

In terms of academic learning, teachers reported that students needed additional learning resources, technology support, and modified academic instruction (including smaller class sizes, flexible learning models, re-teaching, and a modified learning pace) to account for the effects of the pandemic. Students also needed help connecting to resources and completing assignments remotely, especially when using unfamiliar devices, platforms, or apps. Other teachers focused on the need for student accountability in the areas of attendance and completion of assignments, to ensure that students were actively participating in their learning. Many teachers reported that increased parental engagement and supervision was necessary for students to be successful with remote instruction. Some teachers talked about the need for more effective behavioral management and discipline during in-person learning, while others described the
importance of routines and structure to help students remain engaged in learning. Other teachers also mentioned the need for hands-on activities, play-based learning, and breaks from constant online instruction.

Table D20. Teacher-reported effects of pandemic on students and their families
Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

## Impacts on Students: Learning/Academic.

Through the open-ended question at the end of the teacher survey, respondents reported substantial learning loss among their students. One teacher commented that, "students covered up their lack of progress/mastery during fully remote that are discovered once we returned to school." Respondents said that students were passed on to the next grade level at the end of the 2019-20 academic year, despite being academically behind by at least one grade level. Another teacher explained "at the high school level, over half the population of our student cannot do basic math or write a grammatically correct sentence." Much of the foundational knowledge required to learn new subject material was forgotten. Students seemed to forget how to be students due to the pandemic, with teachers revealing student difficulty in following classroom routines and poor handwriting skills. At the same time, many teacher survey respondents agreed that students who were dedicated to learning were able to learn throughout the pandemic. Respondents also noted that students became more knowledgeable about technology, which aided student learning. Some teacher survey respondents said that students were more open to trying new learning techniques and exhibited increased patience.

## Impacts on Students: Effects of pandemic on student conduct/behavior/engagement/work ethic

Of the teachers that responded to the open-ended teacher survey question, the most-reported effect of the pandemic on students was severe behavioral issues. Many teachers shared that students returning to the in-person environment after remote learning lacked empathy, struggled with conflict resolution, and displayed disrespectful and argumentative behavior. Furthermore, many noted that students became increasingly dependent on devices and social media, leading to ongoing digital cheating and a lack of focus and engagement on academic tasks. This lack of focus and motivation was reported frequently by teachers as a result of remote learning. Returning students struggled to acclimate to a structured school environment and were easily distracted, couldn't manage their time, unable to collaborate effectively with others, and unmotivated to perform. This was compounded by a lack of academic accountability that arose during the pandemic and remained in many districts even after the return to fully in-person learning; teachers reported that students were not held accountable for their behavior, and that it bred a lack of academic development and personal responsibility.

According to the end-of-survey open-ended teacher question, some students' engagement, conduct, and/or behavior was positively impacted by the pandemic. For example, some teachers noted that students with special needs or mental health issues participated more freely in the remote environment and performed better without classroom distractions. Furthermore, students became more
technologically literate and flexible in their learning. They had to learn time management skills to complete assignments remotely, they became more willing to try new things, and they learned to collaborate patiently and effectively with other students. Teachers noted that students that were dedicated to their learning excelled during remote instruction.

## Impacts on Students: Socio-emotional and Interpersonal

Teacher survey respondents commented about increases in several negative emotions, including frustration and anger. Respondents noted that the pandemics made students more socially isolated than in the past. Some respondents stated that students had lost the ability to interact with peers, could not engage in productive conflict resolution, and exhibited poor coping skills. Teachers pointed to students' dependence on technology and social media as reasons for underdeveloped interpersonal skills. One teacher noted "students lack more empathy ... There are constant bullying, fights, and crying students with drama." Teachers observed a mismatch between students' grade level and maturity level, with many referencing teaching students behaving 2-3 years below their grade level. In addition, many respondents commented about the number of students who experienced severe mental health crises during the pandemic, including depression and anxiety. One teacher said they "had more students hospitalized for psych issues in the last 2 years than in the previous 14 combined."

## Impacts on Parents: Family Engagement and Support

In their responses to the open-ended question at the end of the teacher survey, teachers expressed concern about inadequate parental involvement and supervision of student's learning during the pandemic. Respondents noted that parents' work obligations affected the extent to which students participated in school. One teacher said, "Work and food were top priorities. Schoolwork was not." Language barriers made it difficult for some parents to engage with teachers or help their children with schoolwork. Teachers also noted that some parents took advantage of the lenient attendance policies, allowing their children to stay home and learn remotely even when they had the ability to attend in-person classes. Teachers also described an unexpected benefit of remote and hybrid learning: the pandemic exposed parents to what a school day is like, garnering more appreciation for teachers and more recognition of the importance of parent involvement in students' academics. Remote learning also provided opportunities for teachers to connect with parents in ways that hadn't been possible previously. Overall, actively involved parents supported remote learning and made teachers feel more connected to their students.

## Impacts on Students: Family Relationships \& Responsibilities

Finally, teacher survey respondents noted that their students experienced an array of family situations that impacted learning and school engagement. Many teachers saw students taking on parent/caregiver roles. One teacher explained that some "students became sole breadwinners of their families. Others had to take care of younger siblings while parents or guardians juggled whatever jobs they
could find. Survival came first, schoolwork second." Some respondents noted that for some students who had family obligations, online learning formats were beneficial.

## Impacts on Students: Services for Special Education Students

Via the open-ended question at the end of the teacher survey, teachers expressed concern about the lack of resources for teachers to use with students' emerging needs for learning support. Some students who might qualify for special education services, including Birth to Three, were not assessed because of the pandemic. Respondents also voiced a need for more teacher training in special education, along with increased access to intervention services and support to help teachers meet Individualized Education Program (IEP) accommodations.

## Impacts on Students: Services for English Learner Students

Similarly, responses to the open-ended teacher survey question indicated that ESL services were minimal or nonexistent during the pandemic, which made it difficult for English Learner students to engage with classroom material.

Research Question 2b. What technological and other resources did districts provide to support student learning during the pandemic, and what technology challenges did students experience?

Table D21. District-reported access to electronic devices for elementary school students prior to the COVID-19 pandemic District Inventory: Q4_7e - Q4_9e. Which of the following accurately describes the following learning opportunities for your district's elementary school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Each student had access to a school-provided device for use in school as needed for class (e.g., Chromebook cart) | 134 | 69.4 | 25 | 78.1 | 92 | 70.8 | 17 | 54.8 |
| Each student had a personal school-provided device for use at home or school | 35 | 18.1 | 5 | 15.6 | 27 | 20.8 | 3 | 9.7 |
| Each student could bring their own device or select to use a school-provided device | 29 | 15.0 | 4 | 12.5 | 17 | 13.1 | 8 | 25.8 |
| None of the above | 51 | 26.4 | 7 | 21.9 | 31 | 23.8 | 13 | 41.9 |
| Total N | 193 | 100.0 | 32 | 100.0 | 130 | 100.0 | 31 | 100.0 |

Table D22. District-reported mean percentage of elementary students with access to digital devices as of March 1, 2020.
District Inventory Q41.1e. Please estimate the percentage of elementary students who had access to digital devices at home as of March 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 170 | 60.1 | (38.6) | 24 | 56.7 | (43.3) | 116 | 61.9 | (39.3) | 30 | 56.0 | (32.0) |
| Chromebooks, laptops, or iPads provided by the student/family | 156 | 49.5 | (29.8) | 27 | 35.6 | (27.8) | 98 | 54.4 | (29.4) | 31 | 46.1 | (29.4) |
| Smartphones only | 84 | 33.1 | (27.5) | 16 | 45.6 | (26.3) | 55 | 27.1 | (23.4) | 13 | 43.1 | (37.5) |
| No mobile device | 66 | 18.3 | (21.3) | 12 | 30.0 | (29.5) | 44 | 15.0 | (19.5) | 10 | 19.0 | (12.9) |

Table D23. District-reported mean percentage of elementary students with access to digital devices as of May 1, 2020
District Inventory: Q41.2e. Please estimate the percentage of elementary students who had access to digital devices at home as of May 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 194 | 87.2 | (21.4) | 33 | 88.5 | (18.7) | 129 | 87.7 | (22.2) | 32 | 83.8 | (21.1) |
| Chromebooks, laptops, or iPads provided by the student/family | 163 | 50.5 | (30.7) | 31 | 32.9 | (28.2) | 101 | 56.2 | (29.8) | 31 | 49.4 | (30.3) |
| Smartphones only | 62 | 21.3 | (26.1) | 16 | 29.4 | (32.1) | 37 | 16.8 | (21.2) | 9 | 25.6 | (31.3) |
| No mobile device | 39 | 14.6 | (20.2) | 8 | 23.7 | (27.2) | 26 | 13.5 | (19.2) | 5 | 6.0 | (5.5) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D24. District-reported mean percentage of elementary students with access to digital devices as of November 1, 2020 District Inventory Q41.3e. Please estimate the percentage of elementary students who had access to digital devices at home as of November 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean <br> Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 193 | 94.6 | (15.5) | 32 | 98.1 | (4.7) | 130 | 95.2 | (15.6) | 31 | 88.4 | (20.3) |
| Chromebooks, laptops, or iPads provided by the student/family | 162 | 51.6 | (31.2) | 31 | 34.8 | (27.6) | 100 | 58.0 | (30.3) | 31 | 47.7 | (31.4) |
| Smartphones only | 44 | 25.5 | (30.5) | 11 | 36.4 | (33.2) | 25 | 18.0 | (23.6) | 8 | 33.8 | (41.7) |
| No mobile device | 29 | 13.8 | (20.9) | 7 | 25.7 | (28.8) | 18 | 11.1 | (18.4) | 4 | 5.0 | (5.8) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D25. District-reported access to electronic devices middle school students prior to the COVID-19 pandemic District Inventory: Q4_7m - Q4_9m. Which of the following accurately describes the following learning opportunities for your district's middle school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Each student had access to a school-provided device for use in school as needed for class (e.g., Chromebook cart) | 146 | 77.2 | 25 | 80.6 | 99 | 81.1 | 22 | 61.1 |
| Each student had a personal school-provided device for use at home or school | 74 | 39.2 | 10 | 32.3 | 59 | 48.4 | 5 | 13.9 |
| Each student could bring their own device or select to use a school-provided device | 57 | 30.2 | 6 | 19.4 | 40 | 32.8 | 11 | 30.6 |
| None of the above | 32 | 16.9 | 5 | 16.1 | 15 | 12.3 | 12 | 33.3 |
| Total N | 189 | 100.0 | 31 | 100.0 | 122 | 100.0 | 36 | 100.0 |

Table D26. District-reported mean percentage of middle school students with access to digital devices as of March 2020
District Inventory Q41.1m. Please estimate the percentage of middle school students who had access to digital devices at home as of March 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 176 | 70.2 | (36.7) | 26 | 62.3 | (40.7) | 114 | 76.2 | (35.1) | 36 | 56.9 | (35.0) |
| Chromebooks, laptops, or iPads provided by the student/family | 143 | 48.7 | (32.0) | 22 | 36.8 | (27.8) | 89 | 54.2 | (33.1) | 32 | 41.9 | (28.3) |
| Smartphones only | 68 | 37.1 | (31.0) | 16 | 54.4 | (29.7) | 39 | 29.7 | (27.1) | 13 | 37.7 | (36.8) |
| No mobile device | 47 | 18.3 | (21.1) | 9 | 16.7 | (17.3) | 28 | 19.3 | (24.3) | 10 | 17.0 | (14.9) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Tables D27. District-reported mean percentage of middle school students with access to digital devices as of May 2020
District Inventory Q41.2m. Please estimate the percentage of middle school students who had access to digital devices at home as of May 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 192 | 87.7 | (22.8) | 31 | 89.7 | (17.2) | 123 | 89.5 | (21.9) | 38 | 80.3 | (27.9) |
| Chromebooks, laptops, or iPads provided by the student/family | 144 | 50.9 | (32.1) | 23 | 37.4 | (26.7) | 89 | 55.8 | (33.4) | 32 | 46.9 | (29.5) |
| Smartphones only | 43 | 28.6 | (33.4) | 12 | 44.2 | (38.7) | 22 | 22.3 | (29.1) | 9 | 23.3 | (32.4) |
| No mobile device | 30 | 14.0 | (19.2) | 9 | 10.0 | (7.1) | 16 | 18.1 | (25.4) | 5 | 8.0 | (4.5) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Tables D28. District-reported mean percentage of middle school students with access to digital devices as of Nov 2020
District Inventory Q41.3m. Please estimate the percentage of middle school students who had access to digital devices at home as off November 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  |  | Mean |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  | N* | Percent | (SD) | N* | Percent | (SD) | N* | Percent | (SD) | N* | Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 192 | 93.0 | (18.9) | 31 | 97.7 | (5.0) | 124 | 94.2 | (17.3) | 37 | 84.9 | (27.7) |
| Chromebooks, laptops, or iPads provided by the student/family | 144 | 51.7 | (32.9) | 23 | 40.4 | (27.4) | 89 | 57.0 | (34.2) | 32 | 45.3 | (30.4) |
| Smartphones only | 31 | 35.8 | (38.0) | 9 | 56.7 | (36.7) | 15 | 22.7 | (32.2) | 7 | 37.1 | (43.9) |
| No mobile device | 26 | 11.9 | (19.2) | 8 | 10.0 | (5.3) | 13 | 15.4 | (26.7) | 5 | 6.0 | (5.5) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D29. District-reported access to electronic devices for high school students prior to the COVID-19 pandemic District Inventory: Q4_7h - Q4_9h. Which of the following accurately describes the following learning opportunities for your district's high school students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Each student had access to a school-provided device for use in school as needed for class (e.g., Chromebook cart) | 124 | 71.7 | 24 | 80.0 | 75 | 74.3 | 25 | 59.5 |
| Each student had a personal school-provided device for use at home or school | 78 | 45.1 | 16 | 53.3 | 54 | 53.5 | 8 | 19.0 |
| Each student could bring their own device or select to use a school-provided device | 80 | 46.2 | 9 | 30.0 | 56 | 55.4 | 15 | 35.7 |
| None of the above | 26 | 15.0 | 4 | 13.3 | 10 | 9.9 | 12 | 28.6 |
| Total N | 173 | 100.0 | 30 | 100.0 | 101 | 100.0 | 42 | 100.0 |

Table D30. District-reported mean percentage high school students with access to digital devices as of March 2020
District Inventory Q41.1h. Please estimate the percentage of high school students who had access to digital devices at home as of March 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 165 | 71.9 | (37.5) | 27 | 67.0 | (37.5) | 96 | 77.2 | (36.1) | 42 | 63.1 | (39.3) |
| Chromebooks, laptops, or iPads provided by the student/family | 131 | 50.6 | (33.7) | 21 | 35.7 | (24.4) | 76 | 55.1 | (35.1) | 34 | 49.7 | (33.4) |
| Smartphones only | 60 | 34.3 | (32.9) | 15 | 60.0 | (34.8) | 29 | 26.9 | (29.7) | 16 | 23.8 | (24.5) |
| No mobile device | 39 | 12.1 | (12.8) | 6 | 11.7 | (11.7) | 20 | 12.5 | (14.8) | 13 | 11.5 | (10.7) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D31. District-reported mean percentage high school students with access to digital devices as of May 2020
District Inventory Q41.2h. Please estimate the percentage of high school students who had access to digital devices at home as of May 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 180 | 86.7 | (25.7) | 31 | 92.5 | (12.9) | 105 | 89.3 | (24.2) | 44 | 76.4 | (32.6) |
| Chromebooks, laptops, or iPads provided by the student/family | 133 | 52.0 | (33.7) | 22 | 35.5 | (23.9) | 76 | 56.3 | (35.1) | 35 | 53.1 | (33.2) |
| Smartphones only | 38 | 32.9 | (36.2) | 10 | 53.0 | (41.1) | 15 | 29.3 | (34.5) | 13 | 21.5 | (30.0) |
| No mobile device | 28 | 10.7 | (8.6) | 6 | 11.7 | (7.5) | 15 | 10.7 | (9.6) | 7 | 10.0 | (8.2) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D32. District-reported mean percentage high school students with access to digital devices as of Nov 2020
District Inventory Q41.3h. Please estimate the percentage of high school students who had access to digital devices at home as of November 1, 2020.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N* | Mean Percent | (SD) | $\mathrm{N}^{*}$ | Mean Percent | (SD) | N* | Mean Percent | (SD) | N* | Mean Percent | (SD) |
| Chromebooks, laptops, or iPads provided by the district | 179 | 91.2 | (22.4) | 31 | 98.1 | (4.8) | 105 | 91.0 | (23.0) | 43 | 86.7 | (27.4) |
| Chromebooks, laptops, or iPads provided by the student/family | 133 | 52.7 | (33.6) | 22 | 38.6 | (24.9) | 76 | 56.6 | (35.3) | 35 | 53.1 | (33.1) |
| Smartphones only | 31 | 38.7 | (39.1) | 8 | 63.7 | (38.9) | 13 | 33.1 | (39.0) | 10 | 26.0 | (33.1) |
| No mobile device | 25 | 8.8 | (8.3) | 6 | 8.3 | (4.1) | 13 | 9.2 | (10.4) | 6 | 8.3 | (7.5) |

*District response rates were sometimes low for these questions, and it is unclear if the response should have been a "no", is truly missing, or that districts did not know. Please note, mean percent describes the mean of each participating district's reported value.

Table D33. Teacher-reported access to 1:1 devices for students by grade level: spring 2020
Teacher Survey Q19_1a. How adequate was your access to $1: 1$ devices for students in spring 2020?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Extremely inadequate | 71 | 11.5 | 47 | 17.8 | 24 | 6.8 |
|  | Somewhat inadequate | 80 | 13.0 | 44 | 16.7 | 36 | 10.2 |
|  | Neither adequate nor inadequate | 21 | 3.4 | 8 | 3.0 | 13 | 3.7 |
|  | Somewhat adequate | 155 | 25.1 | 75 | 28.4 | 80 | 22.7 |
|  | Extremely adequate | 290 | 47.0 | 90 | 34.1 | 200 | 56.7 |
|  | Total N | 617 | 100.0 | 264 | 100.0 | 353 | 100.0 |
| Middle school | Extremely inadequate | 25 | 6.8 | 12 | 10.2 | 13 | 5.2 |
|  | Somewhat inadequate | 35 | 9.5 | 16 | 13.6 | 19 | 7.6 |
|  | Neither adequate nor inadequate | 8 | 2.2 | 2 | 1.7 | 6 | 2.4 |
|  | Somewhat adequate | 89 | 24.1 | 31 | 26.3 | 58 | 23.1 |
|  | Extremely adequate | 212 | 57.5 | 57 | 48.3 | 155 | 61.8 |
|  | Total N | 369 | 100.0 | 118 | 100.0 | 251 | 100.0 |
| High school | Extremely inadequate | 42 | 7.3 | 21 | 11.8 | 21 | 5.3 |
|  | Somewhat inadequate | 64 | 11.1 | 28 | 15.7 | 36 | 9.1 |
|  | Neither adequate nor inadequate | 26 | 4.5 | 6 | 3.4 | 20 | 5.1 |
|  | Somewhat adequate | 158 | 27.5 | 53 | 29.8 | 105 | 26.5 |
|  | Extremely adequate | 284 | 49.5 | 70 | 39.3 | 214 | 54.0 |
|  | Total N | 574 | 100.0 | 178 | 100.0 | 396 | 100.0 |
| Multiple levels, ungraded, or unknown | Extremely inadequate | 16 | 7.9 | 11 | 16.9 | 5 | 3.6 |
|  | Somewhat inadequate | 26 | 12.8 | 7 | 10.8 | 19 | 13.8 |
|  | Neither adequate nor inadequate | 10 | 4.9 | 5 | 7.7 | 5 | 3.6 |
|  | Somewhat adequate | 50 | 24.6 | 23 | 35.4 | 27 | 19.6 |
|  | Extremely adequate | 101 | 49.8 | 19 | 29.2 | 82 | 59.4 |
|  | Total N | 203 | 100.0 | 65 | 100.0 | 138 | 100.0 |

Table D34. Teacher-reported access to 1:1 devices for students by grade level: school year 2020-21
Teacher Survey Q19_1a. How adequate was your access to 1:1 devices for students in 2020-21?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Extremely inadequate | 21 | 3.3 | 10 | 3.7 | 11 | 3.0 |
|  | Somewhat inadequate | 28 | 4.4 | 19 | 7.0 | 9 | 2.5 |
|  | Neither adequate nor inadequate | 16 | 2.5 | 5 | 1.8 | 11 | 3.0 |
|  | Somewhat adequate | 121 | 18.9 | 65 | 23.8 | 56 | 15.3 |
|  | Extremely adequate | 453 | 70.9 | 174 | 63.7 | 279 | 76.2 |
|  | Total N | 639 | 100.0 | 273 | 100.0 | 366 | 100.0 |
| Middle school | Extremely inadequate | 4 | 1.0 | 3 | 2.4 | 1 | . 4 |
|  | Somewhat inadequate | 15 | 3.9 | 8 | 6.5 | 7 | 2.7 |
|  | Neither adequate nor inadequate | 9 | 2.4 | 5 | 4.1 | 4 | 1.6 |
|  | Somewhat adequate | 61 | 16.0 | 21 | 17.1 | 40 | 15.5 |
|  | Extremely adequate | 292 | 76.6 | 86 | 69.9 | 206 | 79.8 |
|  | Total N | 381 | 100.0 | 123 | 100.0 | 258 | 100.0 |
| High school | Extremely inadequate | 13 | 2.3 | 6 | 3.4 | 7 | 1.8 |
|  | Somewhat inadequate | 21 | 3.7 | 12 | 6.8 | 9 | 2.3 |
|  | Neither adequate nor inadequate | 19 | 3.3 | 9 | 5.1 | 10 | 2.5 |
|  | Somewhat adequate | 119 | 20.8 | 39 | 22.0 | 80 | 20.3 |
|  | Extremely adequate | 400 | 69.9 | 111 | 62.7 | 289 | 73.2 |
|  | Total N | 572 | 100.0 | 177 | 100.0 | 395 | 100.0 |
| Multiple levels, | Extremely inadequate | 2 | . 9 | 2 | 3.0 | 0 | . 0 |
| ungraded, or | Somewhat inadequate | 9 | 4.3 | 4 | 6.0 | 5 | 3.5 |
| unknown | Neither adequate nor inadequate | 7 | 3.3 | 4 | 6.0 | 3 | 2.1 |
|  | Somewhat adequate | 53 | 25.1 | 24 | 35.8 | 29 | 20.1 |
|  | Extremely adequate | 140 | 66.4 | 33 | 49.3 | 107 | 74.3 |
|  | Total N | 211 | 100.0 | 67 | 100.0 | 144 | 100.0 |

Table D35. District-reported changes over time in the mean percent of students with sufficient internet access to participate in online learning
District Inventory: Q23. Please provide your best guess for what percentage of students had sufficient internet access for full participation in online learning as of the following dates.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  |  | Mean |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| March 1, 2020 | 217 | 78.8 | (19.5) | 29 | 69.0 | (25.3) | 140 | 82.7 | (14.4) | 48 | 73.3 | (24.8) |
| May 1, 2020 | 220 | 88.4 | (14.7) | 32 | 79.5 | (18.4) | 140 | 91.0 | (11.3) | 48 | 86.5 | (18.3) |
| November 1, 2020 | 219 | 94.5 | (10.0) | 32 | 93.0 | (9.1) | 139 | 96.3 | (5.7) | 48 | 90.2 | (16.8) |

Please note, Mean Percent describes the mean of each participating district's reported value.

Table D36. District-reported changes over time in the mean percent of students who would have had sufficient internet access for full participation in online learning without district action
District Inventory: Q25. Please provide your best guess for what percentage of students would have had sufficient internet access for full participation in online learning as of the following dates without district action.

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  | Mean |  |
|  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| March 1, 2020 | 216 | 76.1 | (20.2) | 29 | 63.8 | (23.7) | 139 | 79.8 | (17.0) | 48 | 72.7 | (23.1) |
| May 1, 2020 | 220 | 78.5 | (20.8) | 32 | 63.4 | (25.4) | 140 | 81.8 | (18.1) | 48 | 79.0 | (21.2) |
| November 1, 2020 | 219 | 81.0 | (20.2) | 32 | 65.9 | (26.3) | 139 | 84.4 | (17.0) | 48 | 81.2 | (19.9) |

Please note, mean percent describes the mean of each participating district's reported value.

Table D37. District-reported efforts to improve internet access in students' homes
District Inventory: Q24. Describe what your district has done since the beginning of the pandemic, if anything, to improve internet access in students' homes.

Following the transition to remote learning, school districts worked to ensure that all students had adequate internet access to participate. As reported by 122 districts, the primary method of doing so was to purchase and provide mobile hotspots for students that needed them. The specific program mentioned most often was a collaboration with the company Kajeet, which aided in providing
mobile hotspots to households in need. Some districts reported that although they had hotspots available, there wasn't a great need for them, and many were never used. Another way that districts contributed to increasing internet connectivity was through collaboration with local companies and programs, an effort that was communicated by 64 districts. Districts made use of CT state programs, such as the Everybody Learns initiative, to increase their students' connectivity and engagement. Another common strategy was collaboration with cable/internet providers, including but not limited to Xfinity, Charter, Optimum, Atlantic Broadband, Spectrum, and more. An additional area of interest was increasing the amount of public Wi-Fi areas within the district's domain for students that didn't have and couldn't get Wi-Fi in their homes. Schools also provided waivers for free or low-cost internet to students, and districts made sure to share information about the availability of free or low-cost internet programs. Despite these resources, there were several districts that discussed barriers to access. Some homes were too far into rural areas to be connected to the internet or covered by cell service. Some families who lacked internet access did not qualify for support. In addition to efforts to increase students' internet access, districts also contributed other resources to support remote learning. There were 14 districts that mentioned they provided devices for students, primarily Chromebooks, to ensure that they could have a $1: 1$ connection with students.

## Table D38. Teacher-reported technology challenges

Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

Teacher survey respondents indicated a variety of concerns about student access to technology through the open-ended question at the end of the survey. Some teachers said that students had access to outdated computers or no access to computers making it difficult for students to learn. Teachers reported that unreliable internet connections also negatively impacted the student experience. Respondents noted that learning how to use new technology was especially difficult for younger students, with many teachers stating that teaching students to use technology took time away from teaching curriculum material. Other teachers raised concerns about the long-term effect of students' inappropriate use of technology to do their homework. One teacher stated that technology was affecting "students' attention spans and their ability to think, reason, and interact with challenging material." Another teacher reported that "students no longer have the patience nor the motivation to engage with curriculum on a deeper and more meaningful level." While this teacher believes there are benefits to using technology for student learning, they caution that "an over-reliance on using computers in the classroom and at home ... incentivizes cheating, depersonalizes instruction, promotes distractions and precipitates social/emotional anxiety." Other teachers reported that school districts provided students with adequate computers and ensured they had free internet access when needed. Some respondents said that students learned how to use a variety of technologies to engage with academic material.

Research Question 2c. What resources were available to support students' physical and emotional wellbeing during the pandemic, compared to before the pandemic?

Table D39. District-reported availability of free meals by grade level prior to the COVID-19 pandemic
District Inventory: Q4_10emh. For which of the following grade levels did your district offer free meals to all students prior to the COVID-19 pandemic (before March 2020)? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | 65 | 29.4 | 27 | 84.4 | 26 | 18.3 | 12 | 25.5 |
| Middle school | 64 | 29.0 | 25 | 78.1 | 25 | 17.6 | 14 | 29.8 |
| High School | 58 | 26.2 | 22 | 68.8 | 18 | 12.7 | 18 | 38.3 |
| None of the above/Not applicable | 145 | 65.6 | 5 | 15.6 | 112 | 78.9 | 28 | 59.6 |
| Total N | 221 | 100.0 | 32 | 100.0 | 142 | 100.0 | 47 | 100.0 |

Table D40. District-reported strategies for providing nutrition support to students during spring 2020
District Inventory: Q11. During spring 2020, which of the following strategies, if any, did your district use to provide nutrition support for students?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Offered free take-away meals to all students | 156 | 71.2 | 30 | 93.8 | 122 | 87.8 | 4 | 8.3 |
| Delivered school meals or groceries to students' homes | 75 | 34.2 | 19 | 59.4 | 46 | 33.1 | 10 | 20.8 |
| Supported enrollment in TANIF, etc. | 11 | 5.0 | 3 | 9.4 | 7 | 5.0 | 1 | 2.1 |
| Other (please describe): | 36 | 16.4 | 4 | 12.5 | 16 | 11.5 | 16 | 33.3 |
| None of the above | 23 | 10.5 | 0 | . 0 | 1 | . 7 | 22 | 45.8 |
| Total N | 219 | 100.0 | 32 | 100.0 | 139 | 100.0 | 48 | 100.0 |

The 36 districts that used the open-text option to describe "other" strategies they used to provide nutrition support to students during spring 2020 emphasized collaboration and referrals. Some districts used this open-text option to note that they were providing free take-away meals for those students eligible for free and reduced meals, rather than for all students. Some districts reported that they
offered grocery pickup or collaborated with food pantries or with other local towns and districts that were distributing food. When districts were not providing nutrition themselves, they often referred students and families to other programs available in the community; this was particularly common among APSEPs, RESCs, and charter districts.
Table D41. District-reported strategies for providing nutrition support to students during the 2020-21 school year
District Inventory: Q19. During the 2020-21 school year, which of the following strategies, if any, did your district use to provide nutrition support for students?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Offered free in-school meals to all students | 177 | 81.6 | 31 | 96.9 | 126 | 92.0 | 20 | 41.7 |
| Offered free take-away meals to all students | 104 | 47.9 | 25 | 78.1 | 77 | 56.2 | 2 | 4.2 |
| Offered free take-away meals to students who were learning remotely | 135 | 62.2 | 30 | 93.8 | 103 | 75.2 | 2 | 4.2 |
| Delivered school meals or groceries to students' homes | 54 | 24.9 | 16 | 50.0 | 33 | 24.1 | 5 | 10.4 |
| Supported enrollment in TANIF, etc. | 14 | 6.5 | 4 | 12.5 | 9 | 6.6 | 1 | 2.1 |
| Other (please describe): | 26 | 12.0 | 2 | 6.3 | 8 | 5.8 | 16 | 33.3 |
| None of the above | 19 | 8.8 | 0 | . 0 | 3 | 2.2 | 16 | 33.3 |
| Total N | 217 | 100.0 | 32 | 100.0 | 137 | 100.0 | 48 | 100.0 |

The 26 districts that used the open-text option to describe "other" strategies they used to provide nutrition support to students during the 2020-21 school year provided a variety of responses. Just as in the spring of 2020, some districts mentioned they only provided free meals to students that qualified for free and reduced meals, not all students. As in the spring, several districts reported that they collaborated with local food pantries to provide for their families. Some districts emphasized creative or unique methods of ensuring nutrition support for students. For example, one district reported that bus stops throughout the city were used to deliver meals to students as they attended school from home. Another district reported that they gave students breakfast foods to take home and eat before coming to school because the district couldn't ensure adequate social distancing for students to eat breakfast at school.

Table D42. District-reported allocation of resources for social services referrals in spring 2020
District Inventory: Q12. In spring 2020, how did your district's allocation of resources for referrals to social services (for example, physical or behavioral health care, nutrition assistance, housing assistance) compare to before the pandemic?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Allocated a lot less resources | 6 | 2.7 | 1 | 3.1 | 4 | 2.9 | 1 | 2.0 |
| Allocated somewhat less resources | 16 | 7.2 | 3 | 9.4 | 10 | 7.2 | 3 | 6.0 |
| Allocated a similar amount of resources | 121 | 54.8 | 12 | 37.5 | 77 | 55.4 | 32 | 64.0 |
| Allocated somewhat more resources | 53 | 24.0 | 11 | 34.4 | 34 | 24.5 | 8 | 16.0 |
| Allocated a lot more resources | 25 | 11.3 | 5 | 15.6 | 14 | 10.1 | 6 | 12.0 |
| Total N | 221 | 100.0 | 32 | 100.0 | 139 | 100.0 | 50 | 100.0 |

Table D43. District-reported number of social services referrals in spring 2020
District Inventory: Q13. In spring 2020, how did the number of students referred for social services (for example, physical or behavioral health care, nutrition assistance, housing assistance) compare to before the pandemic?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| A lot fewer students | 15 | 6.9 | 1 | 3.1 | 11 | 8.0 | 3 | 6.1 |
| Somewhat fewer students | 22 | 10.1 | 9 | 28.1 | 10 | 7.3 | 3 | 6.1 |
| About the same number of students | 106 | 48.6 | 4 | 12.5 | 67 | 48.9 | 35 | 71.4 |
| Somewhat more students | 56 | 25.7 | 14 | 43.8 | 39 | 28.5 | 3 | 6.1 |
| A lot more students | 19 | 8.7 | 4 | 12.5 | 10 | 7.3 | 5 | 10.2 |
| Total N | 218 | 100.0 | 32 | 100.0 | 137 | 100.0 | 49 | 100.0 |

Table D44. District-reported efforts to connect students to social services in spring 2020
District Inventory: Q14. During spring 2020, what was your district doing to connect students to social services agencies?
Districts reported that their efforts to connect students to social services in the spring of 2020 typically involved following their normal processes, but with an increase in personal outreach from staff to students and families due to the shift to virtual learning. For example, referrals conducted through 211 and referrals to outside agencies followed the typical processes. There were 38 districts that mentioned collaborations with local agencies, especially with their local youth and family services agency. To maintain mental health services during this period, a number of districts reported that they partnered with local agencies for mental health and medical support or supported students through school-based health centers and clinicians; virtual services like telehealth appointments were made available in many cases. That being said, four districts explicitly noted that due to the pandemic, social services in their area were limited as a result of local agencies being closed or only offering minimal services. In terms of informing students and families about available resources, 29 districts reported that they conducted active personal outreach to their students and families and 11 reported passive personal outreach, such as robocalls, email newsletters, and resources listed on the district website. Active outreach was a commonly mentioned strategy for maintaining personal connections with students and families; many districts utilized teachers, counselors, and social workers to directly email and call students and families (especially for disengaged or absent students) and ensure that they were connected to the appropriate resources. Some districts ( 11 responses) indicated that social workers and counselors attempted to carry out home visits to students that were disengaged, while other districts reported that home visits were not feasible due to health concerns and unwilling families. For the spring of 2020, several districts mentioned that the COVID-19 shutdowns made it challenging for students to access social services.

Table D45. District-reported allocation of resources for social services referrals in school year 2020-21
District Inventory: Q20. During the 2020-21 school year, how did your district's allocation of resources for referrals to social services (for example, physical or behavioral health care, nutrition assistance, housing assistance) compared to spring 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Allocated a lot less resources | 1 | . 5 | 1 | 3.2 | 0 | . 0 | 0 | . 0 |
| Allocated somewhat less resources | 3 | 1.4 | 0 | . 0 | 0 | . 0 | 3 | 6.1 |
| Allocated a similar amount of resources | 94 | 43.7 | 7 | 22.6 | 53 | 39.3 | 34 | 69.4 |
| Allocated somewhat more resources | 89 | 41.4 | 15 | 48.4 | 66 | 48.9 | 8 | 16.3 |
| Allocated a lot more resources | 28 | 13.0 | 8 | 25.8 | 16 | 11.9 | 4 | 8.2 |
| Total N | 215 | 100.0 | 31 | 100.0 | 135 | 100.0 | 49 | 100.0 |

Table D46. District-reported number of social services referrals in school year 2020-21
District Inventory: Q21. During the 2020-21 school year, how did the number of students referred for social services (for example, physical or behavioral health care, nutrition assistance, housing assistance) compare to spring 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| A lot fewer students | 2 | . 9 | 1 | 3.2 | 0 | . 0 | 1 | 2.0 |
| Somewhat fewer students | 4 | 1.9 | 1 | 3.2 | 2 | 1.5 | 1 | 2.0 |
| About the same number of students | 78 | 36.1 | 6 | 19.4 | 35 | 25.7 | 37 | 75.5 |
| Somewhat more students | 97 | 44.9 | 14 | 45.2 | 77 | 56.6 | 6 | 12.2 |
| A lot more students | 35 | 16.2 | 9 | 29.0 | 22 | 16.2 | 4 | 8.2 |
| Total N | 216 | 100.0 | 31 | 100.0 | 136 | 100.0 | 49 | 100.0 |

Table D47. District-reported efforts to connect students to social services during school year 2020-21
District Inventory: Q22. During the 2020-21 school year, what was your district doing to connect students to social services agencies?

Via the district inventory, districts reported that 2020-21 school year efforts to connect students to social services were largely focused on mental health support and often relied on individualized outreach. For example, 47 districts reported collaborating with or making referrals to local social service agencies. Districts reported a heightened emphasis on implementing school-based mental healthcare on the school level and partnering with local mental health support agencies at the district level. Districts reported that mental health services were embedded within the school system in the form of counseling teams, mental health clinicians, and school-based health centers. Whereas the COVID-19 shutdowns made it challenging for students to access social services in the spring of 2020, districts reported that limited resources available in rural areas of Connecticut were the main barrier to access to social services during the 2020-21 school year. Districts that discussed referrals stressed the importance of social workers, teachers, and counselors maintaining active communications and individual connections with students, and then using existing processes to refer them to any necessary services. In terms of the dissemination of information about available resources, districts reported that beyond sharing information through newsletters and the district and school websites, they asked teachers, counselors, and social workers to actively seek out students that they thought needed additional support and personally reach out to students and families, sometimes even daily. There were 12 districts that mentioned conducting home visits. In general, home visits were completed primarily by school social workers and counselors. Some districts reported that they increased home visits during this time period, and some reported issues with conducting home visits, such as concerns for health or unwillingness from the family.

Table D48. District-reported changes by grade level in students' participation in counseling meetings
District Inventory: Q46emh_1r. To the best of your knowledge, how common were counseling meetings (e.g., virtual or in-person meetings of counselors, social workers, or therapists and students to provide mental health services) with students from the following grade levels during the pandemic, compared to before the pandemic?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | Much less common | 2 | 1.1 | 0 | . 0 | 0 | . 0 | 2 | 6.9 |
|  | Somewhat less common | 13 | 7.0 | 1 | 3.1 | 9 | 7.2 | 3 | 10.3 |
|  | About the same | 73 | 39.2 | 10 | 31.3 | 46 | 36.8 | 17 | 58.6 |
|  | Somewhat more common | 65 | 34.9 | 14 | 43.8 | 46 | 36.8 | 5 | 17.2 |
|  | Much more common | 33 | 17.7 | 7 | 21.9 | 24 | 19.2 | 2 | 6.9 |
|  | Total N | 186 | 100.0 | 32 | 100.0 | 125 | 100.0 | 29 | 100.0 |
| Middle School | Much less common | 2 | 1.1 | 0 | . 0 | 0 | . 0 | 2 | 5.9 |
|  | Somewhat less common | 8 | 4.5 | 2 | 6.5 | 4 | 3.5 | 2 | 5.9 |
|  | About the same | 64 | 35.8 | 10 | 32.3 | 35 | 30.7 | 19 | 55.9 |
|  | Somewhat more common | 63 | 35.2 | 10 | 32.3 | 46 | 40.4 | 7 | 20.6 |
|  | Much more common | 42 | 23.5 | 9 | 29.0 | 29 | 25.4 | 4 | 11.8 |
|  | Total N | 179 | 100.0 | 31 | 100.0 | 114 | 100.0 | 34 | 100.0 |
| High School | Much less common | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 2.4 |
|  | Somewhat less common | 9 | 5.4 | 2 | 6.7 | 4 | 4.2 | 3 | 7.3 |
|  | About the same | 54 | 32.3 | 10 | 33.3 | 24 | 25.0 | 20 | 48.8 |
|  | Somewhat more common | 60 | 35.9 | 9 | 30.0 | 40 | 41.7 | 11 | 26.8 |
|  | Much more common | 43 | 25.7 | 9 | 30.0 | 28 | 29.2 | 6 | 14.6 |
|  | Total N | 167 | 100.0 | 30 | 100.0 | 96 | 100.0 | 41 | 100.0 |

Table D49. District-reported SEL programs/approaches used by elementary schools during 2019-20 and 2020-21
District Inventory: Q47e_1. What social and emotional learning (SEL) program/approach were your elementary schools using, if any, during the following school years?

|  |  |  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | $\begin{gathered} \hline \text { Valid } \\ \text { Percent } \end{gathered}$ | Valid Count | $\begin{gathered} \hline \text { Valid } \\ \text { Percent } \\ \hline \end{gathered}$ | Valid Count | Valid Percent |
| 2019-20 | 4Rs | 2 | 1.1 | 1 | 3.0 | 0 | . 0 | 1 | 3.8 |
|  | Mindup | 5 | 2.8 | 0 | . 0 |  | 4.1 | 0 | . 0 |
|  | PATHS | 1 | . 6 | 0 | . 0 | 1 | . 8 | 0 | . 0 |
|  | PBIS | 102 | 56.4 | 25 | 75.8 | 63 | 51.6 | 14 | 53.8 |
|  | Responsive Classroom | 84 | 46.4 | 14 | 42.4 | 66 | 54.1 | 4 | 15.4 |
|  | Restorative Practices | 78 | 43.1 | 17 | 51.5 | 50 | 41.0 | 11 | 42.3 |
|  | RULER | 49 | 27.1 | 14 | 42.4 | 35 | 28.7 | 0 | . 0 |
|  | Second Step | 85 | 47.0 | 22 | 66.7 | 61 | 50.0 | 2 | 7.7 |
|  | Other (please describe): | 32 | 17.7 | 8 | 24.2 | 15 | 12.3 | 9 | 34.6 |
|  | None | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 3.8 |
|  | Total N | 181 | 100.0 | 33 | 100.0 | 122 | 100.0 | 26 | 100.0 |
| 2020-21 | 4Rs | 2 | 1.1 | 1 | 3.0 | 0 | . 0 | 1 | 3.8 |
|  | Mindup | 5 | 2.7 | 0 | . 0 | 5 | 4.0 | 0 | . 0 |
|  | PATHS | 1 | . 5 | 0 | . 0 | 1 | . 8 | 0 | . 0 |
|  | PBIS | 93 | 50.8 | 24 | 72.7 | 58 | 46.8 | 11 | 42.3 |
|  | Responsive Classroom | 84 | 45.9 | 15 | 45.5 | 65 | 52.4 | 4 | 15.4 |
|  | Restorative Practices | 83 | 45.4 | 18 | 54.5 | 54 | 43.5 | 11 | 42.3 |
|  | RULER | 57 | 31.1 | 15 | 45.5 | 41 | 33.1 | 1 | 3.8 |
|  | Second Step | 88 | 48.1 | 24 | 72.7 | 62 | 50.0 | 2 | 7.7 |
|  | Other (please describe): | 43 | 23.5 | 8 | 24.2 | 25 | 20.2 | 10 | 38.5 |
|  | None | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 3.8 |
|  | Total N | 183 | 100.0 | 33 | 100.0 | 124 | 100.0 | 26 | 100.0 |

Table D50. District-reported SEL programs/approaches used by middle schools during 2019-20 and 2020-21
District Inventory: Q47m_1. What social and emotional learning (SEL) program/approach were your middle schools using, if any, during the following school years?

|  |  |  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| 2019-20 | 4Rs | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 3.3 |
|  | Mindup | 3 | 1.8 | 0 | . 0 | 2 | 1.9 | 1 | 3.3 |
|  | PATHS | 2 | 1.2 | 0 | . 0 | 1 | 1.0 | 1 | 3.3 |
|  | PBIS | 78 | 47.9 | 17 | 58.6 | 45 | 43.3 | 16 | 53.3 |
|  | Responsive Classroom | 37 | 22.7 |  | 17.2 | 26 | 25.0 | 6 | 20.0 |
|  | Restorative Practices | 88 | 54.0 | 22 | 75.9 | 52 | 50.0 | 14 | 46.7 |
|  | RULER | 37 | 22.7 | 11 | 37.9 | 26 | 25.0 | 0 | . 0 |
|  | Second Step | 39 | 23.9 |  | 27.6 | 29 | 27.9 | 2 | 6.7 |
|  | Other (please describe): | 33 | 20.2 | 6 | 20.7 | 16 | 15.4 | 11 | 36.7 |
|  | None | 5 | 3.1 | 0 | . 0 | 5 | 4.8 | 0 | . 0 |
|  | Total N | 163 | 100.0 | 29 | 100.0 | 104 | 100.0 | 30 | 100.0 |
| 2020-21 | 4Rs | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 3.2 |
|  | Mindup | 3 | 1.8 | 0 | . 0 | 2 | 1.9 | 1 | 3.2 |
|  | PATHS | 2 | 1.2 | 0 | . 0 | 1 | . 9 | 1 | 3.2 |
|  | PBIS | 73 | 43.2 | 17 | 54.8 | 42 | 39.3 | 14 | 45.2 |
|  | Responsive Classroom | 39 | 23.1 | 6 | 19.4 | 27 | 25.2 | 6 | 19.4 |
|  | Restorative Practices | 100 | 59.2 | 24 | 77.4 | 61 | 57.0 | 15 | 48.4 |
|  | RULER | 44 | 26.0 | 12 | 38.7 | 31 | 29.0 | 1 | 3.2 |
|  | Second Step | 42 | 24.9 | 10 | 32.3 | 30 | 28.0 | 2 | 6.5 |
|  | Other (please describe): | 39 | 23.1 | 6 | 19.4 | 20 | 18.7 | 13 | 41.9 |
|  | None | 5 | 3.0 | 0 | . 0 | 5 | 4.7 | 0 | . 0 |
|  | Total N | 169 | 100.0 | 31 | 100.0 | 107 | 100.0 | 31 | 100.0 |

Table D51. District-reported SEL programs/approaches used by high schools during 2019-20 and 2020-21
District Inventory: Q47h_1. What social and emotional learning (SEL) program/approach were your high schools using, if any, during the following school years?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| 2019-20 | 4Rs | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | MindUp | 2 | 1.4 | 0 | . 0 | 0 | . 0 | 2 | 5.7 |
|  | PATHS | 3 | 2.1 | 0 | . 0 | 1 | 1.2 | 2 | 5.7 |
|  | PBIS | 62 | 43.1 | 13 | 48.1 | 30 | 36.6 | 19 | 54.3 |
|  | Responsive Classroom | 17 | 11.8 | 2 | 7.4 | 7 | 8.5 | 8 | 22.9 |
|  | Restorative Practices | 79 | 54.9 | 20 | 74.1 | 44 | 53.7 | 15 | 42.9 |
|  | RULER | 27 | 18.8 | 7 | 25.9 | 20 | 24.4 | 0 | . 0 |
|  | Second Step | 15 | 10.4 | 6 | 22.2 | 7 | 8.5 | 2 | 5.7 |
|  | Other (please describe): | 28 | 19.4 | 3 | 11.1 | 14 | 17.1 | 11 | 31.4 |
|  | None | 6 | 4.2 | 0 | . 0 | 6 | 7.3 | 0 | . 0 |
|  | Total N | 144 | 100.0 | 27 | 100.0 | 82 | 100.0 | 35 | 100.0 |
| 2020-21 | 4Rs | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | MindUp | 2 | 1.3 | 0 | . 0 | 0 | . 0 | 2 | 5.4 |
|  | PATHS | 3 | 2.0 | 0 | . 0 | 1 | 1.1 | 2 | 5.4 |
|  | PBIS | 60 | 39.2 | 13 | 44.8 | 28 | 32.2 | 19 | 51.4 |
|  | Responsive Classroom | 19 | 12.4 | 3 | 10.3 | 8 | 9.2 | 8 | 21.6 |
|  | Restorative Practices | 89 | 58.2 | 21 | 72.4 | 53 | 60.9 | 15 | 40.5 |
|  | RULER | 33 | 21.6 | 8 | 27.6 | 25 | 28.7 | 0 | . 0 |
|  | Second Step | 16 | 10.5 | 6 | 20.7 | 7 | 8.0 | 3 | 8.1 |
|  | Other (please describe): | 33 | 21.6 | 3 | 10.3 | 17 | 19.5 | 13 | 35.1 |
|  | None | 6 | 3.9 | 0 | . 0 | 6 | 6.9 | 0 | . 0 |
|  | Total N | 153 | 100.0 | 29 | 100.0 | 87 | 100.0 | 37 | 100.0 |

Table D52. Teacher-reported school support by grade level for students' physical health in 2020-21
Teacher Survey Q24_1. In your opinion, how adequately did your school support students' physical health during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent |
| Elementary school | Support was extremely inadequate | 88 | 10.2 | 50 | 13.7 | 38 | 7.6 |
|  | Support was somewhat inadequate | 140 | 16.2 | 67 | 18.4 | 73 | 14.7 |
|  | Support was neither adequate nor inadequate | 216 | 25.1 | 99 | 27.2 | 117 | 23.5 |
|  | Support was somewhat adequate | 277 | 32.1 | 108 | 29.7 | 169 | 33.9 |
|  | Support was extremely adequate | 141 | 16.4 | 40 | 11.0 | 101 | 20.3 |
|  | Total N | 862 | 100.0 | 364 | 100.0 | 498 | 100.0 |
| Middle school | Support was extremely inadequate | 34 | 6.6 | 13 | 8.0 | 21 | 6.0 |
|  | Support was somewhat inadequate | 107 | 20.8 | 40 | 24.5 | 67 | 19.0 |
|  | Support was neither adequate nor inadequate | 137 | 26.6 | 42 | 25.8 | 95 | 27.0 |
|  | Support was somewhat adequate | 147 | 28.5 | 44 | 27.0 | 103 | 29.3 |
|  | Support was extremely adequate | 90 | 17.5 | 24 | 14.7 | 66 | 18.8 |
|  | Total N | 515 | 100.0 | 163 | 100.0 | 352 | 100.0 |
| High school | Support was extremely inadequate | 84 | 10.6 | 37 | 15.2 | 47 | 8.5 |
|  | Support was somewhat inadequate | 169 | 21.2 | 64 | 26.2 | 105 | 19.0 |
|  | Support was neither adequate nor inadequate | 212 | 26.6 | 64 | 26.2 | 148 | 26.8 |
|  | Support was somewhat adequate | 231 | 29.0 | 53 | 21.7 | 178 | 32.2 |
|  | Support was extremely adequate | 100 | 12.6 | 26 | 10.7 | 74 | 13.4 |
|  | Total N | 796 | 100.0 | 244 | 100.0 | 552 | 100.0 |
| Multiple levels, ungraded, or unknown | Support was extremely inadequate | 23 | 7.8 | 13 | 13.1 | 10 | 5.2 |
|  | Support was somewhat inadequate | 51 | 17.4 | 18 | 18.2 | 33 | 17.0 |
|  | Support was neither adequate nor inadequate | 85 | 29.0 | 30 | 30.3 | 55 | 28.4 |
|  | Support was somewhat adequate | 79 | 27.0 | 28 | 28.3 | 51 | 26.3 |
|  | Support was extremely adequate | 55 | 18.8 | 10 | 10.1 | 45 | 23.2 |
|  | Total N | 293 | 100.0 | 99 | 100.0 | 194 | 100.0 |

Table D53. Teacher-reported school support by grade level for students' social-emotional well-being in 2020-21
Teacher Survey Q24_3. In your opinion, how adequately did your school support students social and emotional well-being during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Support was extremely inadequate | 111 | 12.9 | 67 | 18.4 | 44 | 8.9 |
|  | Support was somewhat inadequate | 222 | 25.8 | 92 | 25.3 | 130 | 26.2 |
|  | Support was neither adequate nor inadequate | 140 | 16.3 | 63 | 17.3 | 77 | 15.5 |
|  | Support was somewhat adequate | 286 | 33.2 | 105 | 28.8 | 181 | 36.4 |
|  | Support was extremely adequate | 102 | 11.8 | 37 | 10.2 | 65 | 13.1 |
|  | Total N | 861 | 100.0 | 364 | 100.0 | 497 | 100.0 |
| Middle school | Support was extremely inadequate | 80 | 15.5 | 34 | 20.9 | 46 | 13.1 |
|  | Support was somewhat inadequate | 133 | 25.8 | 44 | 27.0 | 89 | 25.3 |
|  | Support was neither adequate nor inadequate | 90 | 17.5 | 23 | 14.1 | 67 | 19.0 |
|  | Support was somewhat adequate | 158 | 30.7 | 45 | 27.6 | 113 | 32.1 |
|  | Support was extremely adequate | 54 | 10.5 | 17 | 10.4 | 37 | 10.5 |
|  | Total N | 515 | 100.0 | 163 | 100.0 | 352 | 100.0 |
| High school | Support was extremely inadequate | 99 | 12.4 | 47 | 19.3 | 52 | 9.4 |
|  | Support was somewhat inadequate | 211 | 26.5 | 70 | 28.7 | 141 | 25.5 |
|  | Support was neither adequate nor inadequate | 155 | 19.5 | 44 | 18.0 | 111 | 20.1 |
|  | Support was somewhat adequate | 255 | 32.0 | 63 | 25.8 | 192 | 34.8 |
|  | Support was extremely adequate | 76 | 9.5 | 20 | 8.2 | 56 | 10.1 |
|  | Total N | 796 | 100.0 | 244 | 100.0 | 552 | 100.0 |
| Multiple levels, | Support was extremely inadequate | 40 | 13.6 | 15 | 15.0 | 25 | 12.9 |
| ungraded, or | Support was somewhat inadequate | 66 | 22.4 | 24 | 24.0 | 42 | 21.6 |
| unknown | Support was neither adequate nor inadequate | 45 | 15.3 | 14 | 14.0 | 31 | 16.0 |
|  | Support was somewhat adequate | 111 | 37.8 | 35 | 35.0 | 76 | 39.2 |
|  | Support was extremely adequate | 32 | 10.9 | 12 | 12.0 | 20 | 10.3 |
|  | Total N | 294 | 100.0 | 100 | 100.0 | 194 | 100.0 |

Table D54. Teacher-reported support for students' physical and emotional well-being
Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

## Impacts on Students: Basic Needs

Responses to the open-text question at the end of the teacher survey revealed that students had difficulty accessing basic needs like housing and food. One teacher highlighted that families were uncomfortable accessing support for meeting their basic needs, even when supports were available to students. Other teachers reported that their schools did a great job in ensuring all students' basic needs were met.

## Student Impacts: Socio-Emotional Well-Being and Mental Health

In their responses to the open-text teacher survey question, some teachers reported inadequate support for students' emotional wellbeing. One teacher said, "schools have started SEL initiatives to be able to say that they are doing something but eventually have stopped any programs they do because it has been checked off the list." Another teacher described the inadequate support by commenting, "my school has 2 guidance counselors, 1 school psychologist and 0 social workers...for 3 grades of middle school. It is not enough!"

## Appendix E: Supports for teachers (Research Goal 3)

## Research Question 3a. What do administrators and teachers say about how the pandemic and the resources provided affected teaching and teacher well-being?

Table E1. District-reported staffing adjustments/reassignments in spring 2020
District Inventory Q9. Please describe any adjustments/reassignments you made to staffing to accommodate the pivot to remote learning in March of 2020 due to the emergency response to COVID-19.

When asked to describe staffing adjustments in the spring of 2020, the topic referenced most frequently (by 49 districts) was shifts in job responsibilities or reassignments to new job roles as a result of the sudden shift to remote learning. Because all learning was remote in spring 2020, teachers generally remained in their roles whereas auxiliary staff were reassigned. For example, interventionists and paraeducators prepared class materials, provided online classroom support, and maintained 1-on-1 contact with individual students. Media specialists, IT staff, and technology coaches were often shifted to support teachers and students in working with remote-learning technology. Nine districts mentioned an increase in professional development and technology training for these auxiliary staff to allow them to support instruction, and six districts reported providing devices (such as Chromebooks) to certain staff to support remote learning. Other responsibilities of these staff included the delivery of classroom materials, technology, and meals to student homes. Outside of the districts that reported these reassignments, 17 districts explicitly mentioned that no staffing adjustments were necessary or occurred in the spring of 2020. Five districts described hiring of new staff, primarily substitute teachers or technology supports. Several districts noted that the majority of staffing changes resulting from the pandemic did not occur in the immediate emergency response, but rather in the following school year as districts adjusted to new learning models. There were also some adjustments to the schedule noted, primarily a shortened school day or a shortened amount of instructional time. When instructional time was shortened, the remainder of the time was dedicated to small group interaction or asynchronous work.

Table E2. District-reported staffing adjustments/reassignments in fall 2020
District Inventory Q17. Please describe any adjustments/reassignments you made to staffing to accommodate remote learning in fall 2020.

As opposed to the spring of 2020, the primary fall 2020 staffing adjustment theme reported by districts was the hiring of new staff, which was discussed by 54 districts. Additional teachers were hired primarily to take on the responsibility of teaching fully remote students, although some districts reported hiring additional substitute and floater teachers to support quarantined teachers. Additional support staff were also hired to support remote learners, such as paraeducators, tutors, and technology specialists. Some districts hired extra security guards and custodians to promote COVID-19 safety. Staff reassignments were also common during this period, as was
referenced by 32 districts. Many teachers were reassigned from in-person teaching positions to remote teaching positions, and some teachers were assigned to cover additional sections. Many auxiliary staff members, like library media specialists, technology specialists, interventionists, and arts/PE teachers were reassigned to both virtual and in-person teaching positions. These employees were sometimes assigned to individual students to provide academic and social-emotional support. Some districts that attempted to fill new positions to support virtual learning reported that hiring was unsuccessful. Eight districts reported schedule adjustments, primarily to support hybrid/remote models of learning. Multiple districts reported that the school day or instructional time was shortened to provide time for small-group interaction or time for teachers to connect with remote students.

Table E3. District-reported summer 2020 preparation for fall 2020: safety-related activities
District Inventory Q15_1, Q15_2, Q15_5, Q15_6. Which of the following activities did your district conduct between the last student day of spring 2020 and students' return to school in fall 2020? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Building improvements (ventilation, air purification devices, directional signs) | 206 | 92.4 | 31 | 96.9 | 132 | 93.6 | 43 | 86.0 |
| Purchase of safety equipment (PPE, e.g., shields, masks) | 222 | 99.6 | 32 | 100.0 | 141 | 100.0 | 49 | 98.0 |
| Hiring additional personnel (e.g., tutors, counselors, etc.) | 127 | 57.0 | 26 | 81.3 | 92 | 65.2 | 9 | 18.0 |
| COVID safety training for school personnel | 213 | 95.5 | 32 | 100.0 | 133 | 94.3 | 48 | 96.0 |
| Other (please describe): | 45 | 20.2 | 11 | 34.4 | 29 | 20.6 | 5 | 10.0 |
| None of the above | 21 | 9.4 | 4 | 12.5 | 11 | 7.8 | 6 | 12.0 |
| Total N | 223 | 100.0 | 32 | 100.0 | 141 | 100.0 | 50 | 100.0 |

Of the 45 districts that indicated that they used other strategies to prepare for the 2020-21 school year, several reported safety-related activities that supported teacher well-being. For example, a number of districts reported that they engaged stakeholders (mainly staff and parents) in planning for the fall semester. This included forming committees of any interested parties, conducting listening sessions with families and staff, and holding virtual parent presentations to ensure that parent, student, and staff feedback was considered. It was important to many districts that they create a district-wide return plan for maximizing safety while returning to inperson learning.

Table E4. Teacher-reported teaching challenges in 2020-21 (elementary school teachers)
Teacher Survey Q18. Rate each of the following areas in terms of how difficult it was to achieve during the 2020-2021 school year, compared to before the pandemic.

|  |  |  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Facilitating student engagement | 956 | 5.6 | (1.3) | 396 | 5.5 | (1.5) | 560 | 5.6 | (1.2) |
| Eliciting student participation during instruction | 956 | 5.5 | (1.3) | 399 | 5.5 | (1.4) | 557 | 5.4 | (1.2) |
| Motivating students to complete assignments | 951 | 5.6 | (1.3) | 397 | 5.6 | (1.4) | 554 | 5.6 | (1.2) |
| Ensuring student access to instructional materials (for example, textbooks, videos, other media, etc.) | 956 | 5.4 | (1.3) | 399 | 5.3 | (1.4) | 557 | 5.4 | (1.3) |
| Learning about each student's individual interests, strengths, and needs | 957 | 5.0 | (1.4) | 398 | 5.0 | (1.5) | 559 | 5.1 | (1.4) |
| Setting learning goals | 958 | 5.1 | (1.2) | 396 | 5.0 | (1.3) | 562 | 5.1 | (1.2) |
| Viewing, collecting, or analyzing student work (e.g., student math solutions, student writing pieces) | 952 | 5.4 | (1.4) | 396 | 5.4 | (1.5) | 556 | 5.4 | (1.3) |
| Conducting formative assessments (for example, to guide daily teaching, student personalization, etc.) | 952 | 5.5 | (1.4) | 396 | 5.4 | (1.5) | 556 | 5.5 | (1.3) |
| Preparing students for summative assessments (high stakes tests and unit tests) | 949 | 5.6 | (1.3) | 396 | 5.6 | (1.4) | 553 | 5.6 | (1.2) |
| Adjusting instruction to accommodate individualized education plans (IEPs) | 957 | 5.5 | (1.3) | 399 | 5.5 | (1.4) | 558 | 5.5 | (1.3) |
| Accessing resources, supports, and specialized assistance and services to meet students learning differences or needs (for example, students with disabilities or English learners) | 953 | 5.5 | (1.3) | 396 | 5.5 | (1.4) | 557 | 5.5 | (1.3) |
| Establishing and using small group instruction (for example, breakout groups, reading groups, stations, jigsaw, etc.) | 955 | 5.7 | (1.5) | 397 | 5.5 | (1.6) | 558 | 5.8 | (1.3) |
| Delivering course content (for example, direct instruction, presentations) | 956 | 5.4 | (1.3) | 397 | 5.3 | (1.4) | 559 | 5.5 | (1.3) |
| Establishing and maintaining classroom norms and behavior expectations | 952 | 5.2 | (1.4) | 397 | 5.1 | (1.5) | 555 | 5.4 | (1.3) |
| Lesson planning (including selecting/securing resources, preparing materials, coordinating with colleagues, etc.) | 952 | 5.4 | (1.5) | 397 | 5.1 | (1.6) | 555 | 5.6 | (1.4) |
| Adjusting instruction in real-time to respond to student needs and reactions | 952 | 5.5 | (1.3) | 396 | 5.4 | (1.4) | 556 | 5.5 | (1.3) |
| Coping with unexpected challenges or interruptions during teaching (for example, technology issues, student illness, etc.) | 956 | 5.9 | (1.2) | 397 | 5.8 | (1.3) | 559 | 6.0 | (1.2) |
| Promoting social and emotional learning | 955 | 5.5 | (1.4) | 396 | 5.5 | (1.5) | 559 | 5.5 | (1.4) |
| Collaborating with families to promote learner growth and development | 958 | 4.9 | (1.5) | 395 | 4.9 | (1.5) | 563 | 4.9 | (1.4) |
| Collaborating with colleagues to promote learner growth and development | 959 | 5.0 | (1.4) | 399 | 4.8 | (1.5) | 560 | 5.1 | (1.4) |

Please note, these items range from 1-7, with $1=$ Immensely easier to $7=$ Immensely harder

Table E5. Teacher-reported teaching challenges in 2020-21 (middle school teachers)
Teacher Survey Q18. Rate each of the following areas in terms of how difficult it was to achieve during the 2020-2021 school year, compared to before the pandemic.

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Facilitating student engagement | 554 | 5.8 | (1.3) | 177 | 5.6 | (1.5) | 377 | 5.9 | (1.2) |
| Eliciting student participation during instruction | 558 | 5.8 | (1.3) | 178 | 5.6 | (1.6) | 380 | 5.9 | (1.2) |
| Motivating students to complete assignments | 558 | 5.9 | (1.3) | 178 | 5.6 | (1.5) | 380 | 6.0 | (1.2) |
| Ensuring student access to instructional materials (for example, textbooks, videos, other media, etc.) | 558 | 4.8 | (1.5) | 178 | 4.7 | (1.7) | 380 | 4.9 | (1.4) |
| Learning about each student's individual interests, strengths, and needs | 557 | 5.4 | (1.3) | 177 | 5.1 | (1.6) | 380 | 5.5 | (1.2) |
| Setting learning goals | 556 | 5.0 | (1.2) | 177 | 4.7 | (1.4) | 379 | 5.1 | (1.1) |
| Viewing, collecting, or analyzing student work (e.g., student math solutions, student writing pieces) | 555 | 4.9 | (1.5) | 177 | 4.7 | (1.7) | 378 | 5.0 | (1.4) |
| Conducting formative assessments (for example, to guide daily teaching, student personalization, etc.) | 556 | 5.1 | (1.4) | 176 | 4.9 | (1.7) | 380 | 5.2 | (1.2) |
| Preparing students for summative assessments (high stakes tests and unit tests) | 554 | 5.6 | (1.2) | 175 | 5.4 | (1.4) | 379 | 5.6 | (1.1) |
| Adjusting instruction to accommodate individualized education plans (IEPs) | 554 | 5.3 | (1.4) | 176 | 5.2 | (1.7) | 378 | 5.4 | (1.2) |
| Accessing resources, supports, and specialized assistance and services to meet students learning differences or needs (for example, students with disabilities or English learners) | 554 | 5.3 | (1.4) | 176 | 5.2 | (1.6) | 378 | 5.3 | (1.2) |
| Establishing and using small group instruction (for example, breakout groups, reading groups, stations, jigsaw, etc.) | 555 | 5.7 | (1.5) | 177 | 5.4 | (1.8) | 378 | 5.8 | (1.3) |
| Delivering course content (for example, direct instruction, presentations) | 555 | 5.3 | (1.4) | 177 | 5.1 | (1.5) | 378 | 5.4 | (1.3) |
| Establishing and maintaining classroom norms and behavior expectations | 557 | 5.1 | (1.6) | 176 | 4.7 | (1.8) | 381 | 5.3 | (1.4) |
| Lesson planning (including selecting/securing resources, preparing materials, coordinating with colleagues, etc.) | 558 | 5.2 | (1.5) | 176 | 4.8 | (1.7) | 382 | 5.3 | (1.3) |
| Adjusting instruction in real-time to respond to student needs and reactions | 558 | 5.3 | (1.4) | 178 | 4.9 | (1.6) | 380 | 5.5 | (1.2) |
| Coping with unexpected challenges or interruptions during teaching (for example, technology issues, student illness, etc.) | 559 | 5.7 | (1.3) | 178 | 5.5 | (1.5) | 381 | 5.9 | (1.2) |
| Promoting social and emotional learning | 556 | 5.4 | (1.5) | 177 | 5.0 | (1.8) | 379 | 5.6 | (1.4) |
| Collaborating with families to promote learner growth and development | 557 | 5.1 | (1.4) | 176 | 4.9 | (1.6) | 381 | 5.2 | (1.2) |
| Collaborating with colleagues to promote learner growth and development | 557 | 4.8 | (1.4) | 177 | 4.6 | (1.6) | 380 | 4.9 | (1.3) |

[^7]Table E6. Teacher-reported teaching challenges in 2020-21 (high school teachers)
Teacher Survey Q18. Rate each of the following areas in terms of how difficult it was to achieve during the 2020-2021 school year, compared to before the pandemic.

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Facilitating student engagement | 840 | 6.1 | (1.2) | 257 | 6.0 | (1.3) | 583 | 6.1 | (1.2) |
| Eliciting student participation during instruction | 840 | 6.1 | (1.3) | 255 | 6.0 | (1.4) | 585 | 6.1 | (1.2) |
| Motivating students to complete assignments | 839 | 6.0 | (1.2) | 256 | 6.0 | (1.3) | 583 | 6.0 | (1.1) |
| Ensuring student access to instructional materials (for example, textbooks, videos, other media, etc.) | 840 | 4.9 | (1.4) | 258 | 4.8 | (1.5) | 582 | 5.0 | (1.4) |
| Learning about each student's individual interests, strengths, and needs | 844 | 5.6 | (1.4) | 258 | 5.5 | (1.4) | 586 | 5.7 | (1.3) |
| Setting learning goals | 842 | 5.1 | (1.2) | 259 | 5.0 | (1.3) | 583 | 5.1 | (1.2) |
| Viewing, collecting, or analyzing student work (e.g., student math solutions, student writing pieces) | 840 | 4.9 | (1.5) | 257 | 4.8 | (1.6) | 583 | 5.0 | (1.5) |
| Conducting formative assessments (for example, to guide daily teaching, student personalization, etc.) | 841 | 5.4 | (1.3) | 258 | 5.2 | (1.4) | 583 | 5.4 | (1.3) |
| Preparing students for summative assessments (high stakes tests and unit tests) | 840 | 5.7 | (1.2) | 258 | 5.6 | (1.2) | 582 | 5.7 | (1.1) |
| Adjusting instruction to accommodate individualized education plans (IEPs) | 836 | 5.4 | (1.3) | 256 | 5.3 | (1.4) | 580 | 5.4 | (1.3) |
| Accessing resources, supports, and specialized assistance and services to meet students learning differences or needs (for example, students with disabilities or English learners) | 839 | 5.3 | (1.3) | 256 | 5.3 | (1.4) | 583 | 5.3 | (1.3) |
| Establishing and using small group instruction (for example, breakout groups, reading groups, stations, jigsaw, etc.) | 840 | 5.7 | (1.4) | 258 | 5.5 | (1.6) | 582 | 5.8 | (1.3) |
| Delivering course content (for example, direct instruction, presentations) | 842 | 5.3 | (1.4) | 257 | 5.1 | (1.5) | 585 | 5.4 | (1.3) |
| Establishing and maintaining classroom norms and behavior expectations | 840 | 5.3 | (1.5) | 257 | 5.1 | (1.6) | 583 | 5.5 | (1.5) |
| Lesson planning (including selecting/securing resources, preparing materials, coordinating with colleagues, etc.) | 838 | 5.3 | (1.4) | 257 | 5.1 | (1.5) | 581 | 5.4 | (1.3) |
| Adjusting instruction in real-time to respond to student needs and reactions | 837 | 5.5 | (1.4) | 256 | 5.3 | (1.4) | 581 | 5.6 | (1.3) |
| Coping with unexpected challenges or interruptions during teaching (for example, technology issues, student illness, etc.) | 842 | 5.7 | (1.3) | 260 | 5.5 | (1.5) | 582 | 5.8 | (1.2) |
| Promoting social and emotional learning | 839 | 5.6 | (1.4) | 258 | 5.4 | (1.5) | 581 | 5.7 | (1.3) |
| Collaborating with families to promote learner growth and development | 841 | 5.2 | (1.3) | 257 | 5.1 | (1.4) | 584 | 5.2 | (1.3) |
| Collaborating with colleagues to promote learner growth and development | 840 | 5.1 | (1.4) | 256 | 5.1 | (1.5) | 584 | 5.1 | (1.4) |

Table E7. Teacher-reported teaching challenges in 2020-21 (mixed level teachers)
Teacher Survey Q18. Rate each of the following areas in terms of how difficult it was to achieve during the 2020-2021 school year, compared to before the pandemic.

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Facilitating student engagement | 322 | 5.7 | (1.3) | 103 | 5.9 | (1.2) | 219 | 5.7 | (1.4) |
| Eliciting student participation during instruction | 322 | 5.6 | (1.3) | 102 | 5.8 | (1.3) | 220 | 5.6 | (1.3) |
| Motivating students to complete assignments | 321 | 5.8 | (1.3) | 101 | 5.9 | (1.2) | 220 | 5.7 | (1.3) |
| Ensuring student access to instructional materials (for example, textbooks, videos, other media, etc.) | 322 | 5.1 | (1.5) | 101 | 5.3 | (1.4) | 221 | 5.0 | (1.5) |
| Learning about each student's individual interests, strengths, and needs | 321 | 5.1 | (1.5) | 102 | 5.2 | (1.5) | 219 | 5.1 | (1.4) |
| Setting learning goals | 321 | 5.1 | (1.2) | 103 | 5.2 | (1.2) | 218 | 5.0 | (1.2) |
| Viewing, collecting, or analyzing student work (e.g., student math solutions, student writing pieces) | 322 | 5.1 | (1.4) | 103 | 5.1 | (1.5) | 219 | 5.1 | (1.3) |
| Conducting formative assessments (for example, to guide daily teaching, student personalization, etc.) | 319 | 5.2 | (1.4) | 102 | 5.3 | (1.4) | 217 | 5.2 | (1.4) |
| Preparing students for summative assessments (high stakes tests and unit tests) | 318 | 5.6 | (1.3) | 102 | 5.6 | (1.3) | 216 | 5.6 | (1.2) |
| Adjusting instruction to accommodate individualized education plans (IEPs) | 322 | 5.3 | (1.3) | 102 | 5.4 | (1.3) | 220 | 5.3 | (1.3) |
| Accessing resources, supports, and specialized assistance and services to meet students learning differences or needs (for example, students with disabilities or English learners) | 323 | 5.3 | (1.4) | 103 | 5.4 | (1.4) | 220 | 5.3 | (1.3) |
| Establishing and using small group instruction (for example, breakout groups, reading groups, stations, jigsaw, etc.) | 323 | 5.5 | (1.5) | 104 | 5.6 | (1.5) | 219 | 5.5 | (1.5) |
| Delivering course content (for example, direct instruction, presentations) | 323 | 5.3 | (1.4) | 103 | 5.5 | (1.3) | 220 | 5.2 | (1.5) |
| Establishing and maintaining classroom norms and behavior expectations | 320 | 5.4 | (1.5) | 102 | 5.4 | (1.5) | 218 | 5.3 | (1.4) |
| Lesson planning (including selecting/securing resources, preparing materials, coordinating with colleagues, etc.) | 321 | 5.3 | (1.4) | 102 | 5.3 | (1.5) | 219 | 5.3 | (1.4) |
| Adjusting instruction in real-time to respond to student needs and reactions | 321 | 5.5 | (1.4) | 103 | 5.5 | (1.3) | 218 | 5.4 | (1.4) |
| Coping with unexpected challenges or interruptions during teaching (for example, technology issues, student illness, etc.) | 321 | 5.7 | (1.4) | 103 | 5.7 | (1.4) | 218 | 5.7 | (1.4) |
| Promoting social and emotional learning | 321 | 5.5 | (1.4) | 102 | 5.5 | (1.4) | 219 | 5.6 | (1.4) |
| Collaborating with families to promote learner growth and development | 323 | 5.0 | (1.4) | 104 | 5.1 | (1.5) | 219 | 5.0 | (1.4) |
| Collaborating with colleagues to promote learner growth and development | 320 | 5.0 | (1.4) | 101 | 5.1 | (1.5) | 219 | 4.9 | (1.4) |

[^8]
## Table E8. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (elementary school teachers)

Teacher Survey Q24_4 \& Q24_5. In your opinion, how adequately did your school support school staff's physical health and social and emotional well-being during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| School staff physical health | Support was extremely inadequate | 205 | 23.8 | 105 | 28.8 | 100 | 20.1 |
|  | Support was somewhat inadequate | 233 | 27.1 | 99 | 27.2 | 134 | 27.0 |
|  | Support was neither adequate nor inadequate | 172 | 20.0 | 75 | 20.6 | 97 | 19.5 |
|  | Support was somewhat adequate | 188 | 21.8 | 65 | 17.9 | 123 | 24.7 |
|  | Support was extremely adequate | 63 | 7.3 | 20 | 5.5 | 43 | 8.7 |
|  | Total N | 861 | 100.0 | 364 | 100.0 | 497 | 100.0 |
| School staff social and emotional well-being | Support was extremely inadequate | 324 | 37.6 | 148 | 40.8 | 176 | 35.3 |
|  | Support was somewhat inadequate | 237 | 27.5 | 99 | 27.3 | 138 | 27.7 |
|  | Support was neither adequate nor inadequate | 99 | 11.5 | 44 | 12.1 | 55 | 11.0 |
|  | Support was somewhat adequate | 156 | 18.1 | 55 | 15.2 | 101 | 20.3 |
|  | Support was extremely adequate | 45 | 5.2 | 17 | 4.7 | 28 | 5.6 |
|  | Total N | 861 | 100.0 | 363 | 100.0 | 498 | 100.0 |

Table E9. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (middle school teachers) Teacher Survey Q24_4 \& Q24_5. In your opinion, how adequately did your school support school staff's physical health and social and emotional well-being during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent |
| School staff | Support was extremely inadequate | 115 | 22.3 | 43 | 26.4 | 72 | 20.4 |
| physical health | Support was somewhat inadequate | 160 | 31.0 | 48 | 29.4 | 112 | 31.7 |
|  | Support was neither adequate nor inadequate | 102 | 19.8 | 28 | 17.2 | 74 | 21.0 |
|  | Support was somewhat adequate | 97 | 18.8 | 30 | 18.4 | 67 | 19.0 |
|  | Support was extremely adequate | 42 | 8.1 | 14 | 8.6 | 28 | 7.9 |
|  | Total N | 516 | 100.0 | 163 | 100.0 | 353 | 100.0 |
| School staff social | Support was extremely inadequate | 199 | 38.6 | 60 | 36.8 | 139 | 39.4 |
| and emotional | Support was somewhat inadequate | 149 | 28.9 | 47 | 28.8 | 102 | 28.9 |
| well-being | Support was neither adequate nor inadequate | 75 | 14.5 | 26 | 16.0 | 49 | 13.9 |
|  | Support was somewhat adequate | 68 | 13.2 | 22 | 13.5 | 46 | 13.0 |
|  | Support was extremely adequate | 25 | 4.8 | 8 | 4.9 | 17 | 4.8 |
|  | Total N | 516 | 100.0 | 163 | 100.0 | 353 | 100.0 |

Table E10. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (high school teachers) Teacher Survey Q24_4 \& Q24_5. In your opinion, how adequately did your school support school staff's physical health and social and emotional well-being during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| School staff physical health | Support was extremely inadequate | 216 | 27.1 | 79 | 32.4 | 137 | 24.8 |
|  | Support was somewhat inadequate | 230 | 28.9 | 63 | 25.8 | 167 | 30.3 |
|  | Support was neither adequate nor inadequate | 146 | 18.3 | 47 | 19.3 | 99 | 17.9 |
|  | Support was somewhat adequate | 146 | 18.3 | 37 | 15.2 | 109 | 19.7 |
|  | Support was extremely adequate | 58 | 7.3 | 18 | 7.4 | 40 | 7.2 |
|  | Total N | 796 | 100.0 | 244 | 100.0 | 552 | 100.0 |
| School staff social and emotional well-being | Support was extremely inadequate | 323 | 40.6 | 110 | 45.1 | 213 | 38.6 |
|  | Support was somewhat inadequate | 205 | 25.8 | 54 | 22.1 | 151 | 27.4 |
|  | Support was neither adequate nor inadequate | 103 | 12.9 | 35 | 14.3 | 68 | 12.3 |
|  | Support was somewhat adequate | 125 | 15.7 | 32 | 13.1 | 93 | 16.8 |
|  | Support was extremely adequate | 40 | 5.0 | 13 | 5.3 | 27 | 4.9 |
|  | Total N | 796 | 100.0 | 244 | 100.0 | 552 | 100.0 |

Table E11. Teacher-reported support for staff's physical health and emotional well-being in 2020-21 (mixed level teachers) Teacher Survey Q24_4 \& Q24_5. In your opinion, how adequately did your school support school staff's physical health and social and emotional well-being during the 2020-21 school year?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| School staff physical health | Support was extremely inadequate | 74 | 25.3 | 30 | 30.0 | 44 | 22.9 |
|  | Support was somewhat inadequate | 81 | 27.7 | 27 | 27.0 | 54 | 28.1 |
|  | Support was neither adequate nor inadequate | 63 | 21.6 | 19 | 19.0 | 44 | 22.9 |
|  | Support was somewhat adequate | 50 | 17.1 | 17 | 17.0 | 33 | 17.2 |
|  | Support was extremely adequate | 24 | 8.2 | 7 | 7.0 | 17 | 8.9 |
|  | Total N | 292 | 100.0 | 100 | 100.0 | 192 | 100.0 |
| School staff social and emotional well-being | Support was extremely inadequate | 99 | 33.7 | 35 | 35.0 | 64 | 33.0 |
|  | Support was somewhat inadequate | 77 | 26.2 | 20 | 20.0 | 57 | 29.4 |
|  | Support was neither adequate nor inadequate | 46 | 15.6 | 15 | 15.0 | 31 | 16.0 |
|  | Support was somewhat adequate | 54 | 18.4 | 24 | 24.0 | 30 | 15.5 |
|  | Support was extremely adequate | 18 | 6.1 | 6 | 6.0 | 12 | 6.2 |
|  | Total N | 294 | 100.0 | 100 | 100.0 | 194 | 100.0 |

Table E12. Teacher-reported resources/supports needed during the pandemic (elementary teachers)
Teacher Survey Q28_1r to Q28_10r. How much of a need did you have for the following resources/supports during the pandemic, compared to before the pandemic?

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Remote and/or hybrid lesson plans | 594 | 4.6 | (.8) | 241 | 4.5 | (.9) | 353 | 4.7 | (.7) |
| Social and emotional learning lesson plans or strategies | 596 | 4.3 | (.9) | 241 | 4.2 | (1.0) | 355 | 4.3 | (.8) |
| Strategies for addressing the trauma that students have experienced | 595 | 4.4 | (.9) | 241 | 4.4 | (.9) | 354 | 4.4 | (.9) |
| Strategies to keep students engaged and motivated | 599 | 4.4 | (.8) | 243 | 4.4 | (.9) | 356 | 4.4 | (.8) |
| Strategies to catch students up to grade level | 591 | 4.4 | (.9) | 237 | 4.4 | (.9) | 354 | 4.3 | (.9) |
| Strategies to assess students' academic learning | 596 | 4.0 | (1.0) | 242 | 4.0 | (1.0) | 354 | 4.0 | (.9) |
| Additional school staff who can address students' social and emotional needs | 587 | 4.5 | (.8) | 241 | 4.5 | (.8) | 346 | 4.5 | (.8) |
| Additional school or district staff who can address students' difficulties in using technology | 592 | 4.4 | (.8) | 240 | 4.5 | (.8) | 352 | 4.4 | (.9) |
| Additional staff or technology to help me teach students concurrently | 577 | 4.4 | (.8) | 236 | 4.5 | (.8) | 341 | 4.4 | (.9) |
| Other | 111 | 4.2 | (1.0) | 41 | 4.1 | (1.1) | 70 | 4.3 | (1.0) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table E13. Teacher-reported resources/supports needed during the pandemic (middle school teachers)
Teacher Survey Q28_1r to Q28_10r. How much of a need did you have for the following resources/supports during the pandemic, compared to before the pandemic?

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Remote and/or hybrid lesson plans | 353 | 4.6 | (.8) | 108 | 4.4 | (.9) | 245 | 4.6 | (.7) |
| Social and emotional learning lesson plans or strategies | 349 | 4.3 | (.9) | 108 | 4.2 | (.9) | 241 | 4.3 | (.8) |
| Strategies for addressing the trauma that students have experienced | 345 | 4.4 | (.8) | 105 | 4.3 | (.9) | 240 | 4.4 | (.8) |
| Strategies to keep students engaged and motivated | 354 | 4.5 | (.8) | 108 | 4.5 | (.7) | 246 | 4.5 | (.8) |
| Strategies to catch students up to grade level | 348 | 4.4 | (.8) | 106 | 4.4 | (.8) | 242 | 4.3 | (.9) |
| Strategies to assess students' academic learning | 351 | 3.9 | (.9) | 106 | 4.0 | (.9) | 245 | 3.9 | (.9) |
| Additional school staff who can address students' social and emotional needs | 346 | 4.4 | (.8) | 106 | 4.5 | (.8) | 240 | 4.4 | (.8) |
| Additional school or district staff who can address students' difficulties in using technology | 352 | 4.3 | (.8) | 108 | 4.4 | (.8) | 244 | 4.2 | (.8) |
| Additional staff or technology to help me teach students concurrently | 337 | 4.3 | (.9) | 105 | 4.2 | (1.0) | 232 | 4.4 | (.8) |
| Other | 67 | 4.2 | (1.0) | 22 | 4.0 | (1.0) | 45 | 4.3 | (1.1) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table E14. Teacher-reported resources/supports needed during the pandemic (high school teachers)
Teacher Survey Q28_1r to Q28_10r. How much of a need did you have for the following resources/supports during the pandemic, compared to before the pandemic?

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Remote and/or hybrid lesson plans | 534 | 4.5 | (.8) | 174 | 4.4 | (.8) | 360 | 4.5 | (.9) |
| Social and emotional learning lesson plans or strategies | 518 | 4.1 | (.9) | 166 | 4.2 | (.9) | 352 | 4.1 | (.9) |
| Strategies for addressing the trauma that students have experienced | 514 | 4.2 | (.9) | 169 | 4.2 | (.9) | 345 | 4.2 | (.9) |
| Strategies to keep students engaged and motivated | 532 | 4.5 | (.7) | 174 | 4.5 | (.8) | 358 | 4.6 | (.7) |
| Strategies to catch students up to grade level | 526 | 4.3 | (.9) | 173 | 4.3 | (.9) | 353 | 4.3 | (.9) |
| Strategies to assess students' academic learning | 524 | 4.0 | (.9) | 172 | 3.9 | (.9) | 352 | 4.0 | (.9) |
| Additional school staff who can address students' social and emotional needs | 514 | 4.3 | (.9) | 168 | 4.3 | (.9) | 346 | 4.3 | (.9) |
| Additional school or district staff who can address students' difficulties in using technology | 523 | 4.2 | (.9) | 170 | 4.3 | (.8) | 353 | 4.2 | (.9) |
| Additional staff or technology to help me teach students concurrently | 518 | 4.2 | (.9) | 171 | 4.1 | (1.0) | 347 | 4.2 | (.9) |
| Other | 98 | 4.0 | (1.1) | 36 | 4.1 | (1.1) | 62 | 3.9 | (1.2) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table E15. Teacher-reported resources/supports needed during the pandemic (mixed-level teachers)
Teacher Survey Q28_1r to Q28_10r. How much of a need did you have for the following resources/supports during the pandemic, compared to before $\overline{t h}$ p pandemic?

|  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Remote and/or hybrid lesson plans | 209 | 4.5 | (.9) | 63 | 4.4 | (.8) | 146 | 4.5 | (.9) |
| Social and emotional learning lesson plans or strategies | 204 | 4.1 | (.9) | 61 | 3.9 | (1.0) | 143 | 4.1 | (.9) |
| Strategies for addressing the trauma that students have experienced | 202 | 4.3 | (.9) | 61 | 4.3 | (1.0) | 141 | 4.3 | (.9) |
| Strategies to keep students engaged and motivated | 210 | 4.5 | (.8) | 64 | 4.5 | (.8) | 146 | 4.4 | (.8) |
| Strategies to catch students up to grade level | 205 | 4.3 | (.9) | 62 | 4.3 | (.9) | 143 | 4.3 | (.8) |
| Strategies to assess students' academic learning | 208 | 4.0 | (.9) | 62 | 4.0 | (.9) | 146 | 4.0 | (.8) |
| Additional school staff who can address students' social and emotional needs | 200 | 4.4 | (.9) | 59 | 4.2 | (1.1) | 141 | 4.4 | (.8) |
| Additional school or district staff who can address students' difficulties in using technology | 208 | 4.3 | (.8) | 63 | 4.4 | (.8) | 145 | 4.3 | (.8) |
| Additional staff or technology to help me teach students concurrently | 199 | 4.3 | (.9) | 59 | 4.3 | (.8) | 140 | 4.2 | (1.0) |
| Other | 38 | 4.0 | (1.0) | 12 | 4.0 | (1.1) | 26 | 4.0 | (1.0) |

Please note, these items range from 1-5, with $1=$ Much less of a need to $5=$ Much more of a need.

Table E16. Teacher-reported effects of pandemic and resources provided on teaching and teacher well-being
Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

## Impacts on Teachers: Physical Health

In the open-ended question at the end of the teacher survey, respondents reported that the pandemic took a huge toll on their physical health. Teachers mentioned vision changes, weight gain, and increased physical illnesses, as well as chronic neck, shoulder, and back pain.

## Impacts on Teachers: Mental Health

Responses to the open-ended teacher survey question indicated that teachers experienced an increase in negative mental health due to the pandemic. Teachers felt stressed, overwhelmed, and defeated daily not only worrying about themselves but about their students, co-workers, and family members. Others reported crying at least once a day while working. Teachers lost colleagues due to the
immense stress. Some teachers were diagnosed with anxiety, PTSD, and depression because of the pandemic. Many teachers reported that administration was not doing enough to support teacher mental health, while other described how difficult it was to support students' mental health when they themselves were suffering. A smaller proportion of teachers indicated that they had found ways to cope with the emotional impacts of the pandemic. Some respondents said they strived to maintain a positive outlook during a challenging time, while others reflected on the ways they became adaptive and resilient as strategies to stay optimistic about the future. Some respondents talked about their pride in their work, while others reported experiencing professional and personal growth.

## Impacts on Teachers: Workload

In response to the open-ended teacher survey question, teachers reported the constant changes to the learning format and curriculum resulted in a workload that was difficult to manage. Lesson planning took 2-3 times longer during online learning formats. Grading assignments also took longer. Teachers reported working up to 16 hours a day while others said they regularly were awake past midnight working.

## Impacts on Teachers: Work-life Balance

The responses from the open-ended teacher survey question revealed that teachers found it challenging to balance their work and their personal life. Teachers found it difficult and stressful to manage personal responsibilities like caring for children and older parents during the pandemic. Some respondents discussed the frustration they felt about the boundary between work-life and home-life becoming obsolete during the pandemic. One teacher highlighted how they had minimal home responsibilities unlike their colleagues, enabling them to spend more time learning new technology resources and plan excellent class lessons.

## Impacts on Teachers: Burnout, Intention to Quit, Retention

Responses to the open-ended teacher survey question indicated that many teachers quit their jobs, moved their retirement date to an earlier time, or were seriously considering leaving the profession. Respondents reported feeling less safe, an increased workload without fair compensation, increasing work-related stress, and the mistreatment of teachers as reasons for burnout and the desire to quit. Of the teachers actively considering leaving their profession, losing their retirement and other benefits was the main thing discouraging them from quitting.

## District/School Support for Teachers: District/school policies about learning (attendance, participation, grading)

In response to the open-ended teacher survey question, teachers reported that their administrations' decisions to lower expectations for students created more problems for teachers. Attendance policies during the pandemic encouraged negative behaviors from students, including increased absenteeism and disengagement. As one teacher noted "if they [students] logged in and off for only 5 minutes and didn't do any work, she [the administrator] had us mark them present." Teachers also reported many students were promoted to the next grade level when school policies indicated they should not have been.

## Teacher Experiences: Effects of student engagement/conduct/behavior on teaching

In their responses to the open-ended teacher survey question, many teacher respondents said that they struggled with teaching remote students who were disengaged or undisciplined. One teacher said, "Students who were remote were despondent, apathetic, and unmotivated. They struggled academically and needed constant adult supervision to keep them on task." Many teachers reported that students were distracted by chaotic home environments, other activities on their computers, and social media. Furthermore, there was little accountability for remote learners, and students often refused to turn on their cameras during synchronous instruction or cheated on assignments by using online software or help from their peers. Overall, many teachers reported that students were disengaged or unmotivated, which made it hard to teach effectively. Several respondents noted that it was extremely difficult to implement special education accommodations remotely, which left these students struggling and disengaged. On the other hand, some teacher respondents reported that because hybrid learning led to fewer students in class, there were fewer behavioral issues and teachers were able to provide more personalized instruction to each student. Similarly, some remote teachers reported fewer behavioral issues and more personalized learning, which improved instruction. Remote teachers reported that they no longer had to manage physical behavioral issues or deal with classroom disruptions such as assemblies and fire drills. Respondents reported that students that were engaged and whose parents supported their academic development were successful in remote learning. One teacher said they were "motivated and encouraged by the support from parents and the self-efficacy of the students who did the work and adapted to this new way of learning." Respondents said that there were fewer pressures and expectations placed on their students in a remote environment and that they could get to know their students better. Many teachers reported that motivated students (especially those with engaged parents) thrived during remote learning, which made remote instruction more manageable and rewarding.

## District/School Support for Teachers: School Discipline

In responses to the open-ended teacher survey question, some teachers indicated the lack of support from administration about school discipline made teaching difficult. Some teachers reported that their administrations attempted to ease the impact of the pandemic on students by relaxing school rules and lowering expectations for student conduct, which caused negative student behaviors to become unmanageable. Respondents said that students argued and ignored teacher instructions daily, which took a significant amount of time away from actual instruction.

## District/School Support for Teachers: Social-emotional Support

Responses to the open-ended teacher survey question indicated that many teachers felt they lacked social-emotional support at work. Some respondents said that school leaders and administrators were uncaring, while others pointed to district leadership as the reason for lack of support. The lack of social-emotional support made teaching more stressful and exhausting. One of the very few teachers who reported receiving social-emotional support from their administration or district said this support helped them "professionally adapt and emotionally deal with the situation."

## District/School Support for Teachers: Time

In response to the open-ended teacher survey question, teachers overwhelmingly reported receiving minimal time for lesson planning. One teacher commented "the contracted prep period [is not] long enough to adequately plan for that kind of instruction," going on to say "expecting educators to continue at this pace is unacceptable and a disservice to the very students we're committed to teaching because the only thing they're going to get is exhausted teachers and minimally planned/thrown together lessons." There were a few teachers who said they benefitted from an early-release/half-day each week so they had time without students to plan and prepare for instruction.

## District/School Support for Teachers: Staffing, Duties, Job Responsibilities

A number of teachers who responded to the open-ended teacher survey question reported that the inadequate staffing during the pandemic meant that teachers were assigned an increased number of duties and job responsibilities. Teachers reported that staff shortages and not enough substitute teachers meant they were asked to cover other classes. Other teachers reported that class sizes were increased without additional staff support, which made teaching difficult. Other tasks teachers became responsible for included daily COVID-19 wellness surveys/checks, breakfast and lunch duty, recording meal orders, and cleaning of desks, chairs, and surfaces. Teachers also reported that they needed to support students as mental health professionals, despite lacking training in that field. These additional responsibilities took time away from instruction.

## District/School Support for Teachers: Other

Through the open-ended teacher survey question, teachers reported that they did not feel supported by their schools/districts in terms of COVID-19 safety. Many teachers reported that there were very few protective measures in place, and teachers had to advocate for their own safety and buy their own protective equipment. Teachers said safety protocols that were officially in place were sometime ineffective (such as defective air filters) or were not practiced (such as cleaning protocols). Some respondents said their districts asked teachers to interact closely with student populations without adequate safety protocols, and then required teachers to use their personal sick time when to quarantine after exposure. Other teachers reported that their districts kept up to date with COVID safety measures and made proactive choices to create the safest and most effective environment for staff and students.

Many teachers described other types of support their districts and schools did and didn't provide. Some respondents reported that ineffective communication between administration and teachers made them feel unsupported. Other respondents emphasized that administrators could make an enormous difference in teachers' experiences-for the better or for the worse. Some teachers shared that their leaders showed understanding of the difficulties of remote instruction. Other teachers said their districts created opportunities for teachers to connect with their students in a meaningful way. One teacher said that her leaders "worked to create a sense of shared challenge and community to overcome difficulties".

## Teacher Experiences: Collegiality/Collaboration

Through the open-ended teacher survey question, some teachers reported challenges to collaboration among teachers. Some teachers reported that they were not allowed to collaborate with other colleagues in person, even while wearing masks. Others said that virtual meetings were less effective for collaboration. One teacher noted "it was extremely challenging and time consuming to create effective lessons and to coordinate with colleagues." Another teacher reported that differences in workload among teachers from different subject areas created tension among teachers. At the same time, other teachers respondents said were proud of the ways they were able to collaborate with their colleagues. Colleagues shared helpful resources and taught each another how to use new teaching tools. As one teacher commented, "this was the greatest time for teacher collaboration." Several teachers expressed appreciation for their colleagues, with one teacher saying they "could not have lived through these last two years without the support of my colleagues." These teachers reported that they were thankful to have fellow teachers to lean on for support despite the hardships they faced.

Research Question 3b. What technological resources did districts/schools provide to teachers to support remote and hybrid learning, and what technology challenges and strategies did teachers report?

Table E17. District-reported use of technology by elementary school teachers prior to the COVID-19 pandemic
District Inventory: Q4_4-Q4_6. Which of the following best describes learning opportunities for your district's elementary school students prior to the COVID-19 pandemic (before March 2020)?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| In general, teachers had access to technology integration support (classroom tech coaches) | 102 | 52.8 | 14 | 43.8 | 75 | 57.7 | 13 | 41.9 |
| In general, teachers were using learning management platforms to support instruction (for example, Google Classroom, Schoology, etc.) | 97 | 50.3 | 7 | 21.9 | 78 | 60.0 | 12 | 38.7 |
| In general, teachers were using technology platforms to communicate with parents (for example, Remind, Class Dojo) | 133 | 68.9 | 25 | 78.1 | 96 | 73.8 | 12 | 38.7 |
| None of the above | 29 | 15.0 | 5 | 15.6 | 15 | 11.5 | 9 | 29.0 |
| Total N | 193 | 100.0 | 32 | 100.0 | 130 | 100.0 | 31 | 100.0 |

Table E18. District-reported use of technology by middle school teachers prior to the COVID-19 pandemic
District Inventory: Q4_4-Q4_6. Which of the following best describes learning opportunities for your district's middle school students prior to the COVID-19 pandemic (before March 2020)?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| In general, teachers had access to technology integration support (classroom tech coaches) | 98 | 51.9 | 13 | 41.9 | 70 | 57.4 | 15 | 41.7 |
| In general, teachers were using learning management platforms to support instruction (for example, Google Classroom, Schoology, etc.) | 127 | 67.2 | 15 | 48.4 | 94 | 77.0 | 18 | 50.0 |
| In general, teachers were using technology platforms to communicate with parents (for example, Remind, Class Dojo) | 116 | 61.4 | 19 | 61.3 | 86 | 70.5 | 11 | 30.6 |
| None of the above | 28 | 14.8 | 7 | 22.6 | 11 | 9.0 | 10 | 27.8 |
| Total N | 189 | 100.0 | 31 | 100.0 | 122 | 100.0 | 36 | 100.0 |

Table E19. District-reported use of technology by high school teachers prior to the COVID-19 pandemic
District Inventory: Q4_4-Q4_6. Which of the following best describes learning opportunities for your district's high school students in each of the following grade levels prior to the COVID-19 pandemic (before March 2020)?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| In general, teachers had access to technology integration support (classroom tech coaches) | 88 | 50.9 | 13 | 43.3 | 61 | 60.4 | 14 | 33.3 |
| In general, teachers were using learning management platforms to support instruction (for example, Google Classroom, Schoology, etc.) | 124 | 71.7 | 18 | 60.0 | 84 | 83.2 | 22 | 52.4 |
| In general, teachers were using technology platforms to communicate with parents (for example, Remind, Class Dojo) | 100 | 57.8 | 18 | 60.0 | 67 | 66.3 | 15 | 35.7 |
| None of the above | 25 | 14.5 | 5 | 16.7 | 8 | 7.9 | 12 | 28.6 |
| Total N | 173 | 100.0 | 30 | 100.0 | 101 | 100.0 | 42 | 100.0 |

Table E20. District-reported technology provided to elementary school teachers to support remote learning
District Inventory: Q37e. What technologies were provided to elementary school teachers to support remote teaching during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Chromebooks | 136 | 72.0 | 28 | 84.8 | 89 | 70.6 | 19 | 63.3 |
|  | iPads | 66 | 34.9 | 12 | 36.4 | 42 | 33.3 | 12 | 40.0 |
|  | Laptops (other than Chromebooks) | 102 | 54.0 | 18 | 54.5 | 65 | 51.6 | 19 | 63.3 |
|  | Smartphones | 6 | 3.2 | 0 | . 0 | 5 | 4.0 | 1 | 3.3 |
|  | Wifi hotspot devices | 72 | 38.1 | 15 | 45.5 | 53 | 42.1 | 4 | 13.3 |
|  | Other (please describe): | 15 | 7.9 | 2 | 6.1 | 13 | 10.3 | 0 | . 0 |
|  | Total N | 189 | 100.0 | 33 | 100.0 | 126 | 100.0 | 30 | 100.0 |
| 2020-2021 | Chromebooks | 138 | 72.6 | 25 | 78.1 | 93 | 73.2 | 20 | 64.5 |
|  | iPads | 64 | 33.7 | 13 | 40.6 | 38 | 29.9 | 13 | 41.9 |
|  | Laptops (other than Chromebooks) | 112 | 58.9 | 22 | 68.8 | 71 | 55.9 | 19 | 61.3 |
|  | Smartphones | 3 | 1.6 | 0 | . 0 | 2 | 1.6 | 1 | 3.2 |
|  | Wifi hotspot devices | 72 | 37.9 | 16 | 50.0 | 50 | 39.4 | 6 | 19.4 |
|  | Other (please describe): | 22 | 11.6 | 3 | 9.4 | 19 | 15.0 | 0 | . 0 |
|  | Total N | 190 | 100.0 | 32 | 100.0 | 127 | 100.0 | 31 | 100.0 |

Of districts that used the open-choice option to describe other technologies provided to elementary school teachers to support remote learning, the most-reported technologies were for broadcasting remote instruction to students. These technologies include webcams, document cameras, and sound equipment like microphones and headsets to support teachers' virtual broadcasting of lessons and learning materials. A few districts also provided interactive whiteboards to further support remote instruction. Finally, multiple districts reported providing additional devices to elementary teachers if needed, including extra PCs, computer monitors, and tablets.

Table E21. District-reported technology provided to middle school teachers to support remote learning
District Inventory: Q37m. What technologies were provided to middle school teachers to support remote teaching during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Chromebooks | 124 | 67.4 | 21 | 67.7 | 84 | 71.8 | 19 | 52.8 |
|  | iPads | 35 | 19.0 | 4 | 12.9 | 19 | 16.2 | 12 | 33.3 |
|  | Laptops (other than Chromebooks) | 110 | 59.8 | 21 | 67.7 | 63 | 53.8 | 26 | 72.2 |
|  | Smartphones | 9 | 4.9 | 1 | 3.2 | 4 | 3.4 | 4 | 11.1 |
|  | Wifi hotspot devices | 60 | 32.6 | 11 | 35.5 | 47 | 40.2 | 2 | 5.6 |
|  | Other (please describe): | 10 | 5.4 | 1 | 3.2 | 7 | 6.0 | 2 | 5.6 |
|  | Total N | 184 | 100.0 | 31 | 100.0 | 117 | 100.0 | 36 | 100.0 |
| 2020-2021 | Chromebooks | 124 | 67.8 | 19 | 61.3 | 85 | 73.3 | 20 | 55.6 |
|  | iPads | 38 | 20.8 | 5 | 16.1 | 21 | 18.1 | 12 | 33.3 |
|  | Laptops (other than Chromebooks) | 115 | 62.8 | 24 | 77.4 | 66 | 56.9 | 25 | 69.4 |
|  | Smartphones | 9 | 4.9 | 1 | 3.2 | 4 | 3.4 | 4 | 11.1 |
|  | Wifi hotspot devices | 65 | 35.5 | 15 | 48.4 | 46 | 39.7 | 4 | 11.1 |
|  | Other (please describe): | 22 | 12.0 | 3 | 9.7 | 16 | 13.8 | 3 | 8.3 |
|  | Total N | 183 | 100.0 | 31 | 100.0 | 116 | 100.0 | 36 | 100.0 |

Of districts that used the open-choice option to describe other technologies provided to middle school teachers to support remote learning in spring 2020, the most mentioned technologies were webcams, document cameras, and audio equipment like speakers, microphones, and headsets; it is clear that districts prioritized the provision of these technologies to aid the remote broadcast of instructional materials. A multitude of districts also reported that they provided additional desktop computers, PCs, and monitors.

Table E22. District-reported technology provided to high school teachers to support remote learning
District Inventory: Q37h. What technologies were provided to high school teachers to support remote teaching during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Chromebooks | 108 | 63.9 | 20 | 64.5 | 70 | 72.2 | 18 | 43.9 |
|  | iPads | 23 | 13.6 | 3 | 9.7 | 10 | 10.3 | 10 | 24.4 |
|  | Laptops (other than Chromebooks) | 104 | 61.5 | 22 | 71.0 | 51 | 52.6 | 31 | 75.6 |
|  | Smartphones | 8 | 4.7 | 1 | 3.2 | 4 | 4.1 | 3 | 7.3 |
|  | Wifi hotspot devices | 49 | 29.0 | 10 | 32.3 | 38 | 39.2 | 1 | 2.4 |
|  | Other (please describe): | 13 | 7.7 | 2 | 6.5 | 9 | 9.3 | 2 | 4.9 |
|  | Total N | 169 | 100.0 | 31 | 100.0 | 97 | 100.0 | 41 | 100.0 |
| 2020-2021 | Chromebooks | 110 | 64.0 | 18 | 58.1 | 70 | 72.2 | 22 | 50.0 |
|  | iPads | 26 | 15.1 | 4 | 12.9 | 11 | 11.3 | 11 | 25.0 |
|  | Laptops (other than Chromebooks) | 116 | 67.4 | 26 | 83.9 | 57 | 58.8 | 33 | 75.0 |
|  | Smartphones | 8 | 4.7 | 1 | 3.2 | 4 | 4.1 | 3 | 6.8 |
|  | Wifi hotspot devices | 56 | 32.6 | 13 | 41.9 | 40 | 41.2 | 3 | 6.8 |
|  | Other (please describe): | 22 | 12.8 | 4 | 12.9 | 15 | 15.5 | 3 | 6.8 |
|  | Total N | 172 | 100.0 | 31 | 100.0 | 97 | 100.0 | 44 | 100.0 |

Of districts that used the open-choice option to describe other technologies provided to high school teachers to support remote learning in spring 2020, the most-reported technologies were those used to broadcast virtual instruction, such as webcams, document cameras, microphones, headsets, and speakers to ensure quality streaming. Some districts also mentioned that they supplied additional desktop computers and monitors. Finally, it was reported by two districts that drawing/writing tablets were provided to some teachers to bolster instruction.

Table E23. District-reported learning management systems provided to elementary school teachers to support remote learning District Inventory: Q38e. What learning management systems were provided to elementary school teachers to support remote teaching during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Google Suite/Classroom | 170 | 89.5 | 27 | 81.8 | 119 | 93.7 | 24 | 80.0 |
|  | Schoology | 7 | 3.7 | 0 | . 0 | 7 | 5.5 | 0 | . 0 |
|  | Moodle | 1 | . 5 | 0 | . 0 | 1 | . 8 | 0 | . 0 |
|  | ClassDojo | 48 | 25.3 | 10 | 30.3 | 33 | 26.0 | 5 | 16.7 |
|  | SeeSaw | 89 | 46.8 | 12 | 36.4 | 73 | 57.5 | 4 | 13.3 |
|  | Other (please describe): | 17 | 8.9 | 4 | 12.1 | 7 | 5.5 | 6 | 20.0 |
|  | Total N | 190 | 100.0 | 33 | 100.0 | 127 | 100.0 | 30 | 100.0 |
| 2020-2021 | Google Suite/Classroom | 169 | 88.9 | 26 | 78.8 | 119 | 93.0 | 24 | 82.8 |
|  | Schoology | 9 | 4.7 | 0 | . 0 | 9 | 7.0 | 0 | . 0 |
|  | Moodle | 1 | . 5 | 0 | . 0 | 1 | . 8 | 0 | . 0 |
|  | ClassDojo | 44 | 23.2 | 9 | 27.3 | 30 | 23.4 | 5 | 17.2 |
|  | SeeSaw | 98 | 51.6 | 19 | 57.6 | 75 | 58.6 | 4 | 13.8 |
|  | Other (please describe): | 21 | 11.1 | 7 | 21.2 | 8 | 6.3 | 6 | 20.7 |
|  | Total N | 190 | 100.0 | 33 | 100.0 | 128 | 100.0 | 29 | 100.0 |

Of those districts that that used the open-text option to describe other learning management systems (LMS) provided to elementary school teachers to support remote learning, the most-reported LMS was Microsoft Teams, which can be used to facilitate the sharing of information and instructional materials. Another LMS mentioned was Nearpod (https://nearpod.com/), which allows teachers to assign interactive lessons, activities and assessments remotely. An additional LMS reported that covers multiple subjects was IXL (https://www.ixl.com/), which can be used to assign assignments and assessments over a wide variety of topics. Some districts reported LMS that are subject-specific, such as ASSISTments (https://www.youtube.com/watch?v=8t62Aj-VGig), a learning platform for math where teachers can assign homework and assessments and provide feedback. A final learning management system discussed was Transparent Classroom for Montessori (https://www.transparentclassroom.com/); this platform allows teachers to plan lessons, manage students and record their progress, and communicate with parents in real-time.

Table E24. District-reported learning management systems provided to middle school teachers to support remote learning District Inventory: Q38m. What learning management systems were provided to middle school teachers to support remote teaching during the two timeframes listed?

|  |  |  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | $\begin{aligned} & \text { Valid } \\ & \text { Count } \end{aligned}$ | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Google Suite/Classroom | 164 | 91.1 | 26 | 83.9 | 109 | 94.0 | 29 | 87.9 |
|  | Schoology | 14 | 7.8 | 3 | 9.7 | 11 | 9.5 | 0 | . 0 |
|  | Moodle | 7 | 3.9 | 3 | 9.7 | 4 | 3.4 | 0 | . 0 |
|  | ClassDojo | 22 | 12.2 | 3 | 9.7 | 17 | 14.7 | 2 | 6.1 |
|  | SeeSaw | 35 | 19.4 | 3 | 9.7 | 30 | 25.9 | 2 | 6.1 |
|  | Other (please describe): | 19 | 10.6 | 5 | 16.1 | 9 | 7.8 | 5 | 15.2 |
|  | Total N | 180 | 100.0 | 31 | 100.0 | 116 | 100.0 | 33 | 100.0 |
| 2020-2021 | Google Suite/Classroom | 162 | 89.0 | 25 | 83.3 | 108 | 90.8 | 29 | 87.9 |
|  | Schoology | 17 | 9.3 | 3 | 10.0 | 14 | 11.8 | 0 | . 0 |
|  | Moodle | 8 | 4.4 | 3 | 10.0 | 5 | 4.2 | 0 | . 0 |
|  | ClassDojo | 21 | 11.5 | 3 | 10.0 | 16 | 13.4 | 2 | 6.1 |
|  | SeeSaw | 35 | 19.2 | 4 | 13.3 | 29 | 24.4 | 2 | 6.1 |
|  | Other (please describe): | 21 | 11.5 | 6 | 20.0 | 9 | 7.6 | 6 | 18.2 |
|  | Total N | 182 | 100.0 | 30 | 100.0 | 119 | 100.0 | 33 | 100.0 |

Of those districts that used the open-text option to describe other learning management systems provided to middle school teachers to support remote learning, districts mentioned Microsoft Teams for facilitating communication and Nearpod for providing interactive lessons, activities, and assessments (https://nearpod.com/). One district mentioned the use of Unified Classroom (https://www.powerschool.com/blog/what-is-unified-classroom-2020/), which combines a learning management system with assessments and student performance analytics. Edgenuity is a learning management system that was reported on both the middle school and high school level, as it provides middle and high school courses to students fully-online, including access to teachers, assignments, and assessments (https://www.edgenuity.com/online-courses/). Finally, Transparent Classroom
(https://www.transparentclassroom.com/) was mentioned for Montessori classrooms, and it can be used to plan lessons, manage students and track their progress, and communicate with parents in real time. There was one subject-specific learning management system that a district reported providing to middle school teachers, called ASSISTments, a math-specific platform where teachers can assign homework and assessments and provide feedback to students (https://www.youtube.com/watch?v=8t62Aj-VGig).

Table E25. District-reported learning management systems provided to high school teachers to support remote learning District Inventory: Q38h. What Learning management systems were provided to high school teachers to support remote teaching during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | Google Suite/Classroom | 147 | 88.6 | 26 | 83.9 | 91 | 92.9 | 30 | 81.1 |
|  | Schoology | 20 | 12.0 | 3 | 9.7 | 15 | 15.3 | 2 | 5.4 |
|  | Moodle | 7 | 4.2 | 3 | 9.7 | 4 | 4.1 | 0 | . 0 |
|  | ClassDojo | 7 | 4.2 | 0 | . 0 | 6 | 6.1 | 1 | 2.7 |
|  | SeeSaw | 10 | 6.0 | 0 | . 0 | 9 | 9.2 | 1 | 2.7 |
|  | Other (please describe): | 22 | 13.3 | 6 | 19.4 | 9 | 9.2 | 7 | 18.9 |
|  | Total N | 166 | 100.0 | 31 | 100.0 | 98 | 100.0 | 37 | 100.0 |
| 2020-2021 | Google Suite/Classroom | 146 | 86.4 | 25 | 83.3 | 89 | 89.9 | 32 | 80.0 |
|  | Schoology | 21 | 12.4 | 3 | 10.0 | 17 | 17.2 | 1 | 2.5 |
|  | Moodle | 8 | 4.7 | 3 | 10.0 | 5 | 5.1 | 0 | . 0 |
|  | ClassDojo | 7 | 4.1 | 0 | . 0 | 6 | 6.1 | 1 | 2.5 |
|  | SeeSaw | 9 | 5.3 | 0 | . 0 | 8 | 8.1 | 1 | 2.5 |
|  | Other (please describe): | 25 | 14.8 | 8 | 26.7 | 8 | 8.1 | 9 | 22.5 |
|  | Total N | 169 | 100.0 | 30 | 100.0 | 99 | 100.0 | 40 | 100.0 |

Of the districts that used the open-text option to describe other learning management systems (LMS) provided to high school teachers to support remote learning, 6 mentioned Microsoft Teams and 4 mentioned Nearpod. Microsoft Teams is used to facilitate the sharing of information and instructional materials. Whereas, Nearpod provides interactive lessons, activities, and students assessments (https://nearpod.com/). Unified Classroom was mentioned as a tool for combining the functions of an LMS with assignments, assessments, and student performance analytics (https://www.powerschool.com/blog/what-is-unified-classroom-2020/). Edgenuity was also reported; it provides credited courses across a wide range of subjects and allows students to have virtual access to teachers, coursework, and assessments (https://www.edgenuity.com/online-courses/). One district reported that they provided Buzz, which allows teachers to track progress, personalize learning, and administer assessments. (https://agilix.com/buzz-learning-deliveryplatform/\#:~:text=Buzz\ supports\ successful\ learning\ and,your\ ideas\ for\ transforming\ education)

Table E26. District-reported apps and tools used by elementary school teachers during spring 2020 and school year 2020-2021 District Inventory: Q39e. Which of these were the most-used apps and tools for elementary school teachers during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | YouTube video | 130 | 70.3 | 23 | 71.9 | 85 | 69.1 | 22 | 73.3 |
|  | Desmos | 12 | 6.5 | 5 | 15.6 | 7 | 5.7 | 0 | . 0 |
|  | Edpuzzle | 43 | 23.2 | 10 | 31.3 | 31 | 25.2 | 2 | 6.7 |
|  | Google Forms | 138 | 74.6 | 23 | 71.9 | 96 | 78.0 | 19 | 63.3 |
|  | Kahoot | 86 | 46.5 | 12 | 37.5 | 60 | 48.8 | 14 | 46.7 |
|  | ClassDojo | 73 | 39.5 | 19 | 59.4 | 47 | 38.2 | 7 | 23.3 |
|  | Mentimeter | 2 | 1.1 | 0 | . 0 | 2 | 1.6 | 0 | . 0 |
|  | Quizlet | 67 | 36.2 | 9 | 28.1 | 48 | 39.0 | 10 | 33.3 |
|  | Padlet | 56 | 30.3 | 10 | 31.3 | 44 | 35.8 | 2 | 6.7 |
|  | Screencastify | 87 | 47.0 | 16 | 50.0 | 69 | 56.1 | 2 | 6.7 |
|  | Padlet/Jamboard | 76 | 41.1 | 15 | 46.9 | 56 | 45.5 | 5 | 16.7 |
|  | Other (please describe): | 50 | 27.0 | 9 | 28.1 | 33 | 26.8 | 8 | 26.7 |
|  | Total N | 185 | 100.0 | 32 | 100.0 | 123 | 100.0 | 30 | 100.0 |
| 2020-2021 | YouTube video | 131 | 70.1 | 21 | 63.6 | 87 | 70.2 | 23 | 76.7 |
|  | Desmos | 18 | 9.6 | 7 | 21.2 | 11 | 8.9 | 0 | . 0 |
|  | Edpuzzle | 54 | 28.9 | 12 | 36.4 | 41 | 33.1 | 1 | 3.3 |
|  | Google Forms | 146 | 78.1 | 24 | 72.7 | 103 | 83.1 | 19 | 63.3 |
|  | Kahoot | 91 | 48.7 | 13 | 39.4 | 64 | 51.6 | 14 | 46.7 |
|  | ClassDojo | 74 | 39.6 | 21 | 63.6 | 45 | 36.3 | 8 | 26.7 |
|  | Mentimeter | 4 | 2.1 | 2 | 6.1 | 2 | 1.6 | 0 | . 0 |
|  | Quizlet | 77 | 41.2 | 9 | 27.3 | 56 | 45.2 | 12 | 40.0 |
|  | Padlet | 73 | 39.0 | 14 | 42.4 | 57 | 46.0 | 2 | 6.7 |
|  | Screencastify | 101 | 54.0 | 17 | 51.5 | 81 | 65.3 | 3 | 10.0 |
|  | Padlet/Jamboard | 102 | 54.5 | 19 | 57.6 | 76 | 61.3 | 7 | 23.3 |
|  | Other (please describe): | 54 | 28.9 | 11 | 33.3 | 35 | 28.2 | 8 | 26.7 |
|  | Total N | 187 | 100.0 | 33 | 100.0 | 124 | 100.0 | 30 | 100.0 |

Table E27. District-reported apps and tools used by middle school teachers during spring 2020 and school year 2020-2021 District Inventory: Q39m. Which of these were the most-used apps and tools for middle school teachers during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | YouTube video | 146 | 81.1 | 26 | 83.9 | 92 | 80.7 | 28 | 80.0 |
|  | Desmos | 31 | 17.2 | 6 | 19.4 | 24 | 21.1 | 1 | 2.9 |
|  | Edpuzzle | 65 | 36.1 | 14 | 45.2 | 49 | 43.0 | 2 | 5.7 |
|  | Google Forms | 140 | 77.8 | 23 | 74.2 | 93 | 81.6 | 24 | 68.6 |
|  | Kahoot | 95 | 52.8 | 14 | 45.2 | 66 | 57.9 | 15 | 42.9 |
|  | ClassDojo | 32 | 17.8 | 5 | 16.1 | 23 | 20.2 | 4 | 11.4 |
|  | Mentimeter | 5 | 2.8 | 1 | 3.2 | 4 | 3.5 | 0 | . 0 |
|  | Quizlet | 75 | 41.7 | 11 | 35.5 | 53 | 46.5 | 11 | 31.4 |
|  | Padlet | 54 | 30.0 | 12 | 38.7 | 41 | 36.0 | 1 | 2.9 |
|  | Screencastify | 79 | 43.9 | 17 | 54.8 | 61 | 53.5 | 1 | 2.9 |
|  | Padlet/Jamboard | 70 | 38.9 | 14 | 45.2 | 51 | 44.7 | 5 | 14.3 |
|  | Other (please describe): | 50 | 27.8 | 9 | 29.0 | 31 | 27.2 | 10 | 28.6 |
|  | Total N | 180 | 100.0 | 31 | 100.0 | 114 | 100.0 | 35 | 100.0 |
| 2020-2021 | YouTube video | 149 | 82.3 | 27 | 87.1 | 93 | 80.9 | 29 | 82.9 |
|  | Desmos | 38 | 21.0 | 6 | 19.4 | 31 | 27.0 | 1 | 2.9 |
|  | Edpuzzle | 75 | 41.4 | 13 | 41.9 | 58 | 50.4 | 4 | 11.4 |
|  | Google Forms | 147 | 81.2 | 24 | 77.4 | 99 | 86.1 | 24 | 68.6 |
|  | Kahoot | 98 | 54.1 | 14 | 45.2 | 68 | 59.1 | 16 | 45.7 |
|  | ClassDojo | 30 | 16.6 | 5 | 16.1 | 20 | 17.4 | 5 | 14.3 |
|  | Mentimeter | 6 | 3.3 | 2 | 6.5 | 4 | 3.5 | 0 | . 0 |
|  | Quizlet | 82 | 45.3 | 13 | 41.9 | 55 | 47.8 | 14 | 40.0 |
|  | Padlet | 75 | 41.4 | 18 | 58.1 | 55 | 47.8 | 2 | 5.7 |
|  | Screencastify | 101 | 55.8 | 18 | 58.1 | 81 | 70.4 | 2 | 5.7 |
|  | Padlet/Jamboard | 97 | 53.6 | 20 | 64.5 | 71 | 61.7 | 6 | 17.1 |
|  | Other (please describe): | 54 | 29.8 | 11 | 35.5 | 34 | 29.6 | 9 | 25.7 |
|  | Total N | 181 | 100.0 | 31 | 100.0 | 115 | 100.0 | 35 | 100.0 |

Table E28. District-reported apps and tools used by high school teachers during spring 2020 and 2020-21
District Inventory: Q39h. Which of these were the most-used apps and tools for high school teachers during the two timeframes listed?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid <br> Count | Valid Percent | Valid Count | Valid Percent |
| Spring 2020 | YouTube video | 139 | 84.2 | 27 | 87.1 | 79 | 83.2 | 33 | 84.6 |
|  | Desmos | 41 | 24.8 | 6 | 19.4 | 34 | 35.8 | I | 2.6 |
|  | Edpuzzle | 63 | 38.2 | 16 | 51.6 | 44 | 46.3 | 3 | 7.7 |
|  | Google Forms | 130 | 78.8 | 23 | 74.2 | 82 | 86.3 | 25 | 64.1 |
|  | Kahoot | 90 | 54.5 | 13 | 41.9 | 63 | 66.3 | 14 | 35.9 |
|  | ClassDojo | 15 | 9.1 | 1 | 3.2 | 11 | 11.6 | 3 | 7.7 |
|  | Mentimeter | 6 | 3.6 | 1 | 3.2 | 5 | 5.3 | 0 | . 0 |
|  | Quizlet | 76 | 46.1 | 12 | 38.7 | 52 | 54.7 | 12 | 30.8 |
|  | Padlet | 50 | 30.3 | 12 | 38.7 | 37 | 38.9 | 1 | 2.6 |
|  | Screencastify | 73 | 44.2 | 18 | 58.1 | 53 | 55.8 | 2 | 5.1 |
|  | Padlet/Jamboard | 72 | 43.6 | 16 | 51.6 | 50 | 52.6 | 6 | 15.4 |
|  | Other (please describe): | 39 | 23.6 | 10 | 32.3 | 19 | 20.0 | 10 | 25.6 |
|  | Total N | 165 | 100.0 | 31 | 100.0 | 95 | 100.0 | 39 | 100.0 |
| 2020-2021 | YouTube video | 144 | 85.2 | 28 | 90.3 | 82 | 85.4 | 34 | 81.0 |
|  | Desmos | 46 | 27.2 | 6 | 19.4 | 38 | 39.6 | 2 | 4.8 |
|  | Edpuzzle | 77 | 45.6 | 17 | 54.8 | 55 | 57.3 | 5 | 11.9 |
|  | Google Forms | 139 | 82.2 | 24 | 77.4 | 88 | 91.7 | 27 | 64.3 |
|  | Kahoot | 96 | 56.8 | 14 | 45.2 | 65 | 67.7 | 17 | 40.5 |
|  | ClassDojo | 13 | 7.7 | 1 | 3.2 | 9 | 9.4 | 3 | 7.1 |
|  | Mentimeter | 8 | 4.7 | 3 | 9.7 | 5 | 5.2 | 0 | . 0 |
|  | Quizlet | 88 | 52.1 | 15 | 48.4 | 59 | 61.5 | 14 | 33.3 |
|  | Padlet | 74 | 43.8 | 18 | 58.1 | 53 | 55.2 | 3 | 7.1 |
|  | Screencastify | 95 | 56.2 | 22 | 71.0 | 70 | 72.9 | 3 | 7.1 |
|  | Padlet/Jamboard | 92 | 54.4 | 20 | 64.5 | 64 | 66.7 | 8 | 19.0 |
|  | Other (please describe): | 44 | 26.0 | 12 | 38.7 | 23 | 24.0 | 9 | 21.4 |
|  | Total N | 169 | 100.0 | 31 | 100.0 | 96 | 100.0 | 42 | 100.0 |

Table E29. District-reported single sign-on/app management systems used during spring 2020 by grade level
District Inventory Q40emh_1. During the two timeframes listed, did your district use a single sign-on or similar app management system (for example, Clever SSO) that can track teachers' and students' use of learning apps/tools at the following levels?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | No, we did not have that type of system | 114 | 60.6 | 12 | 36.4 | 76 | 61.3 | 26 | 83.9 |
|  | Yes, we had that type of system, but we didn't use the analytics | 30 | 16.0 | 9 | 27.3 | 19 | 15.3 | 2 | 6.5 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 33 | 17.6 | 8 | 24.2 | 22 | 17.7 | 3 | 9.7 |
|  | Yes, we had that type of system, and we used the analytics extensively | 11 | 5.9 | 4 | 12.1 | 7 | 5.6 | 0 | . 0 |
|  | Total N | 188 | 100.0 | 33 | 100.0 | 124 | 100.0 | 31 | 100.0 |
| Middle School | No, we did not have that type of system | 9 | 47.4 | 2 | 28.6 | 7 | 58.3 | 0 | . 0 |
|  | Yes, we had that type of system, but we didn't use the analytics | 6 | 31.6 | 3 | 42.9 | 3 | 25.0 | 0 | . 0 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 3 | 15.8 | 1 | 14.3 | 2 | 16.7 | 0 | . 0 |
|  | Yes, we had that type of system, and we used the analytics extensively | 1 | 5.3 | 1 | 14.3 | 0 | . 0 | 0 | . 0 |
|  | Total N | 19 | 100.0 | 7 | 100.0 | 12 | 100.0 | 0 | . 0 |
| High School | No, we did not have that type of system | 97 | 58.1 | 11 | 36.7 | 55 | 56.7 | 31 | 77.5 |
|  | Yes, we had that type of system, but we didn't use the analytics | 32 | 19.2 | 9 | 30.0 | 19 | 19.6 | 4 | 10.0 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 33 | 19.8 | 8 | 26.7 | 20 | 20.6 | 5 | 12.5 |
|  | Yes, we had that type of system, and we used the analytics extensively | 5 | 3.0 | 2 | 6.7 | 3 | 3.1 | 0 | . 0 |
|  | Total N | 167 | 100.0 | 30 | 100.0 | 97 | 100.0 | 40 | 100.0 |

Table E30. District-reported single sign-on/app management systems used during 2020-21 by grade level
District Inventory Q40emh_2. During the two timeframes listed, did your district's EDUs use a single sign-on or similar app management system (for example, Clever SSO) that can track teachers' and students' use of learning apps/tools?

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | No, we did not have that type of system | 84 | 44.9 | 8 | 24.2 | 54 | 43.5 | 22 | 73.3 |
|  | Yes, we had that type of system, but we didn't use the analytics | 32 | 17.1 | 7 | 21.2 | 23 | 18.5 | 2 | 6.7 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 51 | 27.3 | 13 | 39.4 | 32 | 25.8 | 6 | 20.0 |
|  | Yes, we had that type of system, and we used the analytics extensively | 20 | 10.7 | 5 | 15.2 | 15 | 12.1 | 0 | . 0 |
|  | Total N | 187 | 100.0 | 33 | 100.0 | 124 | 100.0 | 30 | 100.0 |
| Middle School | No, we did not have that type of system | 7 | 36.8 | 2 | 28.6 | 5 | 41.7 | 0 | . 0 |
|  | Yes, we had that type of system, but we didn't use the analytics | 5 | 26.3 | 2 | 28.6 | 3 | 25.0 | 0 | . 0 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 6 | 31.6 | 2 | 28.6 | 4 | 33.3 | 0 | . 0 |
|  | Yes, we had that type of system, and we used the analytics extensively | 1 | 5.3 | 1 | 14.3 | 0 | . 0 | 0 | . 0 |
|  | Total N | 19 | 100.0 | 7 | 100.0 | 12 | 100.0 | 0 | . 0 |
| High School | No, we did not have that type of system | 83 | 49.4 | 9 | 29.0 | 44 | 45.8 | 30 | 73.2 |
|  | Yes, we had that type of system, but we didn't use the analytics | 24 | 14.3 | 6 | 19.4 | 16 | 16.7 | 2 | 4.9 |
|  | Yes, we had that type of system, and we used the analytics to some extent | 51 | 30.4 | 12 | 38.7 | 30 | 31.3 | 9 | 22.0 |
|  | Yes, we had that type of system, and we used the analytics extensively | 10 | 6.0 | 4 | 12.9 | 6 | 6.3 | 0 | . 0 |
|  | Total N | 168 | 100.0 | 31 | 100.0 | 96 | 100.0 | 41 | 100.0 |

Table E31. District-reported summer 2020 preparation for fall 2020: Online resources and learning management platforms District Inventory: Q15_3, Q15_4. Which of the following activities did your district conduct between the last student day of spring 2020 and the students return to school in fall 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Creating online resources for teachers | 206 | 92.4 | 31 | 96.9 | 131 | 92.9 | 44 | 88.0 |
| Adopting new learning management platforms | 163 | 73.1 | 23 | 71.9 | 104 | 73.8 | 36 | 72.0 |
| None of the above | 9 | 4.0 | 1 | 3.1 | 4 | 2.8 | 4 | 8.0 |
| Total N | 223 | 100.0 | 32 | 100.0 | 141 | 100.0 | 50 | 100.0 |

Table E32. Teacher-reported access to instructional technology in spring 2020 (elementary teachers)
Teacher Survey Q19_2a-Q19_4a. How adequate was your access to each of the following technologies during spring 2020?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system(s) | Extremely inadequate | 84 | 13.6 | 46 | 17.4 | 38 | 10.8 |
|  | Somewhat inadequate | 109 | 17.7 | 48 | 18.2 | 61 | 17.3 |
|  | Neither adequate nor inadequate | 30 | 4.9 | 20 | 7.6 | 10 | 2.8 |
|  | Somewhat adequate | 201 | 32.6 | 84 | 31.8 | 117 | 33.1 |
|  | Extremely adequate | 193 | 31.3 | 66 | 25.0 | 127 | 36.0 |
|  | Total N | 617 | 100.0 | 264 | 100.0 | 353 | 100.0 |
| Learning apps | Extremely inadequate | 80 | 13.0 | 44 | 16.7 | 36 | 10.2 |
|  | Somewhat inadequate | 132 | 21.4 | 61 | 23.1 | 71 | 20.2 |
|  | Neither adequate nor inadequate | 67 | 10.9 | 36 | 13.6 | 31 | 8.8 |
|  | Somewhat adequate | 192 | 31.2 | 74 | 28.0 | 118 | 33.5 |
|  | Extremely adequate | 145 | 23.5 | 49 | 18.6 | 96 | 27.3 |
|  | Total N | 616 | 100.0 | 264 | 100.0 | 352 | 100.0 |
| Hardware/software for concurrent hybrid instruction | Extremely inadequate | 166 | 27.0 | 93 | 35.2 | 73 | 20.8 |
|  | Somewhat inadequate | 159 | 25.9 | 66 | 25.0 | 93 | 26.5 |
|  | Neither adequate nor inadequate | 72 | 11.7 | 39 | 14.8 | 33 | 9.4 |
|  | Somewhat adequate | 124 | 20.2 | 41 | 15.5 | 83 | 23.6 |
|  | Extremely adequate | 94 | 15.3 | 25 | 9.5 | 69 | 19.7 |
|  | Total N | 615 | 100.0 | 264 | 100.0 | 351 | 100.0 |

Table E33. Teacher-reported access to instructional technology in 2020-21 (elementary teachers)
Teacher Survey Q19_2b-Q19_4b. How adequate was technology access for elementary school teachers in 2020-21?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system(s) | Extremely inadequate | 18 | 2.8 | 9 | 3.3 | 9 | 2.5 |
|  | Somewhat inadequate | 55 | 8.6 | 27 | 9.9 | 28 | 7.7 |
|  | Neither adequate nor inadequate | 42 | 6.6 | 21 | 7.7 | 21 | 5.7 |
|  | Somewhat adequate | 199 | 31.1 | 101 | 37.0 | 98 | 26.8 |
|  | Extremely adequate | 325 | 50.9 | 115 | 42.1 | 210 | 57.4 |
|  | Total N | 639 | 100.0 | 273 | 100.0 | 366 | 100.0 |
| Learning apps | Extremely inadequate | 17 | 2.7 | 10 | 3.7 | 7 | 1.9 |
|  | Somewhat inadequate | 58 | 9.1 | 33 | 12.1 | 25 | 6.8 |
|  | Neither adequate nor inadequate | 75 | 11.7 | 34 | 12.5 | 41 | 11.2 |
|  | Somewhat adequate | 233 | 36.5 | 108 | 39.6 | 125 | 34.2 |
|  | Extremely adequate | 256 | 40.1 | 88 | 32.2 | 168 | 45.9 |
|  | Total N | 639 | 100.0 | 273 | 100.0 | 366 | 100.0 |
| Hardware/software for concurrent hybrid instruction | Extremely inadequate | 64 | 10.0 | 44 | 16.1 | 20 | 5.5 |
|  | Somewhat inadequate | 107 | 16.7 | 57 | 20.9 | 50 | 13.7 |
|  | Neither adequate nor inadequate | 83 | 13.0 | 32 | 11.7 | 51 | 13.9 |
|  | Somewhat adequate | 191 | 29.9 | 83 | 30.4 | 108 | 29.5 |
|  | Extremely adequate | 194 | 30.4 | 57 | 20.9 | 137 | 37.4 |
|  | Total N | 639 | 100.0 | 273 | 100.0 | 366 | 100.0 |

Table E34. Teacher-reported access to instructional technology in spring 2020 (middle school teachers)
Teacher Survey Q19_2a-Q19_4a. How adequate was your access to each of the following technologies during spring 2020?

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system(s) | Extremely inadequate | 17 | 4.6 | 8 | 6.8 | 9 | 3.6 |
|  | Somewhat inadequate | 40 | 10.8 | 19 | 16.1 | 21 | 8.4 |
|  | Neither adequate nor inadequate | 18 | 4.9 | 7 | 5.9 | 11 | 4.4 |
|  | Somewhat adequate | 111 | 30.1 | 33 | 28.0 | 78 | 31.1 |
|  | Extremely adequate | 183 | 49.6 | 51 | 43.2 | 132 | 52.6 |
|  | Total N | 369 | 100.0 | 118 | 100.0 | 251 | 100.0 |
| Learning apps | Extremely inadequate | 28 | 7.6 | 17 | 14.4 | 11 | 4.4 |
|  | Somewhat inadequate | 55 | 14.9 | 21 | 17.8 | 34 | 13.5 |
|  | Neither adequate nor inadequate | 41 | 11.1 | 14 | 11.9 | 27 | 10.8 |
|  | Somewhat adequate | 122 | 33.1 | 35 | 29.7 | 87 | 34.7 |
|  | Extremely adequate | 123 | 33.3 | 31 | 26.3 | 92 | 36.7 |
|  | Total N | 369 | 100.0 | 118 | 100.0 | 251 | 100.0 |
| Hardware/software for concurrent hybrid instruction | Extremely inadequate | 59 | 16.0 | 23 | 19.5 | 36 | 14.3 |
|  | Somewhat inadequate | 93 | 25.2 | 29 | 24.6 | 64 | 25.5 |
|  | Neither adequate nor inadequate | 59 | 16.0 | 18 | 15.3 | 41 | 16.3 |
|  | Somewhat adequate | 98 | 26.6 | 30 | 25.4 | 68 | 27.1 |
|  | Extremely adequate | 60 | 16.3 | 18 | 15.3 | 42 | 16.7 |
|  | Total N | 369 | 100.0 | 118 | 100.0 | 251 | 100.0 |

Table E35. Teacher-reported access to instructional technology in 2020-21 (middle school teachers)
Teacher Survey Q19_2b-Q19_4b. How adequate was technology access for middle school teachers in 2020-21?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| learning management system(s) | Extremely inadequate | 7 | 1.8 | 3 | 2.4 | 4 | 1.6 |
|  | Somewhat inadequate | 11 | 2.9 | 6 | 4.9 | 5 | 1.9 |
|  | Neither adequate nor inadequate | 14 | 3.7 | 6 | 4.9 | 8 | 3.1 |
|  | Somewhat adequate | 102 | 26.8 | 34 | 27.6 | 68 | 26.5 |
|  | Extremely adequate | 246 | 64.7 | 74 | 60.2 | 172 | 66.9 |
|  | Total N | 380 | 100.0 | 123 | 100.0 | 257 | 100.0 |
| learning apps | Extremely inadequate | 8 | 2.1 | 5 | 4.1 | 3 | 1.2 |
|  | Somewhat inadequate | 20 | 5.2 | 9 | 7.3 | 11 | 4.3 |
|  | Neither adequate nor inadequate | 26 | 6.8 | 9 | 7.3 | 17 | 6.6 |
|  | Somewhat adequate | 145 | 38.1 | 46 | 37.4 | 99 | 38.4 |
|  | Extremely adequate | 182 | 47.8 | 54 | 43.9 | 128 | 49.6 |
|  | Total N | 381 | 100.0 | 123 | 100.0 | 258 | 100.0 |
| hardware/software for concurrent hybrid instruction | Extremely inadequate | 24 | 6.3 | 11 | 8.9 | 13 | 5.0 |
|  | Somewhat inadequate | 60 | 15.7 | 22 | 17.9 | 38 | 14.7 |
|  | Neither adequate nor inadequate | 40 | 10.5 | 16 | 13.0 | 24 | 9.3 |
|  | Somewhat adequate | 132 | 34.6 | 32 | 26.0 | 100 | 38.8 |
|  | Extremely adequate | 125 | 32.8 | 42 | 34.1 | 83 | 32.2 |
|  | Total N | 381 | 100.0 | 123 | 100.0 | 258 | 100.0 |

Table E36. Teacher-reported access to instructional technology in spring 2020 (high school teachers)
Teacher Survey Q19_2a-Q19_4a. How adequate was your access to each of the following technologies during spring 2020?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| learning management system(s) | Extremely inadequate | 31 | 5.4 | 19 | 10.7 | 12 | 3.0 |
|  | Somewhat inadequate | 52 | 9.1 | 16 | 9.0 | 36 | 9.1 |
|  | Neither adequate nor inadequate | 29 | 5.1 | 13 | 7.3 | 16 | 4.1 |
|  | Somewhat adequate | 189 | 33.0 | 57 | 32.0 | 132 | 33.5 |
|  | Extremely adequate | 271 | 47.4 | 73 | 41.0 | 198 | 50.3 |
|  | Total N | 572 | 100.0 | 178 | 100.0 | 394 | 100.0 |
| learning apps | Extremely inadequate | 38 | 6.6 | 22 | 12.4 | 16 | 4.0 |
|  | Somewhat inadequate | 68 | 11.8 | 23 | 12.9 | 45 | 11.4 |
|  | Neither adequate nor inadequate | 83 | 14.5 | 22 | 12.4 | 61 | 15.4 |
|  | Somewhat adequate | 194 | 33.8 | 66 | 37.1 | 128 | 32.3 |
|  | Extremely adequate | 191 | 33.3 | 45 | 25.3 | 146 | 36.9 |
|  | Total N | 574 | 100.0 | 178 | 100.0 | 396 | 100.0 |
| hardware/software for concurrent hybrid instruction | Extremely inadequate | 104 | 18.2 | 48 | 27.0 | 56 | 14.2 |
|  | Somewhat inadequate | 118 | 20.6 | 39 | 21.9 | 79 | 20.0 |
|  | Neither adequate nor inadequate | 89 | 15.5 | 28 | 15.7 | 61 | 15.4 |
|  | Somewhat adequate | 158 | 27.6 | 43 | 24.2 | 115 | 29.1 |
|  | Extremely adequate | 104 | 18.2 | 20 | 11.2 | 84 | 21.3 |
|  | Total N | 573 | 100.0 | 178 | 100.0 | 395 | 100.0 |

Table E37. Teacher-reported access to instructional technology in 2020-21 (for high school teachers)
Teacher Survey Q19_2b-Q19_4b. How adequate was technology access for high school teachers in 2020-21?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| learning management system(s) | Extremely inadequate | 12 | 2.1 | 5 | 2.8 | 7 | 1.8 |
|  | Somewhat inadequate | 25 | 4.4 | 9 | 5.1 | 16 | 4.1 |
|  | Neither adequate nor inadequate | 20 | 3.5 | 11 | 6.2 | 9 | 2.3 |
|  | Somewhat adequate | 162 | 28.3 | 61 | 34.5 | 101 | 25.6 |
|  | Extremely adequate | 353 | 61.7 | 91 | 51.4 | 262 | 66.3 |
|  | Total N | 572 | 100.0 | 177 | 100.0 | 395 | 100.0 |
| learning apps | Extremely inadequate | 17 | 3.0 | 9 | 5.1 | 8 | 2.0 |
|  | Somewhat inadequate | 36 | 6.3 | 14 | 7.9 | 22 | 5.6 |
|  | Neither adequate nor inadequate | 53 | 9.3 | 19 | 10.7 | 34 | 8.6 |
|  | Somewhat adequate | 207 | 36.2 | 72 | 40.7 | 135 | 34.2 |
|  | Extremely adequate | 259 | 45.3 | 63 | 35.6 | 196 | 49.6 |
|  | Total N | 572 | 100.0 | 177 | 100.0 | 395 | 100.0 |
| hardware/software for concurrent hybrid instruction | Extremely inadequate | 49 | 8.6 | 24 | 13.6 | 25 | 6.3 |
|  | Somewhat inadequate | 86 | 15.0 | 33 | 18.6 | 53 | 13.4 |
|  | Neither adequate nor inadequate | 63 | 11.0 | 15 | 8.5 | 48 | 12.2 |
|  | Somewhat adequate | 199 | 34.8 | 66 | 37.3 | 133 | 33.7 |
|  | Extremely adequate | 175 | 30.6 | 39 | 22.0 | 136 | 34.4 |
|  | Total N | 572 | 100.0 | 177 | 100.0 | 395 | 100.0 |

Table E38. Teacher-reported access to instructional technology in spring 2020 (mixed-level teachers)
Teacher Survey Q19_2a-Q19_4a. How adequate was your access to each of the following technologies during spring 2020?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| learning management system(s) | Extremely inadequate | 12 | 5.9 | 9 | 13.8 | 3 | 2.2 |
|  | Somewhat inadequate | 27 | 13.3 | 11 | 16.9 | 16 | 11.6 |
|  | Neither adequate nor inadequate | 17 | 8.4 | 9 | 13.8 | 8 | 5.8 |
|  | Somewhat adequate | 56 | 27.6 | 17 | 26.2 | 39 | 28.3 |
|  | Extremely adequate | 91 | 44.8 | 19 | 29.2 | 72 | 52.2 |
|  | Total N | 203 | 100.0 | 65 | 100.0 | 138 | 100.0 |
| learning apps | Extremely inadequate | 17 | 8.4 | 8 | 12.3 | 9 | 6.5 |
|  | Somewhat inadequate | 31 | 15.3 | 13 | 20.0 | 18 | 13.0 |
|  | Neither adequate nor inadequate | 28 | 13.8 | 11 | 16.9 | 17 | 12.3 |
|  | Somewhat adequate | 67 | 33.0 | 21 | 32.3 | 46 | 33.3 |
|  | Extremely adequate | 60 | 29.6 | 12 | 18.5 | 48 | 34.8 |
|  | Total N | 203 | 100.0 | 65 | 100.0 | 138 | 100.0 |
| hardware/software for concurrent hybrid instruction | Extremely inadequate | 32 | 15.8 | 14 | 21.5 | 18 | 13.1 |
|  | Somewhat inadequate | 43 | 21.3 | 12 | 18.5 | 31 | 22.6 |
|  | Neither adequate nor inadequate | 36 | 17.8 | 13 | 20.0 | 23 | 16.8 |
|  | Somewhat adequate | 52 | 25.7 | 19 | 29.2 | 33 | 24.1 |
|  | Extremely adequate | 39 | 19.3 | 7 | 10.8 | 32 | 23.4 |
|  | Total N | 202 | 100.0 | 65 | 100.0 | 137 | 100.0 |

Table E39. Teacher-reported access to instructional technology in 2020-21 (mixed-level teachers)
Teacher Survey Q19_2b-Q19_4b. How adequate was technology access for mixed-level teachers in 2020-21?

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| learning management system(s) | Extremely inadequate | 3 | 1.4 | 1 | 1.5 | 2 | 1.4 |
|  | Somewhat inadequate | 13 | 6.2 | 7 | 10.4 | 6 | 4.2 |
|  | Neither adequate nor inadequate | 8 | 3.8 | 5 | 7.5 | 3 | 2.1 |
|  | Somewhat adequate | 66 | 31.3 | 25 | 37.3 | 41 | 28.5 |
|  | Extremely adequate | 121 | 57.3 | 29 | 43.3 | 92 | 63.9 |
|  | Total N | 211 | 100.0 | 67 | 100.0 | 144 | 100.0 |
| learning apps | Extremely inadequate | 3 | 1.4 | 1 | 1.5 | 2 | 1.4 |
|  | Somewhat inadequate | 17 | 8.1 | 10 | 14.9 | 7 | 4.9 |
|  | Neither adequate nor inadequate | 26 | 12.3 | 11 | 16.4 | 15 | 10.4 |
|  | Somewhat adequate | 67 | 31.8 | 23 | 34.3 | 44 | 30.6 |
|  | Extremely adequate | 98 | 46.4 | 22 | 32.8 | 76 | 52.8 |
|  | Total N | 211 | 100.0 | 67 | 100.0 | 144 | 100.0 |
| hardware/software for concurrent hybrid instruction | Extremely inadequate | 11 | 5.2 | 7 | 10.4 | 4 | 2.8 |
|  | Somewhat inadequate | 23 | 11.0 | 10 | 14.9 | 13 | 9.1 |
|  | Neither adequate nor inadequate | 32 | 15.2 | 12 | 17.9 | 20 | 14.0 |
|  | Somewhat adequate | 71 | 33.8 | 26 | 38.8 | 45 | 31.5 |
|  | Extremely adequate | 73 | 34.8 | 12 | 17.9 | 61 | 42.7 |
|  | Total N | 210 | 100.0 | 67 | 100.0 | 143 | 100.0 |

Table E40. Teacher-reported technological resources provided by districts/schools to support remote and hybrid learning Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?
Through the open-ended teacher survey question, teacher survey respondents reported that their districts provided a variety of technology resources including Google Classroom, Seesaw, Google Translate, IXL, Kahoot, Google Meet, and Screencastify. In general, respondents reported that they did not receive adequate training on these technologies, which made implementing them in the classroom challenging. Despite this, many teachers reported that they became more proficient with using various technologies over time. Other respondents reported that they received no technology resources. Some of these teachers used their personal funds to buy the equipment needed to instruct students. Teachers who received minimal technological resources from their districts reported utilizing, they utilized free online resources like Edpuzzle and Kahoot. One teacher said, "Canva, The New York Times, Penny Kittle, Kelly Gallagher, and many researchers on Twitter offered amazing insight and ideas." Responses indicate that access to the internet and technology devices was uneven among districts. Some teachers said that the WiFi in their school building was unstable, leading to frequent interruptions. Other teachers reported that those districts who were already using instructional technology before the pandemic fared better than those that weren't. Several teachers reported that their district grew to use instructional technology more effectively during the pandemic. One teacher said, "Our district was moving towards incorporating more technology in the classroom prior to Covid. Covid sped the process up (e.g., we now have 1 to 1 devices, more student-paced learning, etc.) which does benefit us now that we are seeing a more normal school year. It was painful, but I think in the long run, instruction will benefit."

Research Question 3c. What types and amount of professional development did districts/schools provide to teachers to support remote and hybrid learning (e.g., training on education technology, pedagogy of virtual teaching, etc.)?

Table E41. District-reported hours of paid professional development devoted to remote/virtual learning during spring 2020 District Inventory Q10. During spring 2020, approximately how many hours of district-provided paid teacher professional development/training were devoted to strategies and skills for remote/virtual learning? Please consider only PD/training provided by the district during paid time and select the best response below that includes the total number of hours per teacher.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| None | 18 | 8.3 | 4 | 13.3 | 11 | 8.0 | 3 | 6.0 |
| 1-6 hours | 61 | 28.0 | 6 | 20.0 | 33 | 23.9 | 22 | 44.0 |
| 7-12 hours | 56 | 25.7 | 11 | 36.7 | 34 | 24.6 | 11 | 22.0 |
| 13-18 hours | 37 | 17.0 | 3 | 10.0 | 25 | 18.1 | 9 | 18.0 |
| 19-30 hours | 20 | 9.2 | 3 | 10.0 | 14 | 10.1 | 3 | 6.0 |
| 31+ hours | 26 | 11.9 | 3 | 10.0 | 21 | 15.2 | 2 | 4.0 |
| Total N | 218 | 100.0 | 30 | 100.0 | 138 | 100.0 | 50 | 100.0 |

Table E42. District-reported summer 2020 preparation for fall 2020: paid professional and voluntary development District Inventory: Q15_7, Q15_8, Q15_9, Q15_10. Which of the following activities did your district conduct between the last student day of spring 2020 and the students return to school in fall 2020?

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Paid professional development related to learning technology | 163 | 73.1 | 27 | 84.4 | 105 | 74.5 | 31 | 62.0 |
| Paid professional development related to strategies for remote teaching | 158 | 70.9 | 26 | 81.3 | 102 | 72.3 | 30 | 60.0 |
| Voluntary workshops related to learning technology | 130 | 58.3 | 21 | 65.6 | 93 | 66.0 | 16 | 32.0 |
| Voluntary workshops related to strategies for remote teaching | 122 | 54.7 | 19 | 59.4 | 86 | 61.0 | 17 | 34.0 |
| Other (please describe) | 45 | 20.2 | 11 | 34.4 | 29 | 20.6 | 5 | 10.0 |
| None of the above | 21 | 9.4 | 4 | 12.5 | 11 | 7.8 | 6 | 12.0 |
| Total N | 223 | 100.0 | 32 | 100.0 | 141 | 100.0 | 50 | 100.0 |

Of the 45 districts that indicated that they used other strategies to prepare for the 2020-21 school year, several reported activities related to teacher professional development. Districts reported that they offered webinars and workshops on social-emotional learning, trauma support, technology, and other topics. Other districts reported using online sessions and lists of resources to help prepare staff for the new year. Some districts reported that they made adjustments to the school schedule or the curriculum to account for changes in learning format. Some districts reported that they extended the school year in person and offered summer school and credit recovery both remotely and in-person.

Table E43. District-report hours of paid professional development devoted to remote and/or hybrid instruction in 2020-21 by grade level
District Inventory Q18emh. During the 2020-21 contract year, approximately how many hours of district-provided paid teacher professional development were devoted to strategies for remote and/or hybrid instruction? Please consider only PD/training provided by the district during paid time and select the best response below that includes the total number of hours per teacher for each school level.

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary School | None | 10 | 5.2 | 2 | 6.3 | 5 | 4.0 | 3 | 9.1 |
|  | 1-6 hours | 48 | 25.1 | 6 | 18.8 | 24 | 19.0 | 18 | 54.5 |
|  | 7-12 hours | 43 | 22.5 | 6 | 18.8 | 34 | 27.0 | 3 | 9.1 |
|  | 13-18 hours | 35 | 18.3 | 4 | 12.5 | 27 | 21.4 | 4 | 12.1 |
|  | 19-30 hours | 26 | 13.6 | 6 | 18.8 | 16 | 12.7 | 4 | 12.1 |
|  | 31+ hours | 29 | 15.2 | 8 | 25.0 | 20 | 15.9 | 1 | 3.0 |
|  | Total N | 191 | 100.0 | 32 | 100.0 | 126 | 100.0 | 33 | 100.0 |
| Middle School | None | 7 | 3.8 | 2 | 6.7 | 3 | 2.6 | 2 | 5.4 |
|  | 1-6 hours | 46 | 25.3 | 5 | 16.7 | 19 | 16.5 | 22 | 59.5 |
|  | 7-12 hours | 44 | 24.2 | 5 | 16.7 | 35 | 30.4 | 4 | 10.8 |
|  | 13-18 hours | 30 | 16.5 | 4 | 13.3 | 22 | 19.1 | 4 | 10.8 |
|  | 19-30 hours | 23 | 12.6 | 5 | 16.7 | 14 | 12.2 | 4 | 10.8 |
|  | 31+ hours | 32 | 17.6 | 9 | 30.0 | 22 | 19.1 | 1 | 2.7 |
|  | Total N | 182 | 100.0 | 30 | 100.0 | 115 | 100.0 | 37 | 100.0 |
| High School | None | 5 | 3.0 | 1 | 3.4 | 2 | 2.1 | 2 | 4.8 |
|  | 1-6 hours | 41 | 24.7 | 6 | 20.7 | 11 | 11.6 | 24 | 57.1 |
|  | 7-12 hours | 37 | 22.3 | 5 | 17.2 | 26 | 27.4 | 6 | 14.3 |
|  | 13-18 hours | 31 | 18.7 | 3 | 10.3 | 23 | 24.2 | 5 | 11.9 |
|  | 19-30 hours | 20 | 12.0 | 5 | 17.2 | 11 | 11.6 | 4 | 9.5 |
|  | 31+ hours | 32 | 19.3 | 9 | 31.0 | 22 | 23.2 | 1 | 2.4 |
|  | Total N | 166 | 100.0 | 29 | 100.0 | 95 | 100.0 | 42 | 100.0 |

Tables E44. Teacher-reported professional development over the past 5 years (elementary teachers)
Teacher Survey Q22. How would you rate the amount of professional development you completed in the following areas over the past 5 years? (Consider professional development you completed on your own as well as professional development offered by your district.)

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid <br> Percent |
| Learning management system | Much less than I needed | 234 | 23.9 | 103 | 25.1 | 131 | 23.0 |
|  | Somewhat less than I needed | 237 | 24.2 | 92 | 22.4 | 145 | 25.5 |
|  | About the amount I needed | 372 | 38.0 | 144 | 35.1 | 228 | 40.1 |
|  | Somewhat more than I needed | 90 | 9.2 | 47 | 11.5 | 43 | 7.6 |
|  | Much more than I needed | 46 | 4.7 | 24 | 5.9 | 22 | 3.9 |
|  | Total N | 979 | 100.0 | 410 | 100.0 | 569 | 100.0 |
| Online instructional materials for your curriculum content | Much less than I needed | 256 | 26.2 | 105 | 25.7 | 151 | 26.5 |
|  | Somewhat less than I needed | 295 | 30.2 | 121 | 29.7 | 174 | 30.6 |
|  | About the amount I needed | 314 | 32.1 | 132 | 32.4 | 182 | 32.0 |
|  | Somewhat more than I needed | 71 | 7.3 | 29 | 7.1 | 42 | 7.4 |
|  | Much more than I needed | 41 | 4.2 | 21 | 5.1 | 20 | 3.5 |
|  | Total N | 977 | 100.0 | 408 | 100.0 | 569 | 100.0 |
| Supporting social-emotional learning during remote/hybrid instruction | Much less than I needed | 349 | 35.7 | 140 | 34.2 | 209 | 36.8 |
|  | Somewhat less than I needed | 276 | 28.2 | 117 | 28.6 | 159 | 28.0 |
|  | About the amount I needed | 253 | 25.9 | 105 | 25.7 | 148 | 26.1 |
|  | Somewhat more than I needed | 63 | 6.4 | 30 | 7.3 | 33 | 5.8 |
|  | Much more than I needed | 36 | 3.7 | 17 | 4.2 | 19 | 3.3 |
|  | Total N | 977 | 100.0 | 409 | 100.0 | 568 | 100.0 |
| Other strategies and skills for remote/hybrid instruction (please describe): | Much less than I needed | 260 | 39.1 | 104 | 38.5 | 156 | 39.5 |
|  | Somewhat less than I needed | 138 | 20.8 | 56 | 20.7 | 82 | 20.8 |
|  | About the amount I needed | 215 | 32.3 | 86 | 31.9 | 129 | 32.7 |
|  | Somewhat more than I needed | 34 | 5.1 | 17 | 6.3 | 17 | 4.3 |
|  | Much more than I needed | 18 | 2.7 | 7 | 2.6 | 11 | 2.8 |
|  | Total N | 665 | 100.0 | 270 | 100.0 | 395 | 100.0 |

Tables E45. Teacher-reported professional development over the past 5 years (middle school teachers)
Teacher Survey Q22. How would you rate the amount of professional development you completed in the following areas over the past 5 years? (Consider professional development you completed on your own as well as professional development offered by your district.)

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid <br> Percent | Valid Count | Valid <br> Percent | Valid Count | Valid <br> Percent |
| Learning management system | Much less than I needed | 93 | 16.6 | 29 | 16.1 | 64 | 16.8 |
|  | Somewhat less than I needed | 130 | 23.2 | 39 | 21.7 | 91 | 23.9 |
|  | About the amount I needed | 266 | 47.5 | 89 | 49.4 | 177 | 46.6 |
|  | Somewhat more than I needed | 46 | 8.2 | 16 | 8.9 | 30 | 7.9 |
|  | Much more than I needed | 25 | 4.5 | 7 | 3.9 | 18 | 4.7 |
|  | Total N | 560 | 100.0 | 180 | 100.0 | 380 | 100.0 |
| Online instructional materials for your curriculum content | Much less than I needed | 119 | 21.3 | 34 | 18.9 | 85 | 22.4 |
|  | Somewhat less than I needed | 160 | 28.6 | 52 | 28.9 | 108 | 28.4 |
|  | About the amount I needed | 225 | 40.2 | 82 | 45.6 | 143 | 37.6 |
|  | Somewhat more than I needed | 38 | 6.8 | 6 | 3.3 | 32 | 8.4 |
|  | Much more than I needed | 18 | 3.2 | 6 | 3.3 | 12 | 3.2 |
|  | Total N | 560 | 100.0 | 180 | 100.0 | 380 | 100.0 |
| Supporting social-emotional learning during remote/hybrid instruction | Much less than I needed | 172 | 30.8 | 57 | 31.8 | 115 | 30.3 |
|  | Somewhat less than I needed | 164 | 29.3 | 45 | 25.1 | 119 | 31.3 |
|  | About the amount I needed | 154 | 27.5 | 55 | 30.7 | 99 | 26.1 |
|  | Somewhat more than I needed | 42 | 7.5 | 12 | 6.7 | 30 | 7.9 |
|  | Much more than I needed | 27 | 4.8 | 10 | 5.6 | 17 | 4.5 |
|  | Total N | 559 | 100.0 | 179 | 100.0 | 380 | 100.0 |
| Other strategies and skills for remote/hybrid instruction (please describe): | Much less than I needed | 129 | 33.9 | 35 | 30.7 | 94 | 35.3 |
|  | Somewhat less than I needed | 94 | 24.7 | 25 | 21.9 | 69 | 25.9 |
|  | About the amount I needed | 135 | 35.5 | 44 | 38.6 | 91 | 34.2 |
|  | Somewhat more than I needed | 14 | 3.7 | 6 | 5.3 | 8 | 3.0 |
|  | Much more than I needed | 8 | 2.1 | 4 | 3.5 | 4 | 1.5 |
|  | Total N | 380 | 100.0 | 114 | 100.0 | 266 | 100.0 |

Tables E46. Teacher-reported professional development over the past 5 years (high school teachers)
Teacher Survey Q22. How would you rate the amount of professional development you completed in the following areas over the past 5 years? (Consider professional development you completed on your own as well as professional development offered by your district.)

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid <br> Percent | Valid Count | Valid <br> Percent | Valid Count | Valid <br> Percent |
| Learning management system | Much less than I needed | 156 | 18.2 | 60 | 22.5 | 96 | 16.2 |
|  | Somewhat less than I needed | 187 | 21.8 | 65 | 24.3 | 122 | 20.6 |
|  | About the amount I needed | 399 | 46.4 | 107 | 40.1 | 292 | 49.3 |
|  | Somewhat more than I needed | 72 | 8.4 | 20 | 7.5 | 52 | 8.8 |
|  | Much more than I needed | 45 | 5.2 | 15 | 5.6 | 30 | 5.1 |
|  | Total N | 859 | 100.0 | 267 | 100.0 | 592 | 100.0 |
| Online instructional materials for your curriculum content | Much less than I needed | 209 | 24.3 | 72 | 26.8 | 137 | 23.2 |
|  | Somewhat less than I needed | 257 | 29.9 | 79 | 29.4 | 178 | 30.1 |
|  | About the amount I needed | 316 | 36.7 | 89 | 33.1 | 227 | 38.4 |
|  | Somewhat more than I needed | 55 | 6.4 | 21 | 7.8 | 34 | 5.8 |
|  | Much more than I needed | 23 | 2.7 | 8 | 3.0 | 15 | 2.5 |
|  | Total N | 860 | 100.0 | 269 | 100.0 | 591 | 100.0 |
| Supporting social-emotional learning during remote/hybrid instruction | Much less than I needed | 247 | 28.7 | 79 | 29.4 | 168 | 28.3 |
|  | Somewhat less than I needed | 242 | 28.1 | 75 | 27.9 | 167 | 28.2 |
|  | About the amount I needed | 232 | 26.9 | 75 | 27.9 | 157 | 26.5 |
|  | Somewhat more than I needed | 81 | 9.4 | 21 | 7.8 | 60 | 10.1 |
|  | Much more than I needed | 60 | 7.0 | 19 | 7.1 | 41 | 6.9 |
|  | Total N | 862 | 100.0 | 269 | 100.0 | 593 | 100.0 |
| Other strategies and skills for remote/hybrid instruction (please describe): | Much less than I needed | 203 | 33.7 | 65 | 33.5 | 138 | 33.8 |
|  | Somewhat less than I needed | 122 | 20.3 | 42 | 21.6 | 80 | 19.6 |
|  | About the amount I needed | 232 | 38.5 | 75 | 38.7 | 157 | 38.5 |
|  | Somewhat more than I needed | 29 | 4.8 | 5 | 2.6 | 24 | 5.9 |
|  | Much more than I needed | 16 | 2.7 | 7 | 3.6 | 9 | 2.2 |
|  | Total N | 602 | 100.0 | 194 | 100.0 | 408 | 100.0 |

Tables E47. Teacher-reported professional development over the past 5 years (mixed-level teachers)
Teacher Survey Q22. How would you rate the amount of professional development you completed in the following areas over the past 5 years? (Consider professional development you completed on your own as well as professional development offered by your district.)

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid <br> Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system | Much less than I needed | 61 | 18.3 | 25 | 22.5 | 36 | 16.2 |
|  | Somewhat less than I needed | 75 | 22.5 | 26 | 23.4 | 49 | 22.1 |
|  | About the amount I needed | 154 | 46.2 | 44 | 39.6 | 110 | 49.5 |
|  | Somewhat more than I needed | 24 | 7.2 | 7 | 6.3 | 17 | 7.7 |
|  | Much more than I needed | 19 | 5.7 | 9 | 8.1 | 10 | 4.5 |
|  | Total N | 333 | 100.0 | 111 | 100.0 | 222 | 100.0 |
| Online instructional materials for your curriculum content | Much less than I needed | 85 | 25.5 | 27 | 24.3 | 58 | 26.1 |
|  | Somewhat less than I needed | 89 | 26.7 | 27 | 24.3 | 62 | 27.9 |
|  | About the amount I needed | 114 | 34.2 | 41 | 36.9 | 73 | 32.9 |
|  | Somewhat more than I needed | 26 | 7.8 | 8 | 7.2 | 18 | 8.1 |
|  | Much more than I needed | 19 | 5.7 | 8 | 7.2 | 11 | 5.0 |
|  | Total N | 333 | 100.0 | 111 | 100.0 | 222 | 100.0 |
| Supporting social-emotional learning during remote/hybrid instruction | Much less than I needed | 98 | 29.3 | 28 | 25.2 | 70 | 31.4 |
|  | Somewhat less than I needed | 88 | 26.3 | 25 | 22.5 | 63 | 28.3 |
|  | About the amount I needed | 104 | 31.1 | 38 | 34.2 | 66 | 29.6 |
|  | Somewhat more than I needed | 28 | 8.4 | 12 | 10.8 | 16 | 7.2 |
|  | Much more than I needed | 16 | 4.8 | 8 | 7.2 | 8 | 3.6 |
|  | Total N | 334 | 100.0 | 111 | 100.0 | 223 | 100.0 |
| Other strategies and skills for remote/hybrid instruction (please describe): | Much less than I needed | 65 | 28.0 | 21 | 27.3 | 44 | 28.4 |
|  | Somewhat less than I needed | 50 | 21.6 | 11 | 14.3 | 39 | 25.2 |
|  | About the amount I needed | 96 | 41.4 | 39 | 50.6 | 57 | 36.8 |
|  | Somewhat more than I needed | 7 | 3.0 | 2 | 2.6 | 5 | 3.2 |
|  | Much more than I needed | 14 | 6.0 | 4 | 5.2 | 10 | 6.5 |
|  | Total N | 232 | 100.0 | 77 | 100.0 | 155 | 100.0 |

Over 500 teachers selected the "other strategies and skills for remote/hybrid instruction" option and used the open-text field to describe other professional development they completed in the past five years; as shown above, the majority of these teachers described areas in which they needed more professional development. Many teachers reported that their district had not provided adequate training or support on how to adapt to remote/hybrid learning; when remote learning began in the spring of 2020; they lacked
the technology, technology skills, remote teaching skills, and engagement strategies needed to implement virtual instruction. Some teachers said that their districts provided technology for remote instruction (for example, learning management systems, apps and websites, cameras and other hardware, etc.) but did not provide adequate training on how to use these resources. Many teachers reported that they needed professional development related to learning management systems, specific apps and websites, video and document cameras, and general technology troubleshooting. And many teachers reported that they needed professional development that focused on technology integration-learning how to structure instruction and use technology to make remote learning effective. For example, teachers said they needed support in learning how to open and close breakout rooms in Zoom or Google Meet, but even more said they needed to learn how to use breakout rooms to facilitate small group instruction, peer learning, and student engagement. Teachers reported that with so many learning apps available, they needed support in deciding which apps to use for what purposeslive instruction, pre-recorded instruction, guided practice, formative assessment, summative assessment, etc.-not simply tutorials in how specific apps work. Overall, teachers acknowledged that when translating their lesson plans and instructional materials to a remote format, they needed to learn how to use technology to make instruction engaging and effective. In some cases, teachers wanted support with novel ways of interacting with students, especially disengaged students, while in other cases, teachers wanted support with finding or creating new digital content, such as remote science experiments, art projects, and field trips.

Classroom management was also a commonly mentioned area where professional development was needed, for example managing student behavior virtually, monitoring student devices, and controlling cheating, especially when using new strategies and platforms for student assessment. For teachers who were tasked with dual instruction, in which they taught both in-person and remote students at the same time, strategies were needed for keeping both groups engaged simultaneously. Some teachers said they needed professional development that focused on their setting (for example, self-contained special education classrooms), specific student groups (for example, English learners or students with IEPs), or their content area (for example, science or music). For example, teachers said they need training on how to implement individualized education programs (IEPs) for special education students in a virtual format, as well as how to teach English learners and use interpretation services during remote lessons to ensure equitable instruction. Many teachers reported that they needed support with family engagement - communicating with families about expectations for remote/hybrid learning, ways that the family could support student learning, and student progress, including concerns about attendance, engagement, and performance. Some teachers also reported that they needed professional development focused on worklife balance and personal well-being.

Importantly, many teachers reported that their districts allotted inadequate time to professional development. Some said that the professional development they completed was entirely self-taught and on their own time. Many teachers reported that the most valuable form of professional development they completed was collaboration with other staff members, either informal, with teachers taking the initiative to support and train each other, or formal, with schools training led by teachers or specialists. Some teachers
reported that they took the initiative to participate in online courses and certifications to improve their digital literacy. While many teachers said their districts did not meet their professional development needs, other teachers reported that their districts provided personalized learning platforms, support systems, and resource lists for professional development and training related to apps, technology tools, and blended learning.

## Table E48. Teacher-reported professional development to support remote and hybrid learning

Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

Through the open-ended teacher survey question, some teachers reported that the professional development they received to prepare for remote and hybrid learning was adequate and effective. One teacher reported that when the pandemic began, teachers were given time to adapt to and deal with the situation both professionally and emotionally before beginning remote instruction. Multiple teachers reported that 2-4 days of professional development training was enough to complete extensive training on new technologies and teaching strategies. Some teachers reported that they received training on teaching during a pandemic and how to use online platforms. A number of teachers mentioned that they grew in their ability to effectively use technology to teach, with one teacher specifically mentioning using technology effectively for teaching English learners remotely. Multiple teachers reported that they hope to continue receiving professional development on digital literacy and different learning models to stay knowledgeable and be prepared to integrate remote learning into their teaching practices in the future, if needed.

At the same time, responses to the open-ended teacher survey question indicated that other teachers had many professional development needs that were not met by their districts. Respondents emphasized that there wasn't enough time dedicated to preparing teachers for remote instruction, and that they were thrown into remote, hybrid, and/or concurrent learning models without adequate training. Many teachers reported that they were given new apps, devices, and learning management without any training on how to implement these technologies. Some teachers who received professional development from their district shared the training was too broad and didn't meet their individual needs, especially for specific disciplines and for special education teachers. Some teachers said they sought professional development from sources outside their district or learned the new technologies by collaborating with other teachers. Teachers also reported that they received inadequate professional development in preparation for the return to in-person instruction. Some teachers reported that they received no health and safety training for in-person teaching, nor did their students. Teachers reported that they wanted more professional development focused on teaching post-pandemic or post-remote student populations. A multitude of teachers posited that students returning to in-person instruction were behind socially-emotionally, as well as academically, and teachers needed more professional development and training related to mental health and trauma.

## Research Question 3d. What tools and strategies introduced during the pandemic do administrators and teachers say they will continue to use in their practice?

Table E49. District-reported remote/hybrid practices to continue after the pandemic has passed
District Inventory: Q26_1-Q26_13. Do you plan to use any of the following online practices after the pandemic has passed? Please select all that apply.

|  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Remote instruction for all students during isolated events (e.g., inclement weather days) | 63 | 28.9 | 11 | 34.4 | 40 | 29.0 | 12 | 25.0 |
| Remote instruction for any students whose families request it | 15 | 6.9 | 5 | 15.6 | 2 | 1.4 | 8 | 16.7 |
| Remote instruction for students with special circumstances (e.g., student illness) | 99 | 45.4 | 16 | 50.0 | 61 | 44.2 | 22 | 45.8 |
| One or more stand-alone online courses (e.g., credit recovery, certain advanced coursework) | 112 | 51.4 | 26 | 81.3 | 74 | 53.6 | 12 | 25.0 |
| Learning Management System and/or digital learning tools or platforms | 145 | 66.5 | 24 | 75.0 | 102 | 73.9 | 19 | 39.6 |
| Blended learning courses that include a combination of (but not concurrent) in-person instruction and online instruction | 59 | 27.1 | 14 | 43.8 | 38 | 27.5 | 7 | 14.6 |
| Blended learning courses where teachers instruct some students in person and some students online concurrently (e.g., simulcasting) | 25 | 11.5 | 5 | 15.6 | 15 | 10.9 | 5 | 10.4 |
| Virtual teacher trainings or professional development | 178 | 81.7 | 27 | 84.4 | 114 | 82.6 | 37 | 77.1 |
| Virtual meetings with students (e.g., counselors, social workers, or therapists meeting with students to provide services) | 139 | 63.8 | 25 | 78.1 | 91 | 65.9 | 23 | 47.9 |
| Virtual meetings with parents (e.g., parent-teacher conferences, events for parents) | 204 | 93.6 | 30 | 93.8 | 130 | 94.2 | 44 | 91.7 |
| Online diagnostic or benchmark assessments | 136 | 62.4 | 25 | 78.1 | 99 | 71.7 | 12 | 25.0 |
| Other online practice (please describe): | 36 | 16.5 | 6 | 18.8 | 24 | 17.4 | 6 | 12.5 |
| Additional comments: | 24 | 11.0 | 3 | 9.4 | 17 | 12.3 | 4 | 8.3 |
| Total N | 218 | 100.0 | 32 | 100.0 | 138 | 100.0 | 48 | 100.0 |

Some districts elected to discuss additional online practices (beyond the multiple-choice options provided) that they plan to continue after the pandemic has passed. A common theme was the desire to continue online practices in certain circumstances to minimize learning loss, but that CT state policy has limited the options available for remote instruction, and thus it is not currently possible for districts to use remote learning days for isolated events. As a result, the majority of the other online practices mentioned are unrelated to instructional purposes. Some districts discussed that they would like to continue holding staff meetings and community meetings (such as board meetings) virtually, though the level of enthusiasm with this suggestion was mixed. Some districts wanted virtual staff/community meetings to be the default. Whereas, other districts said that they would continue virtual meetings only if other options were not available. Another use of online practices mentioned was providing academic resources to students virtually. For example, districts indicated that virtual practices could be used to share college opportunities with students, or to get access to more guest speakers that can't physically attend the class. Furthermore, virtual tutoring, skill development, and academic reinforcement were mentioned as potential virtual practices. Regardless of these online options, the most referenced concern about continuing online practices was that districts feel limited by state policy in what remote options they are allowed to provide for their students and their community.

Some districts provided additional comments regarding online practices they plan to continue after the pandemic has passed. There were again a multitude of districts that reported that they would like to have the option of doing remote instructional days during isolated events, but that they are currently limited by state policy; these limitations placed on remote instruction by CT state policy was a common theme throughout these comments. There were a couple of districts that reported that they are considering blended learning options to provide increased flexibility for their students in certain circumstances, such as to allow high school students to take on job opportunities. Another common comment was the use of online practices to increase engagement in the community. There were multiple districts that reported that they're planning to offer their events and programming both in-person and virtually to ensure that these events are accessible to all parents. In general, a plan to continue holding virtual meetings with parents was discussed by a few districts, in addition to holding virtual staff and community meetings. The goal expressed by many districts was to continue using online practices to increase accessibility and ease of involvement for parents and staff within their district.

Table E50. Teacher-reported instructional technologies introduced during the pandemic by grade level
Teacher Survey Q20. Since the pandemic started, which new online instructional materials or technologies have you used that you had not used before the pandemic? Please select all that apply.

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary school | Learning management system | 485 | 77.7 | 211 | 79.3 | 274 | 76.5 |
|  | Online instructional materials for your curriculum content | 497 | 79.6 | 210 | 78.9 | 287 | 80.2 |
|  | Online instructional materials for SEL | 383 | 61.4 | 171 | 64.3 | 212 | 59.2 |
|  | Other | 125 | 20.0 | 56 | 21.1 | 69 | 19.3 |
|  | Total N | 624 | 100.0 | 266 | 100.0 | 358 | 100.0 |
| Middle school | Learning management system | 160 | 45.7 | 67 | 58.8 | 93 | 39.4 |
|  | Online instructional materials for your curriculum content | 244 | 69.7 | 78 | 68.4 | 166 | 70.3 |
|  | Online instructional materials for SEL | 174 | 49.7 | 67 | 58.8 | 107 | 45.3 |
|  | Other | 92 | 26.3 | 27 | 23.7 | 65 | 27.5 |
|  | Total N | 350 | 100.0 | 114 | 100.0 | 236 | 100.0 |
| High school | Learning management system | 246 | 45.6 | 81 | 50.0 | 165 | 43.8 |
|  | Online instructional materials for your curriculum content | 346 | 64.2 | 92 | 56.8 | 254 | 67.4 |
|  | Online instructional materials for SEL | 241 | 44.7 | 81 | 50.0 | 160 | 42.4 |
|  | Other | 145 | 26.9 | 41 | 25.3 | 104 | 27.6 |
|  | Total N | 539 | 100.0 | 162 | 100.0 | 377 | 100.0 |
| Multiple levels, ungraded, or unknown | Learning management system | 124 | 63.3 | 40 | 63.5 | 84 | 63.2 |
|  | Online instructional materials for your curriculum content | 147 | 75.0 | 49 | 77.8 | 98 | 73.7 |
|  | Online instructional materials for SEL | 108 | 55.1 | 35 | 55.6 | 73 | 54.9 |
|  | Other | 39 | 19.9 | 12 | 19.0 | 27 | 20.3 |
|  | Total N | 196 | 100.0 | 63 | 100.0 | 133 | 100.0 |

Table E51. Teacher-reported plans for instructional technology introduced during the pandemic (elementary teachers)
Teacher Survey Q21. Of the new online instructional materials or technologies you have been using since the pandemic started, which would you like to continue using and which would you like to stop using after the pandemic? (Elementary school teachers)

District Type

|  |  | Overall |  | Alliance districts |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Non-Alliance districts |  |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system | Would like to stop using |  |  | 174 | 36.6 | 75 | 36.6 | 99 | 36.7 |
|  | Would like to continue using | 301 | 63.4 | 130 | 63.4 | 171 | 63.3 |
|  | Total N | 475 | 100.0 | 205 | 100.0 | 270 | 100.0 |
| Online instructional materials for your curriculum content | Would like to stop using | 98 | 20.0 | 40 | 19.4 | 58 | 20.4 |
|  | Would like to continue using | 392 | 80.0 | 166 | 80.6 | 226 | 79.6 |
|  | Total N | 490 | 100.0 | 206 | 100.0 | 284 | 100.0 |
| Online instructional materials for SEL | Would like to stop using | 108 | 28.6 | 52 | 30.8 | 56 | 26.8 |
|  | Would like to continue using | 270 | 71.4 | 117 | 69.2 | 153 | 73.2 |
|  | Total N | 378 | 100.0 | 169 | 100.0 | 209 | 100.0 |
| Other | Would like to stop using | 18 | 14.9 | 6 | 11.3 | 12 | 17.6 |
|  | Would like to continue using | 103 | 85.1 | 47 | 88.7 | 56 | 82.4 |
|  | Total N | 121 | 100.0 | 53 | 100.0 | 68 | 100.0 |

Table E452. Teacher-reported plans for instructional technology introduced during the pandemic (middle school teachers)
Teacher Survey Q21. Of the new online instructional materials or technologies you have been using since the pandemic started, which would you like to continue using and which would you like to stop using after the pandemic? (Middle school teachers)

|  |  |  |  | District Type |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system | Would like to stop using | 22 | 14.1 | 11 | 16.9 | 11 | 12.1 |
|  | Would like to continue using | 134 | 85.9 | 54 | 83.1 | 80 | 87.9 |
|  | Total N | 156 | 100.0 | 65 | 100.0 | 91 | 100.0 |
| Online instructional materials for your curriculum content | Would like to stop using | 38 | 15.8 | 12 | 15.6 | 26 | 16.0 |
|  | Would like to continue using | 202 | 84.2 | 65 | 84.4 | 137 | 84.0 |
|  | Total N | 240 | 100.0 | 77 | 100.0 | 163 | 100.0 |
| Online instructional materials for SEL | Would like to stop using | 55 | 32.7 | 20 | 30.3 | 35 | 34.3 |
|  | Would like to continue using | 113 | 67.3 | 46 | 69.7 | 67 | 65.7 |
|  | Total N | 168 | 100.0 | 66 | 100.0 | 102 | 100.0 |
| Other | Would like to stop using | 20 | 22.5 | 3 | 11.5 | 17 | 27.0 |
|  | Would like to continue using | 69 | 77.5 | 23 | 88.5 | 46 | 73.0 |
|  | Total N | 89 | 100.0 | 26 | 100.0 | 63 | 100.0 |

Table E53. Teacher-reported plans for instructional technology introduced during the pandemic (high school teachers)
Teacher Survey Q21. Of the new online instructional materials or technologies you have been using since the pandemic started, which would you like to continue using and which would you like to stop using after the pandemic? (High school teachers)

District Type

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system | Would like to stop using | 43 | 18.1 | 13 | 16.9 | 30 | 18.6 |
|  | Would like to continue using | 195 | 81.9 | 64 | 83.1 | 131 | 81.4 |
|  | Total N | 238 | 100.0 | 77 | 100.0 | 161 | 100.0 |
| Online instructional materials | Would like to stop using | 46 | 13.5 | 11 | 12.2 | 35 | 13.9 |
| for your curriculum content | Would like to continue using | 295 | 86.5 | 79 | 87.8 | 216 | 86.1 |
|  | Total N | 341 | 100.0 | 90 | 100.0 | 251 | 100.0 |
| Online instructional materials for SEL | Would like to stop using | 85 | 36.0 | 23 | 29.5 | 62 | 39.2 |
|  | Would like to continue using | 151 | 64.0 | 55 | 70.5 | 96 | 60.8 |
|  | Total N | 236 | 100.0 | 78 | 100.0 | 158 | 100.0 |
| Other | Would like to stop using | 37 | 26.1 | 12 | 31.6 | 25 | 24.0 |
|  | Would like to continue using | 105 | 73.9 | 26 | 68.4 | 79 | 76.0 |
|  | Total N | 142 | 100.0 | 38 | 100.0 | 104 | 100.0 |

Table E54. Teacher-reported plans for instructional technology introduced during the pandemic (mixed level teachers)
Teacher Survey Q21. Of the new online instructional materials or technologies you have been using since the pandemic started, which would you like to continue using and which would you like to stop using after the pandemic? (Teachers who selected multiple grade levels, no grade levels, or "ungraded")

|  |  | District Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Learning management system | Would like to stop using | 20 | 17.4 | 7 | 18.4 | 13 | 16.9 |
|  | Would like to continue using | 95 | 82.6 | 31 | 81.6 | 64 | 83.1 |
|  | Total N | 115 | 100.0 | 38 | 100.0 | 77 | 100.0 |
| Online instructional materials for your curriculum content | Would like to stop using | 18 | 12.6 | 9 | 18.4 | 9 | 9.6 |
|  | Would like to continue using | 125 | 87.4 | 40 | 81.6 | 85 | 90.4 |
|  | Total N | 143 | 100.0 | 49 | 100.0 | 94 | 100.0 |
| Online instructional materials for SEL | Would like to stop using | 31 | 29.8 | 8 | 23.5 | 23 | 32.9 |
|  | Would like to continue using | 73 | 70.2 | 26 | 76.5 | 47 | 67.1 |
|  | Total N | 104 | 100.0 | 34 | 100.0 | 70 | 100.0 |
| Other | Would like to stop using | 4 | 10.5 | 0 | . 0 | 4 | 15.4 |
|  | Would like to continue using | 34 | 89.5 | 12 | 100.0 | 22 | 84.6 |
|  | Total N | 38 | 100.0 | 12 | 100.0 | 26 | 100.0 |

Research Question 3e. What lessons do administrators and teachers say they learned regarding teaching and learning during the pandemic and how the state could improve in a future pivot to remote learning?

Table E55. Teacher-reported rankings by grade level of preferred learning model post-pandemic
Teacher Survey Q29. After the pandemic, please rank the following instructional models in terms of how you would you prefer to teach, if you had a choice?

|  |  | District Type |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  |
|  |  | N | Ranking | (SD) | N | Ranking | (SD) | N | Ranking | (SD) |
| Elementary school | Fully in-person instruction | 610 | 1.1 | (.5) | 246 | 1.2 | (.5) | 364 | 1.1 | (.5) |
|  | Hybrid model where I provide in-person and remote instruction concurrently | 610 | 3.8 | (1.2) | 246 | 3.7 | (1.2) | 364 | 3.9 | (1.2) |
|  | Hybrid model where I provide in-person instruction and remote instruction not concurrently | 610 | 2.7 | (.9) | 246 | 2.8 | (1.0) | 364 | 2.7 | (.9) |
|  | Fully remote instruction, where my students receive at least one synchronous/real-time class each school day | 610 | 3.2 | (1.0) | 246 | 3.2 | (1.0) | 364 | 3.1 | (.9) |
|  | Fully remote instruction, where my students receive less than one synchronous/real-time class each school day | 610 | 4.2 | (1.0) | 246 | 4.2 | (1.0) | 364 | 4.2 | (.9) |
| Middle school | Fully in-person instruction | 361 | 1.1 | (.5) | 111 | 1.2 | (.7) | 250 | 1.1 | (.5) |
|  | Hybrid model where I provide in-person and remote instruction concurrently | 361 | 3.6 | (1.3) | 111 | 3.5 | (1.3) | 250 | 3.7 | (1.3) |
|  | Hybrid model where I provide in-person instruction and remote instruction not concurrently | 361 | 2.8 | (1.0) | 111 | 2.7 | (.9) | 250 | 2.9 | (1.0) |
|  | Fully remote instruction, where my students receive at least one synchronous/real-time class each school day | 361 | 3.3 | (1.0) | 111 | 3.4 | (.9) | 250 | 3.2 | (1.0) |
|  | Fully remote instruction, where my students receive less than one synchronous/real-time class each school day | 361 | 4.2 | (1.0) | 111 | 4.2 | (1.1) | 250 | 4.1 | (1.0) |
| High school | Fully in-person instruction | 540 | 1.2 | (.7) | 183 | 1.3 | (.8) | 357 | 1.1 | (.6) |
|  | Hybrid model where I provide in-person and remote instruction concurrently | 540 | 3.5 | (1.2) | 183 | 3.7 | (1.3) | 357 | 3.5 | (1.2) |
|  | Hybrid model where I provide in-person instruction and remote instruction not concurrently | 540 | 3.0 | (1.0) | 183 | 2.9 | (1.1) | 357 | 3.0 | (1.0) |
|  | Fully remote instruction, where my students receive at least one synchronous/real-time class each school day | 540 | 3.2 | (1.0) | 183 | 3.1 | (1.0) | 357 | 3.2 | (1.0) |
|  | Fully remote instruction, where my students receive less than one synchronous/real-time class each school day | 540 | 4.1 | (1.1) | 183 | 4.0 | (1.1) | 357 | 4.2 | (1.1) |
| Multiple levels, ungraded, or unknown | Fully in-person instruction | 217 | 1.1 | (.5) | 67 | 1.1 | (.4) | 150 | 1.1 | (.5) |
|  | Hybrid model where I provide in-person and remote instruction concurrently | 217 | 3.5 | (1.2) | 67 | 3.5 | (1.2) | 150 | 3.6 | (1.2) |
|  | Hybrid model where I provide in-person instruction and remote instruction not concurrently | 217 | 2.9 | (1.0) | 67 | 2.7 | (.8) | 150 | 2.9 | (1.0) |
|  | Fully remote instruction, where my students receive at least one synchronous/real-time class each school day | 217 | 3.3 | (1.0) | 67 | 3.3 | (1.0) | 150 | 3.3 | (1.0) |
|  | Fully remote instruction, where my students receive less than one synchronous/real-time class each school day | 217 | 4.2 | (1.0) | 67 | 4.4 | (.9) | 150 | 4.1 | (1.0) |

Please note, teachers were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 5.

Table E56. Teacher-reported rankings by grade level of how prepared they feel to teach each of the learning models Teacher Survey Q30. Considering the current point in time, please rank the following instructional models in terms of how prepared you feel to use them as a teacher.

|  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

Please note, teachers were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 5.

Table E57. Teacher-reported rankings by grade level of how effective the learning models are for students
Teacher Survey Q31. In your opinion, please rank the following instructional models in terms of how effective you believe they are for the average student.

|  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |

Please note, teachers were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 5.

Table E58. Teacher-reported "lessons learned" about teaching and learning during a crisis
Teacher survey Q36. Is there anything else you'd like to share about your experiences as a Connecticut teacher during the COVID-19 pandemic?

## State-Level Policies

Many teacher survey respondents used the open-ended question at the end of the survey to share "lessons learned" about teaching and learning during the pandemic. Respondents described the accumulating effects of multiple years of disruptions to learning-the unplanned shift to remote learning in spring 2020, the constant and rapid changes among learning models in 2020-21, and the pressure to return to "business as usual" in 2021-22. Respondents noted the wide variation in how districts implemented remote learning at the start of the pandemic and the return to in-person school in 2020-21, with some districts returning to full-time in-person learning at the start of fall 2020 and other districts returning to in-person learning later in the school year and sometimes in a hybrid format. Teacher respondents described the enormous gaps in academic and social-emotional development that resulted from the disruptions over the first 16 months of the pandemic, with some teachers pointing out that students continued to miss large chunks of instruction in 202122 as the result of absences related to illness or quarantine.

## Accountability/Standardized Testing

Many teacher survey respondents expressed frustration with the idea that teachers could return to normal instruction during 2021-22 as students and teachers coped with learning loss and ongoing COVID-related disruptions. Some teachers said that while their districts were understanding and flexible with teachers and students at the start of the pandemic, school and district leadership became much less supportive as time went on. Teachers reported that in the 2020-21 and 2021-22 school years, districts prioritized curriculum coverage and standardized assessment scores over mental health for students and staff. One teacher said, "We jumped back to normal too quickly." Many teachers mentioned that leaders' expectations of teachers and students were unreasonable, with several proposing that curriculum and assessment expectations needed to be adjusted at the local, state, and/or national level to address learning loss and accommodate social-emotional challenges. One teacher said "...students are developmentally \& academically behind and all we are being told is fix it with no plan. This is a national issue that needs to be looked at; either add on years to our education system or revamp what needs to be taught in the Common Core curriculum. Teachers cannot just fix it!' Another voiced a common theme by saying, "Stop the state mandates for testing, let us teach our students and help them get back on grade level along with dealing with their social-emotional needs." Other teachers said that evaluating teachers during an ongoing crisis was unreasonable and added unnecessary stress, while others noted that teachers were evaluated unfairly for being unable to remediate learning loss or behavior challenges quickly enough. One teacher said, "teachers are leaving because it is impossible to do their jobs."

## Funding for Public Education

Teacher survey respondents who used the open-ended question at the end of the survey to reflect on funding for public education generally said that funding was inadequate. A number of respondents said that their districts had not given them the materials or tools they needed for remote, hybrid, or social-distanced in-person instruction; several teachers said they purchased equipment and supplies with their own money. Some teachers said that more funding was needed to increase staffing, for example, more teachers to reduce class sizes, additional paraprofessionals to support student learning, and more social workers to help students cope with the effects of the pandemic. Other teachers said their districts did not have adequate funding to address students' complex needs. One teacher said, "Students who were behind fell further behind, which was often not the fault of teachers or the school districts, but rather the fault of not having fully funded budgets to support staff, not having high quality materials, not having social supports in place for mental health, child care, and providing for basic needs like housing and food."

Other respondents reflected on the equity of funding for public education; most of these respondents agreed that inequitable funding of school districts was an issue throughout the pandemic. These teachers described substantial differences between affluent districts and less affluent districts, in terms of devices for $1: 1$ computing and other instructional technology, reliable internet access at students’ homes and in school, and district preparedness for the shift to remote learning in March 2020. One teacher said, "The inequities between urban school students and students in well-funded districts have grown dramatically. I teach in a priority district and my children teach/live in [affluent towns]. It was sickening the difference in resources my grandchildren in [affluent town] received and the lack of resources my students in [city] had. My students had weak or non-existent internet/wi-fi which caused excessive absences and parents just giving up." Another teacher said, "the pandemic exposed gross and shameless educational inadequacies throughout the state of Connecticut. Poor and disenfranchised students in this wealthy state have very separate, and very unequal schools. The students have many more needs, and those needs should be met with adequate staffing and funding."

## Respect for teachers

Over $10 \%$ of those teachers who responded to the open-ended teacher survey question commented on respect for teachers. A large number of teachers expressed frustration that they had to work much harder during the pandemic without appreciation or increased compensation. Many of these responses related to lack of acknowledgement of teachers' hard work, dedication, and acceptance of personal risk during the pandemic. Many teacher survey respondents said they felt like no one cared about teachers' health or emotional wellbeing, with teachers commenting on inadequate safety protocols and unrealistic expectations for teaching and learning. One teacher said, "Teacher voice was not heard concerning physical distancing, class sizes," while another talked about the premature end of mask requirements, and a third said, "Just as other professionals were protected, so should we have been." From the perspective of spring 2022, many teacher survey respondents used the open-ended question to expressed dismay that teachers were overlooked for hazard pay, COVID sick time, or increased compensation, with a very large number saying that they were disappointed that legislation
had not passed to give teachers credit toward retirement for two extra years of service. Many respondents shared this sentiment expressed by one: "Find a way to compensate school employees and essential workers who did their best to keep schools open and students engaged in learning during the pandemic."

Many respondents reported feeling criticized by leaders and the general public for their work during the pandemic; for example, teachers said they were criticized for district decisions not to return to full-time in-person instruction in fall 2020 or blamed unfairly for student learning loss. One teacher said, "The public opinion of teachers in the pandemic swayed very quickly from heroes to zeroes as people became more frustrated with the pandemic." Another teacher said, "No one seems to recognize what we went through. People recognize what nurses and doctors went through. ... We did not feel taken care of or valued." A fourth teacher said, "the community, government, and district leaders have done a terrible job at taking care of their teachers. ... We were heroes and now we are the enemy expected to teach content and SEL. This is not what education is supposed to be."

Many respondents talked about the lack of respect for teachers that was demonstrated by failure to engage teachers' expertise and feedback throughout the pandemic. One teacher said, "Our school boards and government officials need to start listening to teachers, who are highly educated professionals, about what the needs are in the classrooms." Another wrote, "Teaching is always hard, but it got harder, and we don't expect next year [2022-23] to be any easier. At the end of the day, we would take a bullet to protect our students, despite any disrespect from families or our districts. Teachers are not trusted to be experts in their fields despite multiple master's degrees and certifications." Teachers expressed frustration about leadership structures and inflexible policies that prevented them from teaching in ways they believe would best serve students. For example, one teacher said, "I feel as if we lost an opportunity during the pandemic to reevaluate and redesign how we teach to meet the needs of more students. Instead, our concerns and suggestions as the teachers in the classroom were often ignored if not outright ridiculed."

Many teachers talked about the effects of disrespect on teacher morale and teacher attrition. "Teachers have come out of this embattled, embittered, and empty. We take pride in being educators but that is not what was happening during the Covid years. We were forced to be babysitters. The teachers and kids are not okay." Many respondents expressed concern about the large number of people leaving the profession and the small number people entering it. One respondent said, "I worry about future generations of people not entering the teaching field due to the complications, public opinions and political effects of the pandemic." Another said, "This country needs to rethink the treatment of the teaching profession. In order to sustain our public schools, there needs to be additional financial incentive to teach, better working conditions, and a shared community commitment to educating our youth." A third teacher said, "I actually lose sleep with concerns of where we are headed as an institution. I went into teaching because I felt our youth was the most valuable resource we had in this world and any effort to help them become their best had meaning. I do not feel that way especially after this year. ... the level of respect for teachers and the power of learning is non-existent."

## Appendix F: Student outcomes (Research Goal 4)

## Q4a. To what extent were students able to access remote learning?

## Detailed findings from administrative data analysis: Effects on Student Enrollment in 2020-21

In order to examine changes in fall enrollment, we first plotted total state enrollment year by year separately for public pre-school, kindergarten, $1^{\text {st }}-5^{\text {th }}$ grade, $6^{\text {th }}-8^{\text {th }}$ grade and $9^{\text {th }}-12^{\text {th }}$ grade initializing all enrollment by dividing by 2014 enrollment levels. In Figure 1, we show these trends for Alliance Opportunity districts, the 10 districts in the state that are lowest performing on standardized tests. While $1^{\text {st }}-5^{\text {th }}$ grade fall enrollment fell between 2019-20 and 2020-21, the decline in enrollment was very similar in magnitude to declines in the preceding years, and there is no evidence of a decline due to the pandemic. However, for public pre-school and for kindergarten, enrollments drop dramatically between fall 2019-20 and 2020-21, declines much larger than the declines in previous years. In general, across all district types, we observe minimal deviation from trends in pandemic enrollment patterns, except in kindergarten and preschool where we observe substantial declines. Figure 2 presents similar results for all nonAlliance districts and LEA's. Comparing Figures 1 and 2 shows that Alliance Opportunity districts experienced larger declines in kindergarten enrollment.

Figure F1. Enrollment Patterns for Alliance Opportunity Districts


The number of 2014 students that are PK is 3400 . The number of 2014 students that are K is 8900 .

The figure presents the average of enrollment in district and year as a fraction of district's 2014 enrollment. PK stands for public pre-school and K stands for kindergarten. All numbers on the legend refer to grades. Alliance Opportunity districts are the 10 lowest scoring public school districts in the state.

Figure F2. Enrollment Patterns for Non-Alliance Districts


The number of 2014 students that are PK is 8670 . The number of 2014 students that are K is 19394.

The figure presents the average of enrollment in district and year as a fraction of district's 2014 enrollment. PK stands for public pre-school and K stands for kindergarten. All numbers on the legend refer to grades. Non-Alliance districts represent all LEAs except for the 36 lowest test scoring public school districts.

Next, we more closely examine kindergarten enrollment, which is relatively universal within the state, while we do not examine public pre-school, which represents a much more selected population. For kindergarten, we do not observe the full population of students eligible to enroll in kindergarten, and instead we use whether the school provided an in=person option in September as a dependent variable in a student sample to capture changes in enrollment patterns. Table F1 shows these results for kindergarten, as well as $1^{\text {st }}$ and $2^{\text {nd }}$ grade for comparability. Panel one presents results for the pandemic effect on the composition of students between schools that provided an in-person option in September of 2020 and those that did not. Estimates suggest a small decline of approximately $1 / 2$ of one percentage point in kindergarten enrollment loss, significant at the $10 \%$ level, with no significant effects for $1^{\text {st }}$ or $2^{\text {nd }}$ grade. This effect is quite small given the 10 percentage point or more declines in October 2020 kindergarten enrollment. Further, the noisily estimated effect on the interaction of the pandemic variable with share high needs students is negative. Therefore, at the $75^{\text {th }}$ percentile share of high needs students, our best estimate is that there is no improvement in October enrollment, even though kindergarten enrollment losses were stronger for more disadvantaged schools.

As a second approach, we use the sample of students enrolled in first grade in the fall of 2021-22 as a baseline and examine whether those students are observed as enrolled in kindergarten in the previous year. We estimate this model for September enrollment in kindergarten based on share of days offered in person in September, October to December enrollment (observed enrolled in any of the three months) based on share of days during the same period, and same for both January to March and April to June. These results are shown in Table F2. The first row presents the estimate on share of days in person and the second row presents the estimated constant, which captures the fraction or share of first grade students observed as enrolled at the state average share of days offered in person. The second panel also includes a propensity score control for share of days interacted with the pandemic dummy. Results are similar across both panels. In person offerings do not appear to have any effect on kindergarten enrollment either initially or throughout the year. Looking at the intercept, we observe that approximately $87 \%$ of first graders in the following year were not enrolled in kindergarten in September. The share enrolled by the end of the year climbs to $91 \%$ when measured at the average share of days offered in person.

Next, Table F3 presents estimates of our difference-in-differences model of continued enrollment separately by column for $1^{\text {st }}$ through $5^{\text {th }}, 6^{\text {th }}$ through $8^{\text {th }}$, and $9^{\text {th }}$ and $12^{\text {th }}$ grades. The top panel presents the unweighted results and the second panel presents results using the overlap propensity score weights based on the estimates presented in Table 1. The interaction term estimates in the top panel suggest that the in person option minimizes pandemic year enrollment loss by over a percentage point in elementary and by about two-thirds of a percentage point for middle school, but these effects are eroded substantially (especially in elementary school) by the use of overlap weights. These findings suggest that the effect of providing an in person option on enrollment in panel 1 was spurious and likely driven by differences between schools that offered a September in person option and those that did not. Table F4 presents continued enrollment estimates after including interactions with share of high need students. Most estimates are
insignificant, and we do not observe any systematic relationship between an in-person option and continued enrollment.

Table F1. In-Person Option in September as Dependent Variable

|  | $(2)$ <br> Kindergarten | $(3)$ <br> Grade 1 | Grade 2 |
| :--- | :---: | :---: | :---: |
| Controls | $0.00499^{*}$ | -0.00106 | 0.000661 |
| Pandemic year | $(0.00262)$ | $(0.00217)$ | $(0.00238)$ |
|  |  |  |  |
| Observations | 251,767 | 258,433 | 261,228 |
| R-squared | 0.000 | 0.000 | 0.000 |
| Pandemic year | $0.00990^{*}$ | 0.00248 | 0.00266 |
|  | $(0.00558)$ | $(0.00485)$ | $(0.00499)$ |
| Pandemic year*Share of high need students | -0.0150 | -0.00971 | -0.00450 |
|  | $(0.0123)$ | $(0.00967)$ | $(0.00980)$ |
| Observations |  |  |  |
| R-squared | 250,146 | 256,762 | 259,238 |
| 2019-20 Mean School Enrollment w/ In Person Option | 0.038 | 0.059 | 0.065 |
| 2020-21 Mean School Enrollment w/ In Person Option | 77.8 | 76.0 | 76.8 |
| 2019-20 Mean School Enrollment w/out In Person Option | 69.6 | 75.2 | 74.9 |
| 2020-21 Mean School Enrollment w/out In Person Option | 65.4 | 65.4 | 66.3 |
| 25th Percentile High Needs | 55.9 | 64.5 | 64.6 |
| Pandemic Effects on Relative Enrollment In-Person |  |  |  |
| Option | $0.00578^{* *}$ | -0.0002 | 0.0014 |
| 75th Percentile High Needs |  |  |  |
| Pandemic Effects on Relative Enrollment In-Person |  | -0.0046 | -0.0007 |
| Option | 0.00004 |  |  |

Note: The top panel shows the results of regressing in person/hybrid learning mode offered in September on a pandemic dummy variable and a linear trend. The columns present estimates for kindergarten, 1st and 2nd grades. The second panel presents results based on adding controls for the school share of students who are high needs, and the interaction of this variable with the pandemic dummy. The bottom panel presents mean enrollment in districts with and without a pandemic in person option both for periods prior to and during the pandemic. The final two rows in the bottom panel present the estimated effect of the pandemic based on the estimates in panel 2 measured at the 25th and 75th percentiles of share high need students.

Table F2: Enrolled in Kindergarten if Observed in First Grade Next Year

| Observed Enrollment | (1) <br> September | (2) <br> Oct-Dec | $\begin{gathered} \hline \text { (3) } \\ \text { Jan-Mar } \end{gathered}$ | (4) <br> Apr-Jun |
| :---: | :---: | :---: | :---: | :---: |
| No Propensity Score |  |  |  |  |
| Share of Days in Person | $\begin{aligned} & 0.00793 \\ & (0.0229) \end{aligned}$ | $\begin{gathered} 0.0234 \\ (0.0169) \end{gathered}$ | $\begin{gathered} 0.0242 \\ (0.0169) \end{gathered}$ | $\begin{gathered} 0.0260 \\ (0.0198) \end{gathered}$ |
| Share Present at the Mean | $\begin{gathered} 0.869 * * * \\ (0.0125) \end{gathered}$ | $\begin{gathered} 0.897 * * * \\ (0.0124) \end{gathered}$ | $\begin{gathered} 0.909 * * * \\ (0.0132) \end{gathered}$ | $\begin{gathered} 0.911 * * * \\ (0.0161) \end{gathered}$ |
| Observations R-squared | $\begin{gathered} 33,797 \\ 0.000 \end{gathered}$ | $\begin{gathered} 33,797 \\ 0.001 \end{gathered}$ | $\begin{gathered} 33,797 \\ 0.000 \end{gathered}$ | $\begin{gathered} 33,797 \\ 0.000 \end{gathered}$ |
| Conditional on Centered Propensity Score |  |  |  |  |
| Share of Days in Person | $\begin{aligned} & 0.00793 \\ & (0.0229) \end{aligned}$ | $\begin{gathered} 0.0234 \\ (0.0169) \end{gathered}$ | $\begin{gathered} 0.0242 \\ (0.0169) \end{gathered}$ | $\begin{gathered} 0.0260 \\ (0.0198) \end{gathered}$ |
| Share Present at the Mean | $\begin{aligned} & 0.874 * * * \\ & (0.00528) \end{aligned}$ | $\begin{aligned} & 0.912 * * * \\ & (0.00349) \end{aligned}$ | $\begin{aligned} & 0.925 * * * \\ & (0.00326) \end{aligned}$ | $\begin{aligned} & 0.930 * * * \\ & (0.00317) \end{aligned}$ |
| Observations | 33,797 | 33,797 | 33,797 | 33,797 |
| R-squared | 0.000 | 0.001 | 0.000 | 0.000 |
| Mean Non-Remote share for each time period | 0.6267112 | 0.6433241 | 0.6774023 | 0.729346 |

The table shows the results of whether a first-grade student in the next year is enrolled in kindergarten during the pandemic year on share of days in person. The columns present estimates for enrollment observed any time in September, October to December, January to March and April to the end of the school year and share of days in person are calculated for each column in the same month. The share of present at the mean row shows the intercept because the share of days in person variables are mean differenced. The top panel presents the OLS estimates, and the bottom panel presents estimates including a control for the propensity score that is centered with a mean zero.

Table F3. Fall Enrollment if Enrolled in the Previous Year

| Controls | (1) <br> Grades 1st through 5th | (2) <br> Grades 6th through 8th | (3) Grades 9th through 12th |
| :---: | :---: | :---: | :---: |
| Unweighted Model |  |  |  |
| Pandemic year | -0.00288 | 0.00139 | 0.00315* |
|  | (0.00221) | (0.00128) | (0.00172) |
| Pandemic year*In person learning option in Sept | -0.0125*** | $-0.00691 * * *$ | -2.66e-06 |
|  | (0.00242) | (0.00150) | (0.00179) |
| Observations | 726,758 | 468,726 | 636,613 |
| R-squared | 0.015 | 0.272 | 0.417 |
| Propensity Score Weights |  |  |  |
| Pandemic year | -0.00367 | 0.00185 | 0.00397** |
|  | (0.00251) | (0.00124) | (0.00155) |
| Pandemic year*In person learning option in Sept | -0.00249 | -0.00479** | 0.00127 |
|  | (0.00280) | (0.00225) | (0.00184) |
| Observations | 726,758 | 468,726 | 636,613 |
| R-squared | 0.016 | 0.271 | 0.264 |
| Fall Re-enrollment 2017-2019 w/ In-Person |  |  |  |
| Option | 0.978 | 0.978 | 0.969 |
| Fall Re-enrollment 2017-2019 Remote Only | 0.978 | 0.983 | 0.972 |
| Fall Re-enrollment 2020-2021 w/ In-Person |  |  |  |
| Option | 0.963 | 0.973 | 0.973 |
| Fall Re-enrollment 2020-2021 Remote Only | 0.975 | 0.983 | 0.977 |

The top panel presents the estimates of regressing whether a student is observed enrolled in October of each year on a dummy variable for the pandemic year, the interaction of the pandemic dummy with a dummy variable for in person/hybrid option provided in September, and school fixed effects. Columns 1 through 3 present results for elementary, middle and high school grades, respectively. The second panel presents overlap propensity score weighted estimates based on the model presented in Table 1. The bottom panel presents student reenrollment rates year to year separately for schools with and without a pandemic in person/hybrid option both for the pre-pandemic period and during 2020-21.

Table F4. Fall Enrollment and Share High Need Students

| Controls | (1) <br> Grades 1st through 5th | (2) <br> Grades 6th through 8th | (3) <br> Grades 9th <br> through 12th |
| :---: | :---: | :---: | :---: |
| Unweighted Model |  |  |  |
| Pandemic year*Share high need students | 0.0201 | -0.00260 | 0.0106* |
|  | (0.0191) | (0.0168) | (0.00549) |
| Pandemic year*Share high need students* | 0.0116 | 0.0134 | -0.00254 |
| In Person learning option | (0.0196) | (0.0171) | (0.00625) |
| Observations | 726,758 | 468,726 | 636,613 |
| R-squared | 0.015 | 0.272 | 0.417 |
| Propensity Score Weights |  |  |  |
| Pandemic year*Share high need students | 0.0150 | 0.00550 | 0.00960* |
|  | (0.0223) | (0.0184) | (0.00509) |
| Pandemic year*Share high need students* | 0.0222 | 0.0108 | 0.00413 |
| In Person learning option | (0.0228) | (0.0196) | (0.00682) |
| Observations | 726,758 | 468,726 | 636,613 |
| R-squared | 0.016 | 0.271 | 0.264 |
| 25th Percentile High Needs |  |  |  |
| Pandemic Effects Remote | -0.0098 | -0.0007 | 0.0006 |
| Pandemic Effects In-Person Option | -0.0205 | -0.0102 | 0.0007 |
| 75th Percentile High Needs |  |  |  |
| Pandemic Effects Remote | -0.0028 | 0.0017 | 0.0041 |
| Pandemic Effects In-Person Option | -0.0030 | -0.0029 | 0.0056 |

The top panel presents the estimates of regressing whether a student is observed enrolled in October of each year on a dummy variable for the pandemic year, the interaction of the pandemic dummy with a dummy variable for in person/hybrid option provided in September, the interaction of the pandemic dummy with school share of high needs students, the three way interaction between pandemic-in person/hybrid-share high needs, and school fixed effects. Columns 1 through 3 present results for elementary, middle and high school grades, respectively. The second panel presents overlap propensity score weighted estimates based on the model presented in Table 1. The bottom panel presents estimated effects of the pandemic on re-enrollment based on the estimates in panel 2, separately for in-person/hybrid and fully remote at the 25th and 75th percentiles of school share of high needs students.

## Detailed findings from administrative data analysis: Effects on Attendance in 2020-21

Table F5 presents estimates of the effect of in person learning availability on attendance using similar models to enrollment except including a student level control for two year lagged past attendance rates. Models using samples with one-year lags with attendance through March in 2019-20 yield very similar results. The top panel presents the results without the interaction between propensity score and the pandemic variable, and the second panel presents the results after conditioning on this interaction. In both panels, we observe very large declines in attendance during the pandemic of between 2.5 to 4.5 percentage points with larger declines in earlier grades. Further, schools that provide a greater share of days in person experience less enrollment loss at all grade levels, especially in elementary and middle school. The inclusion of the propensity score leads to a reduction in the effect of in person share, and the high school estimates are substantially smaller and insignificant. However, pandemic effect estimates also erode in magnitude so that providing an in-person option ameliorates a similar share of the learning loss in elementary and middle school whether or not models include the propensity score. The bottom panel presents predicted attendance rates at the $10^{\text {th }}$ and $90^{\text {th }}$ percentiles of share of in person using the propensity score model: $46 \%$ vs. $100 \%$ in person for elementary, $44 \%$ vs. $94 \%$ for middle and $41 \%$ vs. $82 \%$ for high school. In elementary, a school at the $90^{\text {th }}$ percentile of in person share is predicted to have a 2 percentage point lower decline in attendance during the pandemic relative to the $10^{\text {th }}$ percentile. Improvements are 1 percentage point for middle school and only half a point for high school.

Table F6 presents the results allowing effects to differ between schools with a low versus high share of high need students. In both models with and without propensity score, we observe that attendance outcomes during the pandemic are substantially worse in schools that have a larger share of high need students across all grade levels. Comparing attendance rates for the $25^{\text {th }}$ and $75^{\text {th }}$ percentiles of share high needs, the bottom panel shows 2 to 3 percentage point worse attendance rates for schools at the $75^{\text {th }}$ percentile. However, the positive significant estimate on the interaction between share days in person and share high needs in panel 1, which is consistent with the previous findings of Halloran et al. (2021) and Goldhaber et al. (2022) for test scores, is not robust to the inclusion of propensity score control (Panel 2). The estimate declines by 35 percent and is no longer significant. In the bottom panel for elementary school, we do observe a one percentage point difference based on remote versus in person learning at the $75^{\text {th }}$ percentile that is not observed at the $25^{\text {th }}$ percentile, and at the $75^{\text {th }}$ percentile the estimate on the interaction between share in person and share in high needs is statistically significant, ${ }^{4}$ but overall our propensity score models provide minimal evidence that in person learning has differential effects between schools based on the share of high needs students.

All models have been estimated grade by grade, and results for pooled elementary, middle and high school grades above are replicated at the individual grade level.

[^9]Table F5. Attendance conditional on previous year attendance

| Controls | (1) <br> Grades 2nd through 5th | (2) <br> Grades 6th through 8th | (3) <br> Grades 9th through 12th |
| :---: | :---: | :---: | :---: |
| No Propensity Score |  |  |  |
| Lagged Attendance | 0.404*** | 0.655*** | 0.660*** |
|  | (0.0302) | (0.0125) | (0.0197) |
| Pandemic year | -0.0468*** | -0.0371*** | -0.0276*** |
|  | (0.00372) | (0.00606) | (0.00986) |
| Pandemic year*Share of days in person | 0.0487*** | $0.0318^{* * *}$ | 0.0198 |
|  | (0.00447) | (0.00825) | (0.0166) |
| Observations | 584,085 | 444,062 | 592,910 |
| R-squared | 0.208 | 0.244 | 0.291 |
| Conditional on Centered Propensity Score |  |  |  |
| Lagged Attendance | 0.404*** | 0.655*** | 0.659*** |
|  | (0.0301) | (0.0125) | (0.0196) |
| Pandemic year | -0.0382*** | -0.0325*** | -0.0256*** |
|  | (0.00349) | (0.00581) | (0.00860) |
| Pandemic year*Share of days in person | 0.0354*** | $0.0223 * * *$ | 0.0125 |
|  | (0.00422) | (0.00828) | (0.0139) |
| Pandemic year*Centered propensity score | 0.0609*** | 0.0526*** | 0.342*** |
|  | (0.00854) | (0.0165) | (0.0607) |
| Observations | 584,085 | 444,062 | 592,910 |
| R-squared | 0.215 | 0.248 | 0.297 |
| Average Attendance Rates 2017-2018, 2018-2019, 0 |  |  |  |
| 2019-20 | 0.956 | 0.953 | 0.938 |
| Average Attendance Rates 2020-21 | 0.944 | 0.934 | 0.919 |
| 10th Percentile Share of In Person Days Available | 0.456 | 0.441 | 0.414 |
| 90th Percentile Share of In Person Days Available | 1.000 | 0.943 | 0.818 |
| Pandemic Effects at 10th Percentile Share In Person | -0.022 | -0.023 | -0.020 |
| Pandemic Effects at 90th Percentile Share In Person | -0.003 | -0.011 | -0.015 |

The top panel presents the estimates of regressing student annual attendance rates on one year lagged student attendance rates, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person during the school year, and school fixed effects. Columns 1 through 3 present results for elementary, middle and high school grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel presents average attendance rates pre-pandemic and during 2020-21. Share of days offered in person at the 10th and 90th percentiles, and estimates effects of the pandemic based on the estimates in panel 2 calculated at the 10th and 90th percentile share of days.

Table F6. Attendance conditional on previous year attendance

| Controls | (1) <br> Grades 2nd through 5th | (2) <br> Grades 6th through 8th | (3) <br> Grades 9th <br> through 12th |
| :---: | :---: | :---: | :---: |
| No Propensity Score |  |  |  |
| Lagged Attendance | $\begin{gathered} 0.404 * * * \\ (0.0301) \end{gathered}$ | $\begin{gathered} 0.655 * * * \\ (0.0124) \end{gathered}$ | $\begin{gathered} 0.659 * * * \\ (0.0196) \end{gathered}$ |
| Pandemic year*Share high need students | $\begin{gathered} -0.0994 * * * \\ (0.0127) \end{gathered}$ | $\begin{gathered} -0.0732 * * * \\ (0.0216) \end{gathered}$ | $\begin{aligned} & -0.0376 \\ & (0.0402) \end{aligned}$ |
| Pandemic year*Share high need students* In Person learning option | $\begin{gathered} 0.0340 * * \\ (0.0162) \end{gathered}$ | $\begin{aligned} & -0.0260 \\ & (0.0321) \end{aligned}$ | $\begin{aligned} & -0.0848 \\ & (0.0655) \end{aligned}$ |
| Observations | 584,085 | 444,062 | 592,910 |
| R-squared | 0.225 | 0.261 | 0.297 |
| Conditional on Centered Propensity Score |  |  |  |
| Lagged Attendance | $\begin{gathered} 0.404 * * * \\ (0.0301) \end{gathered}$ | $\begin{gathered} 0.655 * * * \\ (0.0124) \end{gathered}$ | $\begin{gathered} 0.659 * * * \\ (0.0196) \end{gathered}$ |
| Pandemic year*Share high need students | $\begin{gathered} -0.0840 * * * \\ (0.0131) \end{gathered}$ | $\begin{gathered} -0.0808^{* * *} \\ (0.0225) \end{gathered}$ | $\begin{aligned} & -0.00416 \\ & (0.0369) \end{aligned}$ |
| Pandemic year*Share high need students* In Person learning option | $\begin{gathered} 0.0224 \\ (0.0163) \end{gathered}$ | $\begin{aligned} & -0.0203 \\ & (0.0306) \end{aligned}$ | $\begin{aligned} & -0.0868 \\ & (0.0647) \end{aligned}$ |
| Pandemic year*Centered propensity score | $\begin{aligned} & 0.0170 * * \\ & (0.00754) \end{aligned}$ | $\begin{aligned} & -0.00916 \\ & (0.0194) \end{aligned}$ | $\begin{gathered} 0.168 * * * \\ (0.0637) \end{gathered}$ |
| Observations | 584,085 | 444,062 | 592,910 |
| R-squared | 0.225 | 0.262 | 0.298 |
| 25th Percentile High Needs |  |  |  |
| Pandemic Effects 10th Percentile In-Person | 0.004 | 0.006 | -0.011 |
| Pandemic Effects 90th Percentile In-Person | 0.0067 | 0.0057 | -0.0011 |
| In-Person Option Interaction Significance |  |  |  |
| 75th Percentile High Needs |  |  |  |
| Pandemic Effects 10th Percentile In-Person | -0.0310 | -0.0336 | -0.0252 |
| Pandemic Effects 90th Percentile In-Person | -0.0222 | -0.0383 | -0.0283 |
| In-Person Option Interaction Significance | *** |  |  |

The top panel presents the estimates of regressing student annual attendance rates on one year lagged student attendance rates, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person during the school year, the interaction of the pandemic dummy with school share of high needs students, the three-way interaction between pandemic-share of days in person-share high needs, and school fixed effects. Columns 1 through 3 present results for elementary, middle, and high school grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel presents estimated effects of the pandemic on attendance based on the estimates in panel 2, separately for the 10th and 90th percentiles of share of days offered in person for both the 25 th and 75 th percentiles of school share of high needs students. The bottom rows under the 25 th and 75th percentiles on share high needs represents the statistical significance of the share of days in person interaction with the pandemic dummy when share of high need students has been centered to take a value of zero at the 25 th and 75 th percentiles, respectively.

## Detailed findings from administrative data analysis: Effects on Standardized Test Scores in 2020-21

Tables F7 and F8 present the results for English Language Arts (ELA) and Mathematics (MATH) Smarter Balance test scores and universally administered SAT tests for $11^{\text {th }}$ grade, respectively, using similar models to attendance except including a two-year lag of past test scores and three year lagged for $8^{\text {th }}$ grade Smarter Balance scores for SAT. For both smarter balance ELA and Math tests, the pandemic has negative effects on test scores ranging from about $30 \%$ and $40 \%$ of a standard deviation decline for ELA and $40 \%$ and $60 \%$ for MATH for an entirely remote school with larger losses in the lower grades. The losses for the $11^{\text {th }}$ grade SAT tests are substantially smaller at $15 \%$ and $25 \%$ of a standard deviation for ELA and Math. As with attendance, a higher share of days in person leads to significant reductions in these performance losses, except for the $11^{\text {th }}$ grade SAT tests, with a modest erosion of these improvements in the model that includes the propensity score. Turning to the bottom panel, we used the estimates in panel 2 to compare the negative effects of the pandemic between schools at the $10^{\text {th }}$ and $90^{\text {th }}$ percentiles. At the $10^{\text {th }}$ percentile, the losses range from $17 \%$ to $26 \%$ of a standard deviation for Smarter Balance ELA and $34 \%$ to $44 \%$ for Smarter Balance MATH again with larger losses in lower grades, and these losses fall to between $11 \%$ and $15 \%$ for ELA and $27 \%$ and $31 \%$ for MATH at the $90^{\text {th }}$ percentile.

Tables F9 and F10 present the share high needs interaction models for ELA and MATH, respectively. Table F9 shows substantially larger learning losses on the ELA test for schools with a larger share of high needs students, but the results are a little more unstable when we add the propensity score control. Nonetheless, the bottom panel of Table F9 shows substantial differences of 8 percent of a standard deviation larger decline in $5^{\text {th }}$ and $6^{\text {th }}$ grade ELA scores and 5 percent larger decline for $8^{\text {th }}$ grade ELA at the $75^{\text {th }}$ percentile of school share high needs compared to the 25 th percentile, when measured at the $10^{\text {th }}$ percentile of share of days in person. As shown in Table F10, we did not find evidence of such differences between schools on the MATH test. Next, we looked at the triple interaction of pandemic, share days in person and share high needs as a test of whether in person learning matters more for high needs schools. The estimates on this interaction are only significant for one grade for one test, $6^{\text {th }}$ grade ELA, out of eight estimates, and so that estimate should likely be discounted given the risk of type one error. Further, even though Panel 1 for ELA shows sizable, noisy estimates on ELA for other grades in the same direction as the significant $6^{\text {th }}$ grade estimate, these other estimates erode in magnitude substantially when the propensity score interaction is added and no clear pattern remains. Again, we find minimal evidence that the positive effects of share of days offered in person are greater in Connecticut schools with larger shares of high need students.

Table F7. English Language Arts Test Score Effects

|  | $(1)$ <br> Grade 5 | $(2)$ <br> Grade 6 | $(3)$ <br> Grade 7 | $(4)$ <br> Grade 8 | $(5)$ <br> Grade 11 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Controls |  |  |  |  |  |
| Lagged Score | No Propensity Score |  |  |  |  |
|  | $0.835^{* * *}$ | $0.784^{* * *}$ | $0.815^{* * *}$ | $0.822^{* * *}$ | $0.796 * * *$ |
| Pandemic year | $(0.00286)$ | $(0.00295)$ | $(0.00317)$ | $(0.00339)$ | $(0.00719)$ |
|  | - | - | - | - |  |
| Pandemic year*Share of days in person | $39.95^{* * *}$ | $28.48^{* * *}$ | $27.07 * * *$ | $24.31^{* * *}$ | $-15.47 * * *$ |
|  | $(2.495)$ | $(2.514)$ | $(2.885)$ | $(3.225)$ | $(2.718)$ |
|  | $28.70^{* * *}$ | $15.24^{* * *}$ | $14.79 * * *$ | $14.41^{* * *}$ | -4.711 |
| Observations | $(3.480)$ | $(3.816)$ | $(4.720)$ | $(5.153)$ | $(5.036)$ |
| R-squared |  |  |  |  |  |


| Conditional on Centered Propensity Score |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Lagged Score | $\begin{aligned} & 0.835 * * * \\ & (0.00284) \end{aligned}$ | $\begin{aligned} & 0.784^{* * *} \\ & (0.00294) \end{aligned}$ | $\begin{aligned} & 0.815 * * * \\ & (0.00317) \end{aligned}$ | $\begin{aligned} & 0.822 * * * \\ & (0.00338) \end{aligned}$ | $\begin{aligned} & 0.796^{* *} * \\ & (0.00719) \end{aligned}$ |
| Pandemic year | $\begin{gathered} 37.22 * * * \\ (2.412) \end{gathered}$ | $\begin{gathered} 27.71 * * * \\ (2.408) \end{gathered}$ | $\begin{gathered} 25.33 * * * \\ (2.795) \end{gathered}$ | $\begin{gathered} -\quad-\quad{ }_{2}^{-7 * * *} \\ (3.035) \end{gathered}$ | $\begin{gathered} -15.70^{* * *} \\ (2.710) \end{gathered}$ |
| Pandemic year*Share of days in person | $\begin{gathered} 23.92 * * * \\ (3.373) \end{gathered}$ | $\begin{gathered} 13.84^{* * *} \\ (3.634) \end{gathered}$ | $\begin{aligned} & 11.60^{* *} \\ & (4.536) \end{aligned}$ | $\begin{aligned} & 11.41^{* *} \\ & (4.906) \end{aligned}$ | $\begin{aligned} & -4.336 \\ & (5.031) \end{aligned}$ |
| Pandemic year*Centered propensity score | $\begin{gathered} 23.58 * * * \\ (4.082) \end{gathered}$ | $\begin{aligned} & 8.907 * * \\ & (4.300) \end{aligned}$ | $\begin{gathered} 16.83 * * * \\ (4.810) \end{gathered}$ | $\begin{aligned} & 19.65^{* *} \\ & (7.649) \end{aligned}$ | $\begin{gathered} 16.87 \\ (11.00) \end{gathered}$ |
| Observations | 138,378 | 139,262 | 140,129 | 143,337 | 93,322 |
| R-squared | 0.687 | 0.674 | 0.671 | 0.664 | 0.661 |
| Average ELA Test Scores 2016-17, 2017-18, 2018-19 | 2519.2 | 2539.7 | 2561.7 | 2577.6 | 520.5 |
| Standard Deviation of ELA Test Scores Control |  |  |  |  |  |
| Years | 97.0 | 96.6 | 101.3 | 100.8 | 104.7 |
| Average ELA Test Scores 2020-21 | 2501.4 | 2522.5 | 2547.4 | 2565.7 | 512.2 |
| Standard Deviation of ELA Test Scores 2020-21 10th Percentile Share In-Person Days through | 103.5 | 99.5 | 104.8 | 106.1 | 103.9 |
| April | 0.414 | 0.397 | 0.414 | 0.414 | 0.400 |
| 90th Percentile Share In-Person Days through April | 1.000 | 0.964 | 0.933 | 0.933 | 0.783 |
| Pandemic Effects at 10th Percentile Share InPerson Days | -27.32 | -22.17 | -20.69 | -18.18 | -17.43 |
| Pandemic Effects at 90th Percentile Share InPerson Days | -13.30 | -14.80 | -14.51 | -12.09 | -19.09 |

The top panel presents the estimates of regressing Smarter Balance ELA scale scores on two year lagged ELA scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel present the average
and standard deviation of ELA scores both pre-pandemic and in 2020-21, the 10th and 90th percentiles of share of days offered in person through April, and estimated effects of the pandemic based on the estimates in panel 2 calculated at the 10th and 90th percentile share of days.

Table F8. Mathematics Test Score Effects

| Controls | (1) <br> Grade 5 | (2) <br> Grade 6 | (3) <br> Grade 7 | (4) <br> Grade 8 | Grade 11 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No Propensity Score |  |  |  |  |  |
| Lagged Score | $\begin{aligned} & 0.888 * * * \\ & (0.00435) \end{aligned}$ | $\begin{aligned} & 1.032 * * * \\ & (0.00422) \end{aligned}$ | $\begin{aligned} & 0.996 * * * \\ & (0.00512) \end{aligned}$ | $\begin{aligned} & 0.928 * * * \\ & (0.00711) \end{aligned}$ | $\begin{gathered} 0.759 * * * \\ (0.0102) \end{gathered}$ |
| Pandemic year | $\begin{gathered} -56.26 * * * \\ (2.941) \end{gathered}$ | $\begin{gathered} -60.33 * * * \\ (3.279) \end{gathered}$ | $\begin{gathered} -47.21^{* * *} \\ (3.318) \end{gathered}$ | $\begin{gathered} -44.82 * * * \\ (4.028) \end{gathered}$ | $\begin{gathered} -24.72 * * * \\ (2.838) \end{gathered}$ |
| Pandemic year*Share of days in person | $\begin{gathered} 31.80^{* * *} \\ (4.062) \end{gathered}$ | $\begin{gathered} 28.63 * * * \\ (4.903) \end{gathered}$ | $\begin{gathered} 18.54 * * * \\ (5.185) \end{gathered}$ | $\begin{gathered} 12.91^{* *} \\ (5.963) \end{gathered}$ | $\begin{gathered} -2.925 \\ (5.327) \end{gathered}$ |
| Observations | 137,887 | 138,486 | 138,971 | 141,927 | 93,163 |
| R-squared | 0.734 | 0.754 | 0.750 | 0.744 | 0.717 |
| Conditional on Centered Propensity Score |  |  |  |  |  |
| Lagged Score | $\begin{aligned} & 0.888 * * * \\ & (0.00433) \end{aligned}$ | $\begin{aligned} & 1.032 * * * \\ & (0.00421) \end{aligned}$ | $\begin{aligned} & 0.996 * * * \\ & (0.00512) \end{aligned}$ | $\begin{aligned} & 0.928 * * * \\ & (0.00711) \end{aligned}$ | $\begin{gathered} 0.759 * * * \\ (0.0102) \end{gathered}$ |
| Pandemic year | $\begin{gathered} -53.49 * * * \\ (2.781) \end{gathered}$ | $\begin{gathered} -59.25 * * * \\ (3.238) \end{gathered}$ | $\begin{gathered} -46.41^{* * *} \\ (3.103) \end{gathered}$ | $\begin{gathered} -43.50^{* * *} \\ (3.756) \end{gathered}$ | $\begin{gathered} -24.89 * * * \\ (2.836) \end{gathered}$ |
| Pandemic year*Share of days in person | $\begin{gathered} 26.92 * * * \\ (3.855) \end{gathered}$ | $\begin{gathered} 26.65 * * * \\ (4.757) \end{gathered}$ | $\begin{gathered} 17.04^{* * *} \\ (4.916) \end{gathered}$ | $\begin{aligned} & 10.36^{*} \\ & (5.554) \end{aligned}$ | $\begin{gathered} -2.653 \\ (5.325) \end{gathered}$ |
| Pandemic year*Centered propensity score | $\begin{gathered} 24.37 * * * \\ (4.991) \end{gathered}$ | $\begin{gathered} 12.47 * * * \\ (4.276) \end{gathered}$ | $\begin{gathered} 7.825 \\ (6.352) \end{gathered}$ | $\begin{aligned} & 16.19 * * \\ & (7.812) \end{aligned}$ | $\begin{gathered} 13.23 \\ (10.90) \end{gathered}$ |
| Observations | 137,887 | 138,486 | 138,971 | 141,927 | 93,163 |
| R -squared | 0.735 | 0.754 | 0.750 | 0.744 | 0.717 |
| Average of Math Test Scores 2018-19 | 2512.3 | 2532.2 | 2547.7 | 2561.7 | 506.7 |
| Standard Deviation of Math Test Scores 2018-19 | 91.7 | 105.2 | 111.4 | 119.6 | 111.1 |
| Average of Math Test Scores 2020-21 | 2487.1 | 2504.1 | 2529.3 | 2539.7 | 498.5 |
| Standard Deviation of Math Test Scores 2020-21 10th Percentile Share In-Person Days through | 96.4 | 109.3 | 109.6 | 119.7 | 109.9 |
| April | 0.414 | 0.400 | 0.414 | 0.414 | 0.400 |
| 90th Percentile Share In-Person Days through |  |  |  |  |  |
| April | 1.000 | 0.964 | 0.933 | 0.933 | 0.783 |
| Pandemic Effects at 10th Percentile In-Person | -42.35 | -48.59 | -39.59 | -39.36 | -25.95 |
| Pandemic Effects at 90th Percentile In-Person | -26.57 | -34.39 | -30.51 | -33.83 | -26.97 |

The top panel presents the estimates of regressing Smarter Balance Math scale test scores on two year lagged Math scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5 th, 6 th, 7 th and 8 th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel present the average and standard deviation of ELA test scores both pre-pandemic and in 202021, the 10th and 90th percentiles of share of days offered in person through April, and estimated effects of the pandemic based on the estimates in panel 2 calculated at the 10th and 90th percentile share of days.

Table F9. English Language Arts Test Score Effects by Share High Needs

|  | $(1)$ <br> Grade 5 | $(2)$ <br> Grade 6 | $(3)$ <br> Grade 7 | $(4)$ <br> Grade 8 | $(5)$ <br> Grade 11 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Controls | No Propensity Score |  |  |  |  |
|  |  |  |  |  |  |
| Lagged Score | $0.835^{* * *}$ | $0.784^{* * *}$ | $0.815^{* * *}$ | $0.822^{* * *}$ | $0.796^{* * *}$ |
| Pandemic year*Share high need students | $(0.00286)$ | $(0.00295)$ | $(0.00317)$ | $(0.00338)$ | $(0.00719)$ |
|  | $(11.80)$ | $(11.32)$ | $(11.61)$ | $(15.15)$ | $(14.58)$ |
| Pandemic year*Share high need |  |  |  |  |  |
| students* | 14.73 | $44.99^{* * *}$ | 17.05 | 28.78 | 32.60 |
| $\quad$ In Person learning option | $(16.02)$ | $(16.40)$ | $(18.65)$ | $(22.71)$ | $(24.89)$ |
|  |  |  |  |  |  |
| Observations | 138,378 | 139,262 | 140,129 | 143,337 | 93,322 |
| R-squared | 0.687 | 0.674 | 0.671 | 0.664 | 0.661 |


| Conditional on Centered Propensity Score |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Lagged Score | $\begin{aligned} & 0.835 * * * \\ & (0.00285) \end{aligned}$ | $\begin{aligned} & 0.784 * * * \\ & (0.00294) \end{aligned}$ | $\begin{aligned} & 0.815 * * * \\ & (0.00317) \end{aligned}$ | $\begin{aligned} & 0.822 * * * \\ & (0.00338) \end{aligned}$ | $\begin{aligned} & 0.796^{* *} * \\ & (0.00719) \end{aligned}$ |
| Pandemic year*Share high need students | $\begin{aligned} & -19.66^{*} \\ & (11.87) \end{aligned}$ | $\begin{gathered} -33.46^{* * *} \\ (10.58) \end{gathered}$ | $\begin{aligned} & -1.860 \\ & (12.76) \end{aligned}$ | $\begin{aligned} & -18.31 \\ & (15.03) \end{aligned}$ | $\begin{aligned} & -1.883 \\ & (12.87) \end{aligned}$ |
| Pandemic year*Share high need students* <br> In Person learning option | $\begin{gathered} 6.962 \\ (15.52) \end{gathered}$ | $\begin{gathered} 41.55 * * * \\ (15.33) \end{gathered}$ | $\begin{gathered} 2.425 \\ (18.61) \end{gathered}$ | $\begin{gathered} 18.78 \\ (21.68) \end{gathered}$ | $\begin{gathered} 32.34 \\ (22.53) \end{gathered}$ |
| Pandemic year*Centered propensity score | $\begin{gathered} 12.89 * * * \\ (4.672) \end{gathered}$ | $\begin{gathered} 3.968 \\ (4.716) \end{gathered}$ | $\begin{gathered} 16.56 * * * \\ (5.785) \end{gathered}$ | $\begin{aligned} & 14.82^{*} \\ & (8.924) \end{aligned}$ | $\begin{gathered} 43.67 * * * \\ (11.65) \end{gathered}$ |
| Observations | 138,378 | 139,262 | 140,129 | 143,337 | 93,322 |
| R-squared | 0.687 | 0.674 | 0.671 | 0.664 | 0.661 |
| 25th Percentile High Needs |  |  |  |  |  |
| Pandemic Effects 10 Percentile InPerson | -21.68 | -16.53 | -20.40 | -14.79 | -19.44 |
| Pandemic Effects 90th Percentile InPerson | -11.46 | -16.44 | -14.62 | -12.39 | -22.00 |
| In Person Option Interaction Significance | *** |  | * |  |  |
| 75th Percentile High Needs |  |  |  |  |  |
| Pandemic Effects 10 Percentile InPerson | -30.00 | -24.81 | -20.80 | -19.378 | -15.96 |
| Pandemic Effects 90th Percentile InPerson | -17.76 | -13.82 | -14.44 | -12.72 | -14.63 |
| In-Person Option Interaction Significance | *** | *** | ** | ** |  |

The top panel presents the estimates of regressing Smarter Balance ELA scale test scores on two year lagged ELA scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April, the interaction of the pandemic dummy with school share of high needs students, the three-way interaction between pandemic-share in person-share high needs, and school fixed effects. Columns 1 through 4
present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel presents estimated effects of the pandemic on attendance based on the estimates in panel 2, separately for the 10th and 90th percentiles of share of days offered in person for both the 25 th and 75 th percentiles of school share of high needs students. The bottom rows under 25th and 75th percentiles share high needs represents the statistical significance of the share of days interaction with the pandemic dummy when share high needs has been centered to take a value of zero at the 25 th and 75 th percentiles, respectively.

Table F10. Math Test Score Effects by Share High Needs

| Controls | (1) <br> Grade 5 | (2) <br> Grade 6 | (3) <br> Grade 7 | (4) <br> Grade 8 | (5) <br> Grade 11 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No Propensity Score |  |  |  |  |  |
| Lagged Score | $\begin{aligned} & 0.888 * * * \\ & (0.00435) \end{aligned}$ | $\begin{aligned} & 1.032 * * * \\ & (0.00422) \end{aligned}$ | $\begin{aligned} & 0.996^{* *} * \\ & (0.00513) \end{aligned}$ | $\begin{aligned} & 0.928 * * * \\ & (0.00712) \end{aligned}$ | $\begin{gathered} 0.759 * * * \\ (0.0102) \end{gathered}$ |
| Pandemic year*Share high need students | $\begin{gathered} -6.163 \\ (15.10) \end{gathered}$ | $\begin{aligned} & -15.05 \\ & (13.92) \end{aligned}$ | $\begin{gathered} 3.193 \\ (16.23) \end{gathered}$ | $\begin{aligned} & -15.64 \\ & (20.12) \end{aligned}$ | $\begin{gathered} 3.308 \\ (15.63) \end{gathered}$ |
| Pandemic year*Share high need students* <br> In Person learning option | $\begin{aligned} & -14.05 \\ & (20.44) \end{aligned}$ | $\begin{gathered} 14.57 \\ (19.97) \end{gathered}$ | $\begin{gathered} 9.914 \\ (25.86) \end{gathered}$ | $\begin{gathered} 36.90 \\ (29.50) \end{gathered}$ | $\begin{gathered} -0.654 \\ (26.83) \end{gathered}$ |
| Observations | 137,887 | 138,486 | 138,971 | 141,927 | 93,163 |
| R-squared | 0.735 | 0.754 | 0.750 | 0.744 | 0.717 |
| Conditional on Centered Propensity Score |  |  |  |  |  |
| Lagged Score | $\begin{aligned} & 0.887 * * * \\ & (0.00434) \end{aligned}$ | $\begin{aligned} & 1.032 * * * \\ & (0.00421) \end{aligned}$ | $\begin{aligned} & 0.996^{* * *} \\ & (0.00513) \end{aligned}$ | $\begin{aligned} & 0.928 * * * \\ & (0.00712) \end{aligned}$ | $\begin{gathered} 0.759^{* * *} \\ (0.0102) \end{gathered}$ |
| Pandemic year*Share high need students | $\begin{gathered} 10.70 \\ (13.39) \end{gathered}$ | $\begin{aligned} & -2.801 \\ & (14.26) \end{aligned}$ | $\begin{gathered} 19.72 \\ (13.92) \end{gathered}$ | $\begin{gathered} 6.628 \\ (16.82) \end{gathered}$ | $\begin{gathered} 8.316 \\ (15.47) \end{gathered}$ |
| Pandemic year*Share high need students* <br> In Person learning option | $\begin{aligned} & -26.30 \\ & (17.90) \end{aligned}$ | $\begin{gathered} 3.944 \\ (19.50) \end{gathered}$ | $\begin{aligned} & -4.301 \\ & (22.81) \end{aligned}$ | $\begin{gathered} 18.83 \\ (25.14) \end{gathered}$ | $\begin{gathered} 2.083 \\ (26.15) \end{gathered}$ |
| Pandemic year*Centered propensity score | $\begin{gathered} 20.30^{* * *} \\ (6.110) \end{gathered}$ | $\begin{gathered} 12.17 * * \\ (4.850) \end{gathered}$ | $\begin{gathered} 16.06^{* *} \\ (6.926) \end{gathered}$ | $\begin{gathered} 26.45 * * * \\ (8.119) \end{gathered}$ | $\begin{gathered} 28.10^{* *} \\ (10.84) \end{gathered}$ |
| Observations | 137,887 | 138,486 | 138,971 | 141,927 | 93,163 |
| R-squared | 0.735 | 0.754 | 0.750 | 0.744 | 0.717 |
| 25th Percentile High Needs |  |  |  |  |  |
| Pandemic Effects 10 Percentile In-Person | -42.64 | -48.16 | -54.06 | -43.17 | -27.87 |
| Pandemic Effects 90th Percentile In-Person | $\begin{gathered} -23.76 \\ * * * \end{gathered}$ | $\begin{gathered} -34.58 \\ * * * \end{gathered}$ | $\begin{gathered} -32.61 \\ * * * \end{gathered}$ | -37.86 | -27.86 |
| 75th Percentile High Needs |  |  |  |  |  |
| Pandemic Effects 10 Percentile In-Person | -42.73 | -48.77 | -45.15 | -37.14 | -25.01 |
| Pandemic Effects 90th Percentile In-Person | -31.44 | -34.15 | -25.51 | -27.55 | -24.75 |
| In Person Option Interaction Significance | *** | *** | ** | ** |  |

The top panel presents the estimates of regressing Smarter Balance Math scale test scores on two year lagged Math scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April, the interaction of the pandemic dummy with school share of high needs students, the three-way interaction between pandemic-share in person-share high needs, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy. The bottom panel presents estimated effects of the pandemic on attendance based on the estimates in panel 2 , separately for the 10 th and 90 th percentiles of share of days offered in person for both the 25th and 75th percentiles of school share of high needs students. The bottom rows under 25 th and 75 th percentiles shares high needs represents
the statistical significance of the share of days in person with the pandemic dummy when share high needs has been centered to take a value of zero at the 25th and 75th percentiles, respectively.

## Detailed findings from administrative data analysis: Falsification Tests

In this section, we present falsification tests for the main results on enrollment from Table F3, attendance from Table F5, and ELA and Math test scores from Tables F7 and F8. We treated 2019-20 as the fake pandemic year for enrollment, and 2018-19 as the fake pandemic year for other outcomes. The sample sizes are reduced in the falsification as compared to the main analyses except for the enrollment falsification because we do not have a full three years of data with lagged outcomes prior to the 2018-2019 fake pandemic year.

Table F11 presents falsification tests for enrollment. All estimates are insignificant and very small, ranging between 0.1 and 0.2 percentage points. Table F12 presents the falsification tests for attendance. Only one estimate out of the 12 estimates on the pandemic dummy and the dummy interacted with share in person is significant and only at the $10 \%$ level. All estimates are substantially smaller than the estimates in Table F5 and the largest estimates are in the opposite direction of our main estimates.

Turning to the falsification tests for test scores, Table F13 for ELA and Table F14 for Math, we do observe that there are trends in test score performance that lead to a significant effect of the fake pandemic year on test scores, but again these estimates are modest in size in terms of estimates of actual test score losses during the pandemic and in the opposite direction for ELA. Therefore, at worst, the estimated losses during the pandemic are understated somewhat for ELA and overstated somewhat for Math, which might explain part of the larger losses during the pandemic in Math test scores relative to ELA scores. Turning to the estimated effects of in person learning opportunities on test scores, all but one of 20 estimates are insignificant and the one significant estimate is only at the $10 \%$ level of significance. This marginally significant estimate is substantially larger than most of the falsification estimates for test scores and is still only about $1 / 4$ the size of the actual estimate from Table F8.

Therefore, we conclude that our results cannot be explained by pre-existing differences in trends between districts that tended to provide more in person learning options and those that did not.

Table F11. Falsification of In-Person Learning Effects on Enrollment

| Controls | (1) | (2) | (3) |
| :---: | :---: | :---: | :---: |
|  | Grades 1st through 5th | Grades 6th through 8th | Grades 9th through 12th |
| Unweighted Model |  |  |  |
| Pandemic year | -0.000806 | -0.00119 | -0.00193 |
|  | (0.00152) | (0.00116) | (0.00138) |
| Pandemic year*In person learning option in Sept | 0.000997 | 0.000766 | 0.00192 |
|  | (0.00161) | (0.00129) | (0.00150) |
| Observations | 733,573 | 471,798 | 636,971 |
| R -squared | 0.012 | 0.282 | 0.407 |
| Propensity Score Weight |  |  |  |
| Pandemic year | -0.00112 | -0.00122 | -0.00112 |
|  | (0.00170) | (0.00120) | (0.00128) |
| Pandemic year*In person learning option in Sept | 0.000992 | 0.00159 | 0.00129 |
|  | (0.00184) | (0.00158) | (0.00175) |
| Observations | 733,573 | 471,798 | 636,971 |
| R-squared | 0.015 | 0.264 | 0.259 |

The table presents falsification tests dropping the pandemic year and treating 2018-19 as a fake pandemic year. The top panel presents the estimates of regressing whether students enrolled at the beginning of previous school year also enrolled for the current year (including the pandemic year) on a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that that is weighted by the inverse of the propensity score from the estimates in Table 1.

Table F12. Falsification Tests for In-Person Learning Effects on Attendance

|  | Grades 2nd through <br> 5th | Grades 6th through <br> 8th | Grades 9th through <br> 12th |
| :--- | :---: | :---: | :---: |
|  |  |  |  |
| Controls | No Propensity Score |  |  |


|  | Centered Propensity Score |  |  |
| :--- | :---: | :---: | :---: |
| Lagged Attendance | $0.346^{* * *}$ | $0.590^{* * *}$ | $0.601^{* * *}$ |
|  | $(0.0219)$ | $(0.0134)$ | $(0.0235)$ |
| Pandemic year | -0.000662 | -0.00162 | 0.00503 |
|  | $(0.00104)$ | $(0.00148)$ | $(0.00397)$ |
| Pandemic year*Share of days in person | -0.00175 | 0.000203 | $-0.0111^{*}$ |
|  | $(0.00143)$ | $(0.00218)$ | $(0.00662)$ |
| Pandemic year*Centered propensity score | $0.00514^{* * *}$ | $0.00616^{* *}$ | 0.0509 |
|  | $(0.00185)$ | $(0.00294)$ | $(0.0335)$ |
| Observations |  |  |  |
| R-squared | 293,937 | 223,552 | 297,085 |

The table presents falsification tests dropping the pandemic year and treating 2018-19 as a fake pandemic year. The top panel presents the estimates of regressing attendance rates on two year lagged rates, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy.

Table F13. Falsification Tests for In-person Learning Effects on ELA Test Scores

|  | $(1)$ <br> Grade 5 | $(2)$ <br> Grade 6 | $(3)$ <br> Grade 7 | $(4)$ <br> Grade 8 | $(5)$ <br> Grade 11 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Controls |  |  |  |  |  |
|  | No Propensity Score |  |  |  |  |
| Lagged Score | $0.844^{* * *}$ | $0.790^{* * *}$ | $0.823^{* * *}$ | $0.839^{* * *}$ | $0.803^{* * *}$ |
| Pandemic year | $(0.00350)$ | $(0.00343)$ | $(0.00373)$ | $(0.00414)$ | $(0.00666)$ |
|  | $7.144^{* * *}$ | 2.014 | $8.001^{* * *}$ | $9.236 * * *$ | $-7.263^{* * *}$ |
| Pandemic year*Share of days in person | $(2.503)$ | $(2.289)$ | $(2.647)$ | $(2.971)$ | $(2.605)$ |
|  | 1.566 | 4.055 | -2.033 | -2.228 | 4.994 |
|  | $(3.494)$ | $(3.370)$ | $(4.186)$ | $(4.261)$ | $(4.717)$ |
| Observations |  |  |  |  |  |
| R-squared | 69,648 | 71,274 | 71,188 | 72,653 | 64,237 |


|  | Centered Propensity Score |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | $0.843^{* * *}$ | $0.790^{* * *}$ | $0.822^{* * *}$ | $0.838^{* * *}$ | $0.803^{* * *}$ |
|  | $(0.00352)$ | $(0.00343)$ | $(0.00373)$ | $(0.00413)$ | $(0.00665)$ |
| Lagged Score | $5.824^{* *}$ | 1.774 | $6.530^{* *}$ | $9.203^{* * *}$ | $-7.262^{* * *}$ |
|  | $(2.558)$ | $(2.365)$ | $(2.548)$ | $(2.946)$ | $(2.608)$ |
| Pandemic year | 3.935 | 4.424 | 0.595 | -2.272 | 4.991 |
| Pandemic year*Share of days in person | $(3.652)$ | $(3.532)$ | $(4.127)$ | $(4.193)$ | $(4.720)$ |
|  | $-14.38^{* * *}$ | -2.357 | $-13.22^{* * *}$ | -1.024 | -3.456 |
| Pandemic year*Centered propensity score | $(5.048)$ | $(3.635)$ | $(4.038)$ | $(5.692)$ | $(17.66)$ |
|  |  |  |  |  |  |
| Observations | 69,817 | 71,439 | 71,369 | 72,855 | 64,237 |
| R-squared | 0.695 | 0.679 | 0.683 | 0.670 | 0.665 |

The table presents falsification tests dropping the pandemic year and treating 2018-19 as a fake pandemic year. The top panel presents the estimates of regressing Smarter Balance ELA scale test scores on two year lagged ELA scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy.

Table F14. Falsification Tests for In-person Learning Effects on Math Test Scores

|  | $(1)$ <br> Grade 5 | $(2)$ <br> Grade 6 | $(3)$ <br> Grade 7 | $(4)$ <br> Grade 8 | (5) <br> Grade 11 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Controls |  |  |  |  |  |
|  | No Propensity Score |  |  |  |  |
| Lagged Score | $0.902^{* * *}$ | $1.041^{* * *}$ | $1.012^{* * *}$ | $0.942 * * *$ | $0.765^{* * *}$ |
| Pandemic year | $(0.00493)$ | $(0.00507)$ | $(0.00525)$ | $(0.00753)$ | $(0.00997)$ |
|  | $-6.535^{* *}$ | $-7.849 * *$ | $-6.014^{* *}$ | $-6.794^{*}$ | $-13.85^{* * *}$ |
| Pandemic year*Share of days in person | $(3.067)$ | $(3.390)$ | $(2.822)$ | $(3.699)$ | $(2.871)$ |
|  | 6.367 | -0.141 | 1.605 | -1.747 | 5.713 |
| Observations | $(4.146)$ | $(5.092)$ | $(4.210)$ | $(5.555)$ | $(5.301)$ |
| R-squared |  |  |  |  |  |


|  | Centered Propensity Score |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Lagged Score | $0.900^{* * *}$ | $1.040^{* * *}$ | $1.011^{* * *}$ | $0.941^{* * *}$ | $0.765^{* * *}$ |
|  | $(0.00496)$ | $(0.00507)$ | $(0.00526)$ | $(0.00753)$ | $(0.00997)$ |
| Pandemic year | $-7.131^{* *}$ | $-7.640^{* *}$ | $-6.306^{* *}$ | $-7.019^{*}$ | $-13.83^{* * *}$ |
| Pandemic year*Share of days in person | $(3.106)$ | $(3.424)$ | $(2.886)$ | $(3.712)$ | $(2.863)$ |
|  | $7.505^{*}$ | -0.469 | 2.077 | -1.322 | 5.679 |
| Pandemic year*Centered propensity score | $(4.258)$ | $(5.173)$ | $(4.317)$ | $(5.562)$ | $(5.238)$ |
|  | -6.766 | 1.332 | -2.562 | -3.791 | 15.48 |
| Observations | $(5.604)$ | $(5.436)$ | $(4.299)$ | $(6.411)$ | $(19.02)$ |
| R-squared |  |  |  |  |  |

The table presents falsification tests dropping the pandemic year and treating 2018-19 as a fake pandemic year. The top panel presents the estimates of regressing Smarter Balance ELA scale test scores on two year lagged Math scores, a dummy variable for the pandemic year, the interaction of the pandemic dummy with the share of days offered in person through April of the school year, and school fixed effects. Columns 1 through 4 present results for 5th, 6th, 7th and 8 th grades, respectively. The second panel presents results of a model that also includes the propensity score from the estimates in Table 2 interacted with the pandemic dummy.

## District Inventory Indicators of Remote Learning Conditions

Table F15. Remote learning conditions: Access to synchronous instruction in spring 2020 (district inventory indicator 1)

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Count | Valid Percent | Valid Count | Valid <br> Percent | Valid Count | Valid Percent | Valid Count | Valid Percent |
| Elementary | Fully asynchronous | 35 | 18.0 | 7 | 21.9 | 25 | 19.5 | 3 | 8.8 |
| School | Partially or fully synchronous | 159 | 82.0 | 25 | 78.1 | 103 | 80.5 | 31 | 91.2 |
|  | Total | 194 | 100.0 | 32 | 100.0 | 128 | 100.0 | 34 | 100.0 |
| Middle | Fully asynchronous | 32 | 17.0 | 5 | 16.1 | 23 | 19.3 | 4 | 10.5 |
| School | Partially or fully synchronous | 156 | 83.0 | 26 | 83.9 | 96 | 80.7 | 34 | 89.5 |
|  | Total | 188 | 100.0 | 31 | 100.0 | 119 | 100.0 | 38 | 100.0 |
| High | Fully asynchronous | 30 | 17.4 | 5 | 16.7 | 19 | 19.4 | 6 | 13.6 |
| School | Partially or fully synchronous | 142 | 82.6 | 25 | 83.3 | 79 | 80.6 | 38 | 86.4 |
|  | Total | 172 | 100.0 | 30 | 100.0 | 98 | 100.0 | 44 | 100.0 |

Please note that response options in this table were created by combining data from district inventory Q5; detailed results for Q5 are available in Table C5. In this table,
Asynchronous is a combination of "Fully Asynchronous without Technology" with "Fully Asynchronous with Technology"; Synchronous is a combination of "Partially
Synchronous" with "Fully Synchronous". (Derived variables: Q5e_r, Q5m_r, Q5h_r).

Table F16. Remote learning conditions: Access to remote learning technology in spring 2020 (district inventory indicator 2)

|  | District Type |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  |  | Mean |  |  | Mean |  |  | Mean |  |  | Mean |  |
|  | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) | N | Percent | (SD) |
| Elementary School | 180 | 75.6 | (20.1) | 27 | 65.4 | (25.5) | 124 | 79.8 | (16.7) | 29 | 67.4 | (22.3) |
| Middle School | 174 | 78.7 | (19.2) | 25 | 68.8 | (26.8) | 115 | 83.4 | (14.3) | 34 | 70.0 | (21.5) |
| High School | 164 | 79.8 | (18.8) | 26 | 70.8 | (24.3) | 97 | 84.6 | (12.8) | 41 | 74.0 | (23.1) |

Please note that the data in this table were created by combining data from district inventory Q23 (percentage of students with adequate internet access as of March 1, 2020;
detailed results in Table D35) and Q41 (percentage of students with access to a digital device for remote learning as of March 1, 2020; detailed results in Tables D22, D26, and D30); for Q41, we used the higher value of two options: district-provided Chromebooks, laptops, or iPads or family-provided Chromebooks, laptops, or iPads. The values in this table represent the mean of each participating district's reported values for these two items. (Derived variables: SACle pp, SAClm_p, SAC1h_p.)

Table F17. Remote learning conditions: Summer 2020 preparation for fall (district inventory indicator 3)

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts |
| Number of | 1 | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
| Activities | 2 | 2 | . 9 | 0 | . 0 | 1 | . 7 | 1 | 2.0 |
|  | 3 | 2 | . 9 | 0 | . 0 | 0 | . 0 | 2 | 4.0 |
|  | 4 | 13 | 5.8 | 1 | 3.1 | 5 | 3.5 | 7 | 14.0 |
|  | 5 | 15 | 6.7 | 3 | 9.4 | 10 | 7.1 | 2 | 4.0 |
|  | 6 | 26 | 11.7 | 0 | . 0 | 16 | 11.3 | 10 | 20.0 |
|  | 7 | 43 | 19.3 | 6 | 18.8 | 22 | 15.6 | 15 | 30.0 |
|  | 8 | 31 | 13.9 | 3 | 9.4 | 22 | 15.6 | 6 | 12.0 |
|  | 9 | 42 | 18.8 | 7 | 21.9 | 29 | 20.6 | 6 | 12.0 |
|  | 10 | 49 | 22.0 | 12 | 37.5 | 36 | 25.5 | 1 | 2.0 |
|  | Total N | 223 | 100.0 | 32 | 100.0 | 141 | 100.0 | 50 | 100.0 |

Please note that the data in this table represent the number of 10 listed activities conducted between the last student day of spring 2020 and students' return to school in fall 2020 , as reported by districts in District Inventory Q15; detailed data for Q15 is presented in Tables E3, E31 and E42. (Derived variable: Q15count).

Table F18. Remote learning conditions: District improvements in remote learning (district inventory indicator 4)

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts |
| Number of Elementary | 0 | 2 | 1.1 | 0 | . 0 | 0 | . 0 | 2 | 7.1 |
| School Activities | 1 | 3 | 1.6 | 1 | 3.0 | 2 | 1.6 | 0 | . 0 |
|  | 2 | 14 | 7.6 | 3 | 9.1 | 7 | 5.6 | 4 | 14.3 |
|  | 3 | 18 | 9.7 | 0 | . 0 | 14 | 11.3 | 4 | 14.3 |
|  | 4 | 25 | 13.5 | 1 | 3.0 | 20 | 16.1 | 4 | 14.3 |
|  | 5 | 33 | 17.8 | 6 | 18.2 | 24 | 19.4 | 3 | 10.7 |
|  | 6 | 35 | 18.9 | 10 | 30.3 | 21 | 16.9 | 4 | 14.3 |
|  | 7 | 55 | 29.7 | 12 | 36.4 | 36 | 29.0 | 7 | 25.0 |
|  | Total N | 185 | 100.0 | 33 | 100.0 | 124 | 100.0 | 28 | 100.0 |
| Number of Middle | 0 | 3 | 1.7 | 0 | . 0 | 0 | . 0 | 3 | 9.1 |
| School Activities | 1 | 6 | 3.3 | 1 | 3.2 | 4 | 3.4 | 1 | 3.0 |
|  | 2 | 9 | 5.0 | 1 | 3.2 | 4 | 3.4 | 4 | 12.1 |
|  | 3 | 19 | 10.6 | 1 | 3.2 | 12 | 10.3 | 6 | 18.2 |
|  | 4 | 25 | 13.9 | 2 | 6.5 | 18 | 15.5 | 5 | 15.2 |
|  | 5 | 40 | 22.2 | 6 | 19.4 | 30 | 25.9 | 4 | 12.1 |
|  | 6 | 32 | 17.8 | 9 | 29.0 | 20 | 17.2 | 3 | 9.1 |
|  | 7 | 46 | 25.6 | 11 | 35.5 | 28 | 24.1 | 7 | 21.2 |
|  | Total N | 180 | 100.0 | 31 | 100.0 | 116 | 100.0 | 33 | 100.0 |
| Number of High School | 0 | 3 | 1.7 | 0 | . 0 | 0 | . 0 | 3 | 7.0 |
| Activities | 1 | 8 | 4.7 | 1 | 3.2 | 3 | 3.1 | 4 | 9.3 |
|  | 2 | 7 | 4.1 | 0 | . 0 | 3 | 3.1 | 4 | 9.3 |
|  | 3 | 17 | 9.9 | 1 | 3.2 | 9 | 9.2 | 7 | 16.3 |
|  | 4 | 27 | 15.7 | 1 | 3.2 | 18 | 18.4 | 8 | 18.6 |
|  | 5 | 34 | 19.8 | 7 | 22.6 | 23 | 23.5 | 4 | 9.3 |
|  | 6 | 31 | 18.0 | 8 | 25.8 | 17 | 17.3 | 6 | 14.0 |
|  | 7 | 45 | 26.2 | 13 | 41.9 | 25 | 25.5 | 7 | 16.3 |
|  | Total N | 172 | 100.0 | 31 | 100.0 | 98 | 100.0 | 43 | 100.0 |

[^10] results for Q36 are available in Tables C65, C66, and C67. (Derived variables: Q36e_c, Q36m_c, Q36h_c.)

Table F19. Remote learning conditions: Rigor of student assessment in 2020-21 (district inventory indicator 5)

|  |  | District Type |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Overall |  | Alliance districts |  | Non-Alliance districts |  | APSEPs |  |
|  |  | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts | Valid Number of Districts | Valid Percent of Districts |
| Number of Elementary | 0 | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 3.4 |
| School Assessments | 1 | 2 | 1.1 | 1 | 3.1 | 0 | . 0 | 1 | 3.4 |
|  | 2 | 2 | 1.1 | 0 | . 0 | 1 | . 8 | 1 | 3.4 |
|  | 3 | 6 | 3.2 | 0 | . 0 | 4 | 3.2 | 2 | 6.9 |
|  | 4 | 16 | 8.6 | 3 | 9.4 | 9 | 7.1 | 4 | 13.8 |
|  | 5 | 21 | 11.2 | 5 | 15.6 | 13 | 10.3 | 3 | 10.3 |
|  | 6 | 138 | 73.8 | 23 | 71.9 | 98 | 77.8 | 17 | 58.6 |
|  | Total N | 187 | 100.0 | 32 | 100.0 | 126 | 100.0 | 29 | 100.0 |
| Number of Middle | 0 | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 2.9 |
| School Assessments | 1 | 1 | . 6 | 0 | . 0 | 0 | . 0 | 1 | 2.9 |
|  | 2 | 3 | 1.7 | 2 | 6.7 | 1 | . 9 | 0 | . 0 |
|  | 3 | 12 | 6.7 | 0 | . 0 | 7 | 6.1 | 5 | 14.3 |
|  | 4 | 23 | 12.8 | 4 | 13.3 | 14 | 12.2 | 5 | 14.3 |
|  | 5 | 33 | 18.3 | 6 | 20.0 | 23 | 20.0 | 4 | 11.4 |
|  | 6 | 107 | 59.4 | 18 | 60.0 | 70 | 60.9 | 19 | 54.3 |
|  | Total N | 180 | 100.0 | 30 | 100.0 | 115 | 100.0 | 35 | 100.0 |
| Number of High School | 0 | 2 | 1.2 | 0 | . 0 | 0 | . 0 | 2 | 4.9 |
| Assessments | 1 | 0 | . 0 | 0 | . 0 | 0 | . 0 | 0 | . 0 |
|  | 2 | 7 | 4.1 | 2 | 6.5 | 1 | 1.0 | 4 | 9.8 |
|  | 3 | 13 | 7.6 | 1 | 3.2 | 6 | 6.1 | 6 | 14.6 |
|  | 4 | 27 | 15.9 | 3 | 9.7 | 17 | 17.3 | 7 | 17.1 |
|  | 5 | 43 | 25.3 | 9 | 29.0 | 26 | 26.5 | 8 | 19.5 |
|  | 6 | 78 | 45.9 | 16 | 51.6 | 48 | 49.0 | 14 | 34.1 |
|  | Total N | 170 | 100.0 | 31 | 100.0 | 98 | 100.0 | 41 | 100.0 |

Please note that this table reports a weighted count of up to 6 based on district-reported student assessment practices (District Inventory Q42; detailed data in Tables C22, C23, and C24) and grading practices (District Inventory Q44; detailed data in Tables C40, C43, and C46) during the 2020-21 school year. Specifically, we assigned 1 point for each of the following assessment types reported by districts: in-class assignments, quizzes/tests, diagnostic ELA assessments, and diagnostic math assessments (up to 4 points) and we assigned a score of 0-2 for the rigor of grading practices (0 if a district selected "Grading was suspended" and/or "Pass/fail" AND neither "Proficiency" and/or "Letter grades" was selected; 1 if a district selected "Proficiency" and/or "Letter grades" AND "Grading was suspended" and/or "Pass/fail"; and 2 if a district selected "Proficiency" and/or "Letter grades" was selected AND did not select "Grading was suspended" or "Pass/fail.") (Derived variables: SA3e_c, SA3m_c, SA3h_c.)

Table F20. Remote learning conditions: Social services referrals for students in 2020-21 (district inventory indicator 6)

|  |  |  |  |  |  |  | Type |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Overall |  |  | Alliance districts |  |  | Non-Alliance districts |  |  | APSEPs |  |  |
|  | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) | N | Mean | (SD) |
| Non-Academic/Social Supports referrals for students in school year 202021 | 215 | 3.7 | (.7) | 31 | 3.9 | (.9) | 135 | 3.8 | (.6) | 49 | 3.2 | (.7) |
| Please note that the means in this compared to before the pandemic $5=a$ lot more resources/students. | table $p$ and Q Detail | ent the (the nu esults for | ge of $t$ of stud 0 and |  |  | $\begin{aligned} & \hline Q 20( \\ & s \text { in } 20 \\ & 45 \text { and } \end{aligned}$ | $\begin{aligned} & \text { nount } \\ & \text { comp } \end{aligned}$ Derive |  |  | $\begin{aligned} & \text { servic } \\ & =\text { a lo } \end{aligned}$ | errals du resource | $2020$ udents |

# Q4b. What do teachers say about the association of learning models and conditions with student attendance and performance? 

See narrative for results.

## Q4c. How were remote learning models and conditions associated with changes in student attendance and performance on standardized assessments?

As described in the pre-analysis plan, we pooled all data and grades for each of the four outcomes considered estimating separate coefficients on the district inventory indicator for each outcome. For attendance and chronic absence, we pooled all grades $1^{\text {st }}-12^{\text {th }}$, but estimated separate estimates on the district inventory indicator for $1^{\text {st }} \& 2^{\text {nd }}$ grades, $3^{\text {rd }}$ grade through the end of elementary school, middle school and high school, where the grades associated with each grade span were based on the reports in the district inventory. For test scores, we pooled all scores treating ELA and Math scores for the same grade and year as separate observations and estimated a separate estimate on the inventory indicator for each grade between $5^{\text {th }}$ and $8^{\text {th }}$ plus $11^{\text {th }}$ grade for both ELA and Math scores, a total of 10 separate estimates. We then conducted an F-test for whether we could reject the null hypothesis that all of the estimates associated with a specific indicator and student outcome are zero.

Table F21 presents the results of these F-test along with Bonferroni corrections to these F-tests to address concerns about type I error given the large number of hypotheses being tested, as discussed in the pre-analysis plan above. Each column represents one of our six indicators created based on the district inventory data. The first column is an indicator whether learning in spring 2020 was synchronous with a 1 representing partially or fully synchronous and a 0 representing fully asynchronous learning. Approximately 75 percent of districts offered partially or fully synchronous. The second column captures the self-report of the fraction of students that had online access during spring 2020. Across districts, the estimates range between 20 and $100 \%$ of students, and on average districts reported approximately 75 percent of students had access. The third indicator is summer preparation which represents a sum from 2 to 10 of the number of actions selected by districts as activities undertaken in the summer of 2020 in preparation for the 2020-21 school year with a mean across districts of 8.5 activities, including activities like building improvements, new online resources, or teacher training. The fourth indicator captures information on the rigor of assessment models used by districts in 2020-21. This index ranges between 0 and 6 where 0 is all grading suspended or pass fail and minimal evaluation of assignments, tests or other assessments, and 6 is no use of pass/fail or suspension of grading and use of a full range of assessment tools. The average across all districts was 5.4. Indicator 5 is based on averaging Likert scales for increases in resources allocated to identifying and referring students to social services and for increases in the number of students referred. The scale runs from 1 to 5 with a 1 representing the largest increase and 5 representing large decreases, and the district mean is 2 . The final column (indicator 6 ) is for reported improvements in online learning for the 2020-21 school year with the index ranging from 1 to 7 with a mean of 5.7 and a higher number implying greater improvements.

The statistical models are difference-in-differences models as described in the pre-analysis plan conditioned on school fixed effects for each grade or grade span and in the case of test scores by ELA vs Math. However, we departed from the basic difference-in-differences models for both online access in spring 2020 and improvements in online learning in 2020-21. The reason for the departure is illustrated in the second panel of Table F21, which shows the correlation between the district inventory indicator and both share of days offered in person and share of high needs students. For both of these indicators, the correlation with share high needs is quite high. Therefore, following the approaches for administrative data analysis (described at the start of this appendix), we developed propensity scores for online access spring 2020 and improvements in online learning as a function of the type of Local Educational Authority (LEA) and the share of high needs students, allowing the influence of share high needs to vary with the type of LEA. We estimated a two-sided Tobit for online access since access is bound between $0 \%$ and $100 \%$ of students, and an ordered probit for improvements in online learning given the discrete values between 1 and 7. Given continuous treatment for online access, we included the propensity score interacted with the pandemic dummy. For the ordered probit, we could use inverse propensity score weighting except we regularized the weights by scaling by the unconditional probability of each outcome, which preserves the original sample distribution of outcomes across the 7 possible values. For all other district inventory indicators, the correlation with share high needs and share of days offered in person is small.

As described in our pre-analysis plan, we had intended to allow the effect of improvements in online learning to vary with the share of days that were offered in person. However, those estimates were very unstable due to multicollinearity between the pandemic effect of improvements in online learning and a control for how the effect of these improvements varied with the share of days offered online by districts. Essentially, the direct effect of improvements and the interaction of improvements with share of days online were always opposite in sign, and switching from negative to positive across grades with no discernable pattern. As a result, we made a second departure from our pre-analysis plan: we dropped the triple interaction term and focused solely on the interaction of improvements in online learning with the pandemic dummy, which is the same model used for the other five district inventory indicators.

The resulting F-tests are shown in the third panel of Table 21 . We can immediately rule out any correlation between three indicators-synchronous spring 2020, summer preparation, and improvements in online learning-because none of the individual F-tests were significant at the $5 \%$ level of confidence even before any corrections associated with the many hypothesis tests conducted. These three columns received an X in the last row of the table indicating that the results are clearly insignificant.

The social services referrals indicator yielded the F-test that rejects the null hypothesis of no effects with the most confidence. Following our pre-analysis plan, we first corrected for type 1 error within each column or for each district inventory indicator, as shown in the fourth panel of Table F21. Multiplying the p-value on test score proficiency by 4 for the social services referrals indicator yielded a p-value of 0.0004 . Then, across indicators, we multiplied this p-value by 6 for the six indicators, yielding a p-value of 0.0024 . This $p$-value is very conservative because it
ignores correlations across indicators that would reduce the multiplication factor below 6 and assumes a perfect correlation between tests within the indicators that would add additional confidence based on rejection for multiple outcomes, in this case a rejection for test scale scores as well at the 0.05 p -value.

The next high level of confidence arises for online access in spring 2020. We conducted the same exercise multiplying the lowest p-value by 4 , and then multiplying the resulting p -value by 5 given the 5 remaining indicators, since the null hypothesis has already been rejected for the first indicator (following a step-down Bonferroni approach). The last indicator where we observed some statistical evidence of a relationship is assessment rigor. In this case, we note that we have very similar p-values for both attendance rate and chronic absence. Even if these tests were perfectly correlated, we could conclude that there are results for attendance overall with a maximum p-value of 0.027 and that we failed to find results for test scores overall. Therefore, we multiplied this $p$-value by 2 to capture the fact that we examined both attendance and test performance, and then multiplied the resulting $p$-value by 4 because there are only four district inventory indicators remaining after the null hypothesis has been rejected for the first two. These corrections yielded a p-value of 0.224 when using these very conservative approaches. Therefore, once the correlations between tests are considered, this $p$-value could fall considerably and meet reasonable threshold of confidence. However, at present, we will only discuss the results on this variable as suggestive of effects.

Next, we moved to the exploratory analyses described in our pre-analysis plan and examined the individual outcome and grade span estimates for each indicator. Table F22 starts by presenting the test scale score and test proficiency estimates for social services referrals and test proficiency for online access in spring 2020 (the test scale score F-test is not significant for online access). We observe lower math test scale scores and proficiency levels across the board, especially in lower grades, with larger increases in resources for referrals and more student referrals relative to pre-pandemic levels; we also observe some evidence of higher ELA scores and proficiency for $6^{\text {th }}$ grade. In terms of magnitude, a one-point increase in this five-point scale is associated with declines proficiency in math by 1 to 2.5 percentage points of students for 5th-8th grades (for example, the percentage of a district's fifth grade students proficient in math might fall from $50 \%$ to $48 \%$ ). In terms of ELA proficiency, we observed declines of about one percentage point for 6th grade. Math and ELA test scale scores for the same grades decline by between 2.5 and 3.5 percent of a standard deviation.

Given that the social service referrals indicator (number of students referred for social services and resources allocated for social services referrals) is associated with lower test scores, it is important to discuss potential mechanisms behind these effects. Given the low correlation with student share high needs, we do not anticipate that these results are caused by pre-pandemic differences between districts. Rather, one possible explanation is a type of reverse causality where conditional on the pre-pandemic needs of students, the students in some districts faced larger shocks and were in much more need of referrals, leading to more resources allocated for making more referrals. These same schools saw substantially larger declines in test scores, especially math test scores, during the pandemic. A natural policy implication to draw from these
results is that standard measures of district need and disadvantage (for example, those used to identify Alliance districts) may not fully capture the heterogeneous impacts of a crisis on a district's student body. Ongoing monitoring during a crisis may be required to identify districts where due to unforeseen circumstances learning losses are likely to be especially large.

The district inventory indicator with the second lowest p-value is online access in spring 2020. Only the F-test for test proficiency is highly significant. However, like assessment models, we have two results for attendance rate and chronic absence that are near significant at the five percent level. Starting with proficiency in column 3 of Table 22, we observe that most of the estimates are positive, but only two are statistically significant: $6^{\text {th }}$ grade proficiency in math and $11^{\text {th }}$ grade proficiency in ELA using the state established proficiency threshold for the SAT test each year. In terms of magnitude, a $20 \%$ increase in the percentage of students with online access (equivalent to a one standard deviation increase) implies a 1.5 percentage point increase in the share of $6^{\text {th }}$ grade students proficient in Math in the spring of 2021 and a 1 percentage point increase in the share of $11^{\text {th }}$ grade students proficient in the ELA test. Given the lack of any specific pattern in the grade and subject matter affected, one might reasonably conclude that there are test score effects, but they are sufficiently small that one can only detect effects when estimation errors lead to large magnitude estimates and one cannot reliably determine whether these estimated effects are concentrated in a specific grade or in a specific topic area.

Finally, Table F23 presents attendance effect estimates for both online access and assessment rigor. For online access, chronic absence and attendance effects are unexpectedly negative with better access in spring 2020 being associated with worse attendance in 2020-21, but the estimates are quite small, less than 0.002 in terms of attendance rates and at most just over $1 / 2$ a percentage point in terms of rates of chronic absence in 2020-21. These effects may arise simply because good online access in spring 2020 is consistent with better ability to manage hybrid and online learning in 2020-21 and therefore may have led to better tracking of student attendance.

More rigorous student assessment practices are also associated with differences in attendance and chronic absence during the pandemic. In this case, more rigorous assessment is associated with better attendance in middle school, but the effects are small in magnitude. A 1-point improvement in the 6-point assessment index has effects of less than 0.002 in terms of increasing attendance rates and only $1 / 2$ of one percentage point reduction in chronic absence.

Table F21. Results of Inferential Analysis: Association of Remote Learning Conditions with Student Outcomes
Remote learning conditions (i.e. district inventory indicators)

|  | Synchronous Spring 2020 | Online Access Spring 2020 | Summer Preparation | $\begin{gathered} \text { Assessment Rigor } \\ \mathbf{2 0 2 0 - 2 0 2 1} \end{gathered}$ | Social Services Referrals | Improvements in Online Learning |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mean | 0.747 | 74.8 | 8.51 | 5.38 | 3.92 | 5.67 |
| Min/Max | 0/1 | 20/100 | 2/10 | 0/6 | 1/5 | 1/7 |
| Correlations with |  |  |  |  |  |  |
| Days In Person Sept-June | 0.17 | 0.34 | -0.24 | 0.05 | -0.03 | -0.18 |
| Days In Person Sept-April | 0.19 | 0.31 | -0.22 | 0.06 | -0.03 | -0.18 |
| Share High Need | -0.15 | -0.60 | 0.09 | -0.03 | +0.13 | 0.35 |
| Outcomes in 2020-21 | F-Test [p-value] | F-Test [p-value] | F-Test [p-value] | F-Test [p-value] | F-Test [p-value] | F-Test [p-value] |
| Attendance Rate | 1.31 [0.265] | 2.39 [0.058] | 0.17 [0.956] | 2.59 [0.036] | 1.36 [0.244] | 1.75 [0.138] |
| w/ in outcome Bonferroni |  |  |  |  |  |  |
| Chronic Absence | 2.04 [0.086] | 2.34 [0.053] | 0.76 [0.552] | 2.75 [0.027] | 0.68 [0.609] | 2.29 [0.058] |
| w/ in outcome Bonferroni |  |  |  | [0.054]\# |  |  |
| Scale Score | 1.30 [0.228] | 1.30 [0.225] | 1.12 [0.340] | 0.89 [0.541] | 2.27 [0.0128] | 1.28 [0.238] |
| w/ in outcome Bonferroni |  |  |  |  | [0.0512] |  |
| Proficiency | 0.98 [0.458] | 2.77 [0.0023] | 0.99 [0.453] | 1.46 [0.148] | 3.64 [0.0001] | 0.75 [0.682] |
| w/ in outcome Bonferroni |  | [0.0092] |  |  | [0.0004] |  |
| Treatment Bonferroni 6 tests using most significant outcome | X | [0.046] | X | [0.224]\# | [0.0024] | X |

Notes: Difference-in-Difference models estimated with pooled grades and/or grade spans and school fixed effects. Models for online access spring 2020 are estimated interacting a propensity score for the district inventory item with a pandemic dummy due to the high correlation of the item with school share of students with high needs. Similarly, the model for improvements in online learning are estimated using inverse propensity score weights associated with the scores on the district item. F-tests conducted for significant of all estimates across grades/grade spans. Within outcome Bonferroni conducted by multiplying pvalue of most significant result by four with the exception of assessment rigor where combined results for Chronic Absence and Attendance are compared to overall results for test score variables by multiplying lowest p-value by two and conservatively assuming perfect correlation between estimates for Attendance Rate and Chronic Absence. The last row shows the combined Bonferroni significance level across the six tests using a step-down approach multiplying the pvalue for the item with the lowest p -value by six for the six items considered, the next by five, etc. An X in this row implies that estimates are far from any reasonable significance level.

Table F22. Individual test and grade estimates for remote learning conditions
Remote learning conditions (i.e. district inventory indicators)

| Outcomes | Social Services Referrals |  | Online Access Spring 2020 |
| :---: | :---: | :---: | :---: |
|  | Test Scores | Test Proficiency | Test Proficiency |
| Math 5th Grade | -0.0339*** | -0.0248*** | 0.0069 |
|  | (0.0123) | (0.00593) | (0.0339) |
| Math 6th Grade | -0.0256** | $-0.0232 * * *$ | 0.0723*** |
|  | (0.0106) | (0.00530) | (0.0276) |
| Math 7th Grade | $-0.0367^{* * *}$ | $-0.0137 * * *$ | 0.0211 |
|  | (0.0107) | (0.00489) | (0.0267) |
| Math 8th Grade | -0.0243* | -0.0172** | -0.0454 |
|  | (0.0134) | (0.00679) | (0.0419) |
| Math 11th Grade | -0.0062 | 0.00301 | 0.0054 |
|  | (0.0121) | (0.00525) | $(0.0307)$ |
| ELA 5th Grade | -0.0134 | -0.0057 | 0.0377 |
|  | $(0.00912)$ | $(0.00423)$ | $(0.0231)$ |
| ELA 6th Grade | -0.0254** | -0.0117** | 0.0054 |
|  | $(0.0106)$ | (0.00473) | (0.0304) |
| ELA 7th Grade | -0.0154 | -0.0085 | 0.0175 |
|  | $(0.0118)$ | (0.00535) | (0.0254) |
| ELA 8th Grade | -0.0149 | -0.0075 | 0.0361 |
|  | (0.0118) | (0.00480) | (0.0257) |
| ELA 11th Grade | -0.0060 | -0.0062 | 0.0499* |
|  | (0.0111) | (0.00531) | (0.0302) |

Notes: Each column represents the estimates on the interaction between the district inventory indicator and dummy variables for each student test subject and grade. The first row of column headers indicate the district inventory indicator and the second row indicates the student outcome.

Table F23. Individual grade span attendance estimates for remote learning conditions
Remote learning conditions (i.e. district inventory indicators)

|  | Online Access Spring 2020 |  | Assessment Models 2020-2021 |  |
| :--- | :---: | :---: | :---: | :---: |
| Outcomes | Attendance Rate | Chronic Absence | Attendance Rate | Chronic Absence |
| Early Elementary | $-0.00733^{* *}$ | $0.0319^{* *}$ | 0.000173 | 0.00143 |
|  | $(0.00318)$ | $(0.0132)$ | $(0.000458)$ | $(0.00286)$ |
| Late Elementary | $-0.00713^{* * *}$ | $0.0178^{* *}$ | $-8.75 \mathrm{e}-05$ | $0.00259^{* *}$ |
|  | $(0.00247)$ | $(0.00815)$ | $(0.000298)$ | $(0.00127)$ |
| Middle School | 0.00222 | 0.0162 | $0.00158^{* * *}$ | $-0.00496^{* *}$ |
|  | $(0.00277)$ | $(0.0136)$ | $(0.000507)$ | $(0.00219)$ |
| High School | 0.00102 | -0.00345 | 0.000224 | 0.00278 |
|  | $(0.00538)$ | $(0.0141)$ | $(0.000826)$ | $(0.00238)$ |

Notes: Each column represents the estimates on the interaction between the district inventory indicator and dummy variables for each grade span. The first row of column headers indicate the district inventory indicator and the second row indicates the student outcome.


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[^0]:    ${ }^{1}$ Districts do vary in grade composition so that some middle schools will be represented in $1^{\text {st }}-5^{\text {th }}$ or $9^{\text {th }}-12^{\text {th }}$ and some elementary schools in $6^{\text {th }}-8^{\text {th. }}$. The use of school fixed effects helps to address this issue. Further, as noted, this problem will not arise with analyses at the individual grade level and all results are robust

[^1]:    ${ }^{2}$ We combine public and regional school districts because regional school districts are traditional public schools that are jointly under the supervision of and locally funded by a combination of towns. We also include endowed schools with town school districts because those endowed schools traditionally were affiliated with a specific town and received and in some cases still receive support from that town.

[^2]:    ${ }^{3}$ CTECS is one district with a single value for share of in person days and so the estimate on share high needs across the technical high schools is meaningless, opposite in sign and identical in magnitude to level estimate. Only one endowed middle exists in the state so the effect of share high needs for that school is unidentified.

[^3]:    Please note, teachers were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 7.

[^4]:    Please note, teachers were asked to rank order the options listed above, with the highest ranked option receiving a score of 1 and the lowest ranked option receiving a score of 7.

[^5]:    instruction and remote instruction concurrently (i.e., at the same time); Hybrid model, where I provided in-person instruction and remote instruction at different times (not concurrently); Fully remote instruction, where my students received at least one synchronous/real-time class each school day (for example, classes via zoom); Fully remote instruction, where my students received less than one

[^6]:    Please note, mean percent describes the mean of each participating district's reported value.

[^7]:    Please note, these items range from 1-7, with $1=$ Immensely easier to $7=$ Immensely harder

[^8]:    Please note, these items range from 1-7, with $1=$ Immensely easier to $7=$ Immensely harder

[^9]:    ${ }^{4}$ Specifically, the coefficient on this interaction is significant in a model where the share high needs variable takes the value of zero at the $75^{\text {th }}$ percentile, negative below and positive above.

[^10]:    Please note that the data in this table represent a count of improvements in remote learning from 2019-20 to 2020-21, as reported by districts in District Inventory Q36; detailed

