

Research Report

2026-07

The Impact of COVID-19 Instructional Model Changes on Grade Inflation in Grade 11 English

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Conclusions

This study shows that English 11 grades increased during the 2020–2021 academic year despite stable or declining ACT scores, which provides clear evidence of pandemic-era grade inflation. Difference-in-difference estimates show that instructional modality shifts, particularly changes involving virtual and hybrid instruction, were associated with slightly higher levels of grade inflation, although grade inflation was evident in all modalities. Overall, learning modality made a small but noticeable contribution to variation in grade inflation but does not explain the widespread grade increases observed during the pandemic.

So What?

The widespread grade inflation observed in this study across all instructional modalities suggests that grades from the 2020–2021 academic year should be interpreted with caution, particularly when used as the sole indicator of academic readiness. Although learning modality helps explain some variation in grade inflation, its modest effect sizes indicate that broader policy and grading changes are more likely to have influenced grade inflation. Institutions relying heavily on HSGPA, especially in the context of test-optional admissions policies, may benefit from incorporating additional measures or contextual indicators to more fairly evaluate students who attended high school during the pandemic.

Now What?

Additional research should explore whether grade inflation observed during the pandemic persisted, normalized, or shifted as schools returned to more stable instructional modalities. Additional research that looks at multiple post-pandemic cohorts and multiple course subjects could help disentangle the effects of learning modality from broader grading policy changes. Understanding how schools recalibrated grading after the emergency conditions of the pandemic is critical for informing more consistent, transparent, and resilient assessment systems for future disruptions.

About the Author

Edgar I. Sanchez, PhD

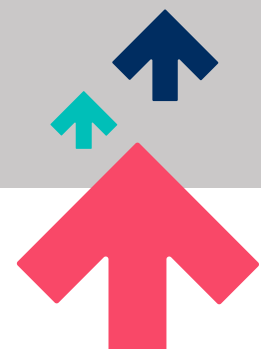
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Introduction

Following the identification of a public health emergency by the World Health Organization (WHO) and the declaration of the COVID-19 pandemic in 2020 (WHO, 2020), orders related to preventive measures resulted in many school closures across the United States (Education Week, 2020). The outbreak of the COVID-19 pandemic led to several changes in the educational sector, including disruptions in participation, attendance, and the traditional delivery of learning and assessment (Malkus & Christensen, 2020). Many schools switched to remote or hybrid learning, and school districts implemented varying grading policies; some adopted a performance-based grading system, while others adopted a completion-based system (Jack et al., 2022; Malkus & Christensen, 2020).

The drastic shift to distance or remote learning, along with changes in grading policies, raised concern among researchers about the impact of the pandemic on grading. In their study, Goldhaber and Goodman Young (2024) noted that although grades in some subjects did return to earlier levels after schools reopened, math grades remained elevated. Importantly, the study found that the link between students' course grades and standardized test scores weakened over time, which suggests that grades became less reliable indicators of academic achievement after the pandemic.

Such a change is often called grade inflation and refers to an increase in high school GPA (HSGPA) without a corresponding improvement in content mastery, often measured by standardized tests. This phenomenon was a systemic problem prior to the pandemic and has been reported to be more evident since the pandemic (Sanchez & Moore, 2022). Reports from the 2022 study by Sanchez and Moore revealed that although there was a continuous decline in ACT Composite scores, there was an increase in high school grades, with grade inflation becoming more notable during the 2020–2021 school year.

Evidence of grade inflation has been found at the subject level as well as at the overall HSGPA level. Sanchez (2023) revealed evidence of grade inflation at the subject level in high school, with the largest amount of grade inflation being observed for math, followed by science, then English, and finally social studies.

In recent years, shifts in college admissions policies—such as the widespread adoption of test-optional and test-blind admissions policies during the pandemic—have increased the emphasis on HSGPA as a key metric for evaluating applicants (Chen & Sanchez, 2024). Some postsecondary institutions no longer require test scores, and researchers and commentators have raised concerns that this greater reliance on HSGPA could magnify the effects of grade inflation, thereby potentially overstating students' academic readiness for college (Sanchez & Moore, 2022). While Sanchez and Moore (2022) don't directly look at whether test-optional or test-blind policies resulted in changes in grading practices, their work does highlight the potential risks associated with using HSGPA as the primary measure of achievement, especially within the context of increased grade inflation. This situation has resulted in an ongoing debate about whether students entering college after the pandemic are as prepared as their grades might suggest (Sanchez, 2024).

Multiple factors contributed to the issue of grade inflation during the COVID-19 pandemic; one major factor was the disruption to instructional delivery. This was particularly the case with the shift to virtual and hybrid learning. Some studies focused on high schools where remote learning altered teachers' grading philosophies, leading to more lenient assignment of grades as well as extended deadlines, grade point boosts, and lowered expectations (Landreau, 2023; Mentz, 2024). During this time, high schools adopted flexible grading systems such as pass/fail and no-zero policies, particularly to accommodate disparities in students' resources at home (Castro et al., 2020; Wieselmann & Crotty, 2022). These types of changes led to notable increases in GPA, particularly in underresourced and rural districts, which complicated the extent to which grades reflected actual content mastery (Panton, 2023). At the same time, the use of test-optional admissions policies rose and HSGPA became a more influential factor in college admissions decisions, making it imperative to critically assess the impact of pandemic-era grading policies (Lofaro, 2021). By understanding how instructional disruptions reshaped grading practices, we can better understand the evaluation of student readiness for post-secondary education during this period. Because the first post-pandemic year includes the most straightforward and substantial effects of the pandemic on schooling, including widespread shifts to virtual and hybrid instruction and the implementation of emergency grading practices, we selected the 2020–2021 school year as our focus. This allows for a clean pre/post contrast in the difference-in-difference design and makes use of the most complete learning modality data available from the COVID-19 School Data Hub.

The changes in instructional modality during the COVID-19 pandemic, particularly the widespread transition to remote and hybrid learning, fundamentally altered how students were taught and assessed. As a response to unprecedented disruptions during the pandemic, many districts adopted very lenient grading policies such as pass-or-fail systems, no-fail guarantees, and extended deadlines (Castro et al., 2020; Illinois State Board of Education, 2020; Norville, 2020; Opalka & Talkington, 2020; Tadayon, 2020; Townsley, 2020). While these changes were intended to support students during a time of crisis, they also made getting high grades easier and weakened the traditional alignment between grades and content mastery. Recent research has shown that in remote-learning settings, grades often rose even as standardized test scores declined, which suggests that grades became less reliable indicators of academic achievement (Goldhaber & Goodman Young, 2024; Swiderski & Crittenden Fuller, 2023). This disconnect raises concerns about the validity of grades as measures of learning and has implications for educational equity, instructional policy, and college admissions, especially in a test-optional environment where GPA carries increasing weight in decision-making.

Studying the impact of instructional modality on grade inflation is important for understanding how emergency teaching formats influence grading practices and student outcomes. The evidence from large-scale studies and district-level analysis indicates that students in remote and hybrid environments were more likely to receive inflated grades, particularly in schools serving economically disadvantaged populations (Goldhaber et. al., 2022; Sanchez & Moore, 2022). Such findings suggest that instructional modality not only shaped the delivery of education but also introduced variability in grading standards across schools and student groups. By focusing on English 11, a commonly taken course, we can isolate the effects of

learning modality on grading within a consistent academic context.¹ This offers insights into broader trends in grade inflation and helps stakeholders interpret pandemic-era transcripts with appropriate caution.

Even though the acute disruptions of the pandemic have subsided, the overall educational effects continue to matter in 2026 and beyond. Those students who attended high school during the pandemic years are now entering and progressing through college, and their academic performance is being evaluated based on a system that likely still relies heavily on HSGPA. Lacking a clear understanding of the extent to which pandemic-era learning modalities and grading practices influenced GPA inflation, colleges risk over- or underestimating students' readiness. Additionally, as test-optional policies remain widespread and conversations about permanently altering this admissions process continue, findings from the pandemic era are essential to helping inform equitable and valid admissions policies. The insights gained from studying pandemic-era grade inflation can also help us prepare educators and policymakers to respond more effectively to future disruptions.

In the current study, we examine the impact of instructional modality during the COVID-19 pandemic on grade inflation in English 11 courses for an ACT-tested population. We use data from ACT-tested public school students in Grade 11 across 3 cohorts: 2017–2018, 2018–2019, and 2020–2021. Our population was drawn from both national ACT test takers and students from states with ACT state contracts where nearly all public school juniors take the ACT. To help ensure data reliability, we focused on schools with at least 30 ACT-tested students per year and specifically analyzed students who provided data for their English course grade. This focus allows for an examination of subject-specific grade inflation during the instructional disruption of the COVID-19 pandemic.

While many of the studies that have looked at grade inflation have focused on aggregate HSGPA as their primary measure (e.g., Sanchez & Moore, 2022), we look at a single grade-level course because it is offered across districts and was commonly taken during the 2020–2021 school year when pandemic-related disruptions were at their height. Unlike HSGPA, which aggregates grades from across multiple subjects and years, many of which may fall outside the pandemic period, focusing on English 11 allows us to isolate the pandemic's effect on grading practices more precisely. Additionally, prior research by Sanchez (2023) has shown that grade inflation during the pandemic was present not only in cumulative GPA but also in individual subjects such as English. While our findings may not generalize to all subjects or even to overall HSGPA, they still provide focused evidence of subject-specific grade inflation and offer invaluable insights into how learning modality affected grading during a critical instructional year.

In this study, we examine the impact of the patterns of modes of learning during the COVID-19 pandemic on high school grade inflation. Specifically, we use a difference-in-difference (DiD) design with categorical levels to isolate the causal impact of mode of learning, as measured by

¹ In the ACT registration process, we ask students what courses they have taken. We specifically ask if they have taken English 11. It is possible that not all students meant the same ELA course but rather simply whatever ELA course they took in the 11th grade.

virtual, hybrid, and in-person instruction during the 2020–2021 school year, on the degree of grade inflation. High school grade inflation was estimated using ACT test data and self-reported English 11 grade data from the academic years 2017–2018, 2018–2019, and 2020–2021; the DiD approach, which focused on the 2018–2019 and 2020–2021 school years, was used to examine whether the external shock on grading practices of the pandemic-induced shift in learning modality affected grade inflation.

The findings of the present study offer preliminary insights into grade inflation, specifically in the context of English 11 courses taken during the early pandemic period. While it's true that these results cannot be generalized across all subjects or time periods, they are nonetheless useful for institutions seeking to understand how pandemic-era grading practices and learning modality shifts may have influenced high school grades in the short term. This can have implications for admissions and placement decisions in test-optional contexts, where greater reliance on GPA requires careful interpretation. Policymakers and school administrators may also find value in the results and in considering how such contextual factors influence GPA trends, particularly during the immediate aftermath of the COVID-19 pandemic. It is important to note, however, that this study does not aim to predict long-term trends and does not account for the GPA normalization that has been reported in other research since 2021. The research's contribution lies in helping to frame cautious and context-specific interpretations of GPA during periods of educational disruption such as the COVID-19 pandemic.

This study addressed the following research questions:

1. How did grade inflation in English 11 differ before and after the onset of the pandemic among ACT-tested students?
2. Did the learning modality shift associated with the COVID-19 pandemic cause an increase in the magnitude of grade inflation among ACT test students?

Methods

Population and Sample Characteristics

The sample was drawn from the graduating classes of U.S. ACT test takers in the classes of 2017–2018, 2018–2019, and 2020–2021 (National testing and State and District testing). In State and District testing, states administer the ACT to nearly all public high school 11th graders, whereas in National testing, students self-select to take the ACT. This section begins by outlining the three nested samples used in the study: 1) the ACT-tested population, 2) the grade inflation (GI) sample, and 3) the difference-in-difference (DiD) sample. Each sample is selected to enable specific analysis related to estimating grade inflation and assessing the impact of instructional modality. The population of students consisted of ACT-tested public high school students who took Grade 11 English. The grade inflation sample included students from schools with a minimum of 30 ACT-tested students in each year examined who had no missing data (see the Appendix for further details). The DiD sample included schools that had a minimum of 30 ACT-tested students in each year examined, reported the learning modalities used during the pandemic on the COVID-19 School Data Hub (COVID-19 School Data Hub

[CSDH], 2023), and had no missing data. In this study, the population examined included all students who met the criteria in the academic years examined. The grade inflation sample is a subset of the population that also had no missing data on key variables. The DiD sample is a subset of the grade inflation sample from the 2018–2019 and 2020–2021 academic years, which includes additional variables that also met a no-missing-data requirement.

The grade inflation sample (used to estimate grade inflation in high schools) covers 81% of the population because we used only schools with sufficient multiyear data on students' English 11 and ACT scores to track grade trends and estimate grade inflation. The school sample used for the difference-in-difference sample (DiD) covered 68% of the ACT-tested population due to matching restrictions with the COVID-19 School Data Hub. The grade inflation sample consisted of 4,033,609 students from 8,377 schools, while the DiD sample consisted of 3,402,126 students from 6,599 schools across the United States (Table 1). As previously described, the grade inflation sample is a subset of the ACT-tested population, and the DiD sample is a subset of the grade inflation sample. Demographic characteristics, ACT Composite scores, HSGPA, and English 11 grades for the population and subsamples are presented in Table 1. Overall, the racial/ethnic, gender, and family income distributions of the grade inflation and the DiD samples were reasonably close to those of the ACT-tested population.

Table 1. Student Population and Sample Characteristics for the 2017, 2018, and 2020 Cohorts

	Characteristics	Population	GI sample	DiD sample
N	Schools	28,079	8,377	6,599
	Students	4,992,986	4,033,609	3,402,126
Race/ethnicity N (%)	African American	617,348 (12.4)	511,591(12.7)	464,363 (13.6)
	American Indian/Alaskan Native	41,039 (0.8)	28,409 (0.7)	19,703 (0.6)
	Asian	229,678 (4.6)	175,603 (4.4)	149,026 (4.4)
	Hispanic	782,416 (15.7)	572,507 (14.2)	498,902 (14.7)
	Native Hawaiian/Pacific Islander	14,168 (0.3)	11,448 (0.3)	10,269 (0.3)
	Prefer not to respond/missing	469,650 (9.4)	393,925(9.8)	328,258 (9.6)
	Two or more races	224,473 (4.5)	182,994(4.5)	150,787 (4.4)
	White	2,614,214(52.4)	2,157,132(53.5)	1,780,818 (52.3)
Gender N (%)	Another gender	2,645 (0.1)	2,342(0.1)	2,095 (0.1)
	Female	2,553,794 (51.1)	2,022,429 (50.1)	1,706,247 (50.2)
	Male	2,312,226 (46.3)	1,894,284 (47.0)	1,589,326 (46.7)
	Missing	115,363 (2.3)	106,678(2.6)	97,772 (2.9)
	Prefer not to respond	8,958 (0.2)	7,876 (0.2)	6,686 (0.2)
Family income N (%)	< \$36K	552,918 (11.1)	430,975 (10.7)	372,016 (10.9)
	\$36K–\$60K	651,354 (13.0)	511,386 (12.7)	426,121 (12.5)
	\$60K–\$100K	789,066(15.8)	608,274 (15.1)	544,404 (16.0)
	> \$100K	939,731(18.8)	750,624 (18.6)	578,971 (17.0)
	Missing	2,059,917 (41.3)	1,732,350 (42.9)	1,480,614 (43.5)
Academic metrics	HSGPA (mean (SD))	3.43 (0.59)	3.41 (0.59)	3.38 (0.61)
	English 11 grades (mean (SD))	3.47 (0.76)	3.45 (0.78)	3.42 (0.79)
	ACT Composite (mean (SD))	20. 3 (6.03)	20.3 (6.03)	19.8 (5.92)

Analytical (DiD) Sample

Table 2 shows the demographic variables provided by students, including gender, race/ethnicity, and family income, for the sample used in the difference-in-difference model for the 2018–2019 and 2020–2021 cohorts. These demographic variables were collected at the time of ACT test registration. In the study sample, the average English 11 grades for each graduating cohort range from 3.31 (2018–2019) to 3.42 (2020–2021), while the average ACT Composite scores range from 20.30 (2018–2019) to 19.85 (2020–2021).

Table 2. Difference-in-Difference Sample Demographics

	Characteristic	2018–2019	2020–2021
N	Students	1,185,228	963,520
	Schools	6,599	6,599
Race/ethnicity N (%)	African American	162,307 (13.7)	125,968 (13.1)
	American Indian/Alaskan Native	6,966 (0.6)	5,716 (0.6)
	Asian	52,590 (4.4)	40,778 (4.2)
	Hispanic	179,194 (15.1)	138,300 (14.4)
	Native Hawaiian/Pacific Islander	3,521 (0.3)	2,830 (0.3)
	Prefer not to respond/missing	112,183 (9.5)	103,895 (10.8)
	Two or more races	52,496 (4.4)	42,979 (4.5)
	White	615,971 (52.0)	503,054 (52.2)
Gender N (%)	Another gender	0 (0.0)	2,095 (0.2)
	Female	603,613 (50.9)	466,860 (48.5)
	Male	558,207 (47.1)	438,770 (45.5)
	Missing	23,408 (2.0)	49,109 (5.1)
	Prefer not to respond	0 (0.0)	6,686 (0.7)
Family income N (%)	< \$36K	138,131 (11.7)	73,672 (7.6)
	\$36K–\$60K	156,354 (13.2)	92,331 (9.6)
	\$60K–\$100K	203,003 (17.1)	103,261 (10.7)
	> \$100K	207,192 (17.5)	151,429 (15.7)
	Missing	480,548 (40.5)	542,827 (56.3)
Academic metrics	HSGPA (mean (SD))	3.28 (0.64)	3.38 (0.61)
	English 11 grades (mean (SD))	3.31 (0.84)	3.42 (0.79)
	Percent missing English 11 grades (%)	41.3	54.0
	ACT Composite (mean (SD))	20.30 (5.83)	19.85 (5.92)

In Table 2, we can see an increase in missingness for several key demographic and academic variables between the 2018–2019 and the 2020–2021 cohorts. In particular, the proportion of students with missing gender responses increased from 2.0% to 5.1%, and the rate of missingness among race/ethnicity responses rose from 9.5% to 10.8%. These increases are relatively modest. There was a more notable increase, however, in the rate of missing family income responses, which rose from 40.5% to 56.3%. Additionally, the percentage of students who did not report an English 11 grade increased from 41.3% to 54.0%.

Measures

ACT Composite Score

The ACT Composite scores were the students' most recent test scores prior to high school graduation (which for some students might be from a State and District school-day test administration and for others might be from a National test administration). These scores were used in the grade inflation model.

English 11 Grades

Students' English 11 grades were collected from self-reported grades in English 11. School-level (mean of English 11 for the school) and student-level English 11 grades were utilized in estimating grade inflation.

Grade Inflation

To estimate the average school-level grade inflation for English 11 grades, this study modeled the grades as a function of students' standardized ACT Composite scores, the school's average ACT Composite score in 2017, cohort year, the change in the percentage of students missing English 11 grades between cohorts, and the interaction between these factors. The model included random intercepts and slopes for cohort year at the school level to capture variations in grade trends across schools. This grade inflation index reflects each school's deviation from the average change in English 11 grades across cohorts after adjusting for academic performance and data completeness. Further details on the model specification and estimation procedures are provided in the Technical Appendix.

The inclusion of the percentage of students missing English 11 grades serves as a statistical control to account for potential bias introduced by differential data availability across cohorts; by adjusting for this variation, the model helps ensure that observed grade inflation reflects true shifts in grading practices rather than changes in sample composition. While the assumption that data is missing completely at random cannot be definitively proven, this assumption is supported by state- and district-level grading policies among State and District contract states, which make up most of the tested population, wherein students are not required or given time to fill in this additional information. This suggests that the missingness of English 11 grades is unlikely to be systematically correlated with individual student or school-level GPA and lends plausibility to the missing-completely-at-random assumption in this context.

Learning Modality

To capture the instructional format used across semesters within schools during the 2020–2021 school year, we compiled data on the learning modality for each school from the COVID-19 School Data Hub (CSDH, 2023). The COVID-19 School Data Hub is a database that was designed to support educators, researchers, and policymakers in exploring how the COVID-19 pandemic affected secondary learning environments during the 2020–2021 school year. It aggregates data reported by state education agencies on the instructional modes adopted in schools and districts across the United States during the pandemic. The data were collected

directly from public records as well as from state-level reporting systems. This database enables detailed exploration of how different modes of learning were distributed across states and offers a foundation for evaluating the academic impacts of pandemic-related school instructional modality changes. For our analysis, we used the district file, which captured the learning modality by month for the 2020–2021 school year. While the district file provided monthly modality data, we chose to summarize patterns at the school level using ordered modality combinations to reduce noise from short-term changes; this approach allowed us to capture meaningful shifts in instructional delivery without overfitting to temporary changes.

Modalities were categorized as either virtual, hybrid, or in person. Because instructional modes were most likely dictated by the district, district-reported modality was used for each school. For each school, we created a unique ordered list of the modalities being used. Evidence from the National Center for Education Statistics (NCES) suggests that only 0.6% of public schools were engaged in fully virtual schooling during the 2019–2020 school year. The NCES Common Core of Data on virtual school enrollment for the 2019–2020 school year were collected as of October 1, 2019. This means that over 99% of students attended traditional brick-and-mortar schools prior to the pandemic (NCES, 2021). While the COVID-19 School Data Hub does not capture instructional modality changes that occurred between October 2019 and August 2020, for the purposes of this analysis we infer in-person learning as the foundational modality for most schools leading up to the pandemic, recognizing that some transitions may have begun at the end of the 2019–2020 school year. For example, across the months of the 2020–2021 school year, a school may have started in person and then switched to hybrid. For the purposes of the analysis, their ordered list would indicate in person, then hybrid. If a school started in person but switched to online at the start of the pandemic, and then to hybrid at some point during the school year, their ordered list would be in person, then online, and then hybrid. In the case of schools that utilized only in-person learning, the list would include only in-person learning, as that was used during the entire 2020–2021 school year. For schools that used multiple modalities, we identify which modalities were used during the 2020–2021 school year and in which order. This approach preserves the temporal sequence of instructional changes and provides a summary of each school's adaptation over time. This modality listing is then used to examine patterns of instructional delivery and to explore associations with grade inflation. In total, there were 15 unique modality combinations (see Table 3). The five most frequent modalities observed were staying in person throughout the 2020–2021 school year; beginning the year virtually and then transitioning to hybrid learning; beginning the year with hybrid learning and then transitioning to in-person learning; staying in hybrid learning all year; and beginning the year virtually, transitioning to hybrid, and then moving to in-person learning.

Table 3. District Learning Modalities During the 2020–2021 School Year

District modality combinations	N	Percent
Hybrid	1,369	9%
Hybrid, in person	1,497	10%
Hybrid, in person, virtual	96	1%
Hybrid, virtual	557	4%
Hybrid, virtual, in person	503	3%
In person	4,495	30%
In person, hybrid	665	4%
In person, hybrid, virtual	144	1%
In person, virtual	560	4%
In person, virtual, hybrid	101	1%
Virtual	580	4%
Virtual, hybrid	2,634	18%
Virtual, hybrid, in person	1,057	7%
Virtual, in person	624	4%
Virtual, in person, hybrid	84	1%

Data Analysis

Descriptive Analysis

To address the first research question, which asks how grade inflation in English 11 differs before and after the pandemic among ACT-tested students, we use descriptive analysis of unadjusted English 11 grades and ACT Composite scores across 3 cohorts: 2017–2018, 2018–2019, and 2020–2021. Through this analysis, we provide foundational insights into overall trends in student performance as well as grading practices before and during the COVID-19 pandemic. This descriptive analysis serves as an important piece of the overall data analysis strategy, offering context for how to interpret the results of the grade inflation and difference-in-difference models.

Grade Inflation Model

To explore the impact of the COVID-19 instructional model changes on high school grade inflation, we first calculated the grade inflation index for each school by cohort year using cohort 2017–2018 as the base year. The average grade inflation index for each school in a cohort year was estimated using a hierarchical linear model (HLM) that nested students within high schools and allowed a random slope for cohort year. Grade inflation was modeled separately for each pair of years to get the grade inflation index for the schools in each cohort year. This was estimated for cohorts 2018–2019 (comparison year pre-COVID) and 2020–2021 (comparison year during the pandemic).

For details on the grade inflation model, please see the Technical Appendix.

To quantify the magnitude of the grade inflation index, we calculated standardized mean differences (SMDs). The grade inflation index and SMD serve complementary but distinct purposes in the analysis. The grade inflation index estimates the average change in English 11 grades at the school level as expressed on the GPA scale and provides a direct measure of grade shifts over time. On the other hand, the SMD is used to quantify the magnitude of those grade changes across schools by standardizing the difference in grades relative to the standard deviation of grades and the baseline year (2017–2018). This standardization allows us to interpret the grade changes in terms of effect sizes, facilitating comparisons across schools and cohorts. The grade inflation index tells us how much grades have changed, and the SMD helps us understand how meaningful those changes are in practical terms.

Difference-in-Difference Model

This study uses a categorical difference-in-difference (DiD) design to causally estimate the impact of COVID-19 instructional models on the degree of grade inflation. A longitudinal dataset with grade inflation index for each school was examined for two treatment periods (pre-pandemic vs. post-onset). The data for the pre-pandemic year was the 2018–2019 grade inflation index (estimated using the grade inflation model), while the data for the post-onset year was the 2020–2021 grade inflation index.

The categorical level utilized in this study was the pattern of learning modality (instructional model) reported for each school in 2020–2021 in the COVID-19 School Data Hub (CSDH, 2023). The in-person learning modality was used as the reference category, which means that the reference schools were schools that were in person before the pandemic and remained in person during the pandemic.

The DiD model was estimated for grade inflation index in each school using the model below:

$$Grade\ Inflation_{it} = \beta_0 + \sum_{k=1}^{K-1} \beta_{1k} (Post\ COVID_t \times Learning\ Modality_{ik}) + \alpha_t + \gamma_{it} + \varepsilon_{it}$$

Where:

- i indexes schools and t indexes cohort years,
- $Post\ COVID_t$ is a binary indicator (1 for 2020–2021, 0 for 2018–2019),
- $Learning\ Modality_{ik}$ is a categorical variable representing the instructional modality pattern (15 levels),
- β_{1k} captures the DiD estimates for each modality pattern relative to the reference group (schools that remained in person),
- α_t and γ_{it} represent fixed effects for time and cohort year, and
- ε_{it} is the error term clustered at the school level.

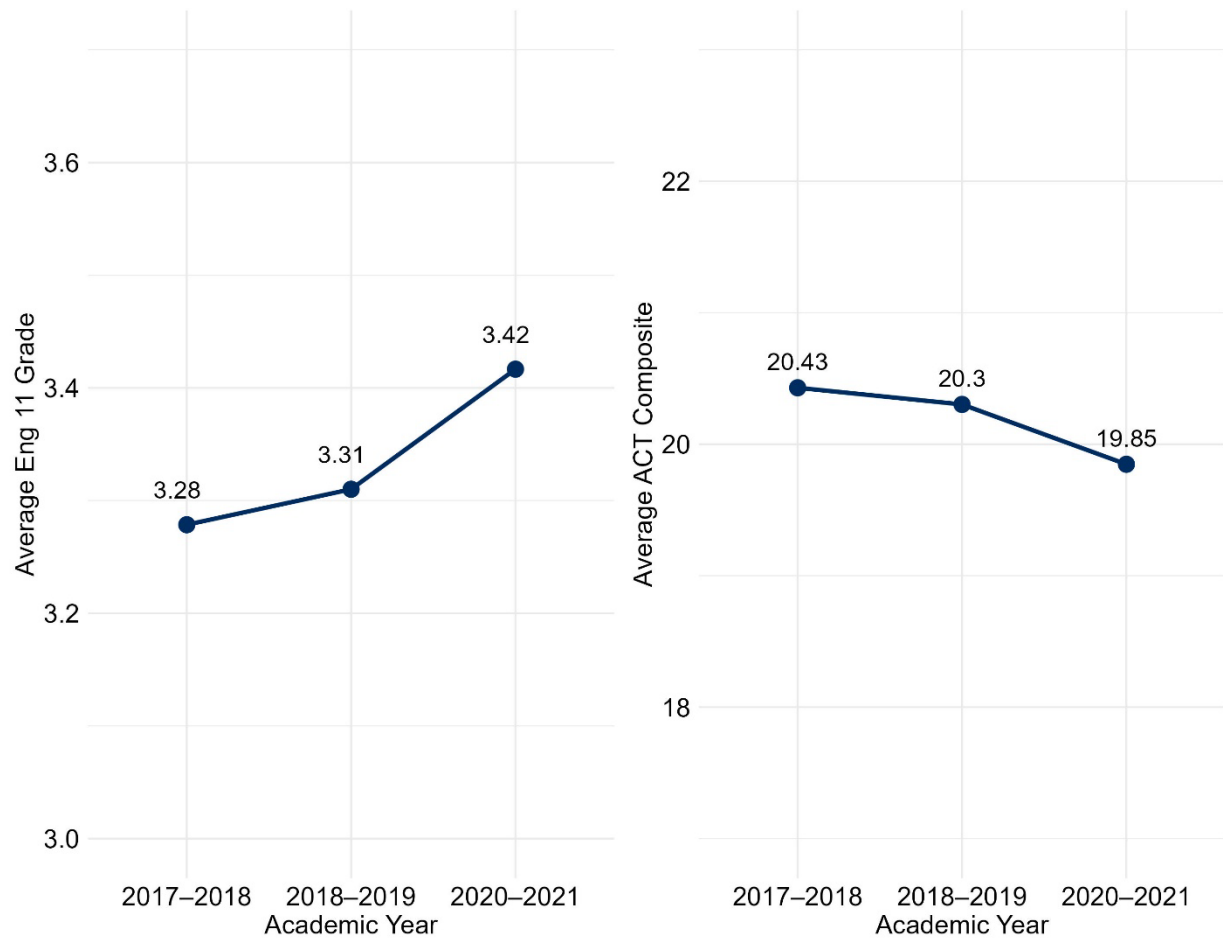
In the model, we do not include separate terms for the main effects of post-COVID and learning modality pattern because they are already accounted for by the fixed effects for time in school. If we were to include them, they would create redundancy in the model, leading to perfect multicollinearity. In difference-in-difference models with fixed effects, such interactions between time and treatment group capture the treatment effect of interest, making the separate main effects unnecessary.

Results

Descriptive Analysis

In Figure 1, we can see that based on the unadjusted English 11 grades and ACT Composite scores for the years 2017–2018, 2018–2019, and 2020–2021, mean English 11 grades increased from 3.28 in 2017–2018 to 3.42 in 2020–2021. At the same time, ACT Composite scores declined from 20.43 in 2017–2018 to 19.85 in 2020–2021. The 2017–2018 cohort is used to establish a change in grades, with 2017–2018 serving as the base year and the other two years serving as comparison years. In the difference-in-difference analysis, we use the grade inflation index, which indicates changes from the base year 2017–2018. In this figure, we present all three years to provide a more complete picture of the changes that have occurred in average English 11 grades and average ACT Composite scores.

Figure 1. Unadjusted English 11 Grades and ACT Composite Scores by Year



How Did Grade Inflation Differ Before and After the Onset of the Pandemic Among ACT-Tested Students?

Table 4 summarizes the distribution of standardized mean differences (SMDs) in grade inflation index across school-level grade changes before and after the onset of the COVID-19 pandemic. The SMD value represents the magnitude of change in school-level grade inflation relative to the standard deviation of grade inflation in 2017–2018. This SMD allows us to compare the change in grade inflation prior to and after the onset of the COVID-19 pandemic. These grade inflation changes are categorized by conventional effect size definitions: negligible (between –0.10 and +0.10), small (0.10 to 0.20 or –0.10 to –0.20), moderate (0.20 to 0.50 or –0.20 to –0.50), and large (greater than 0.50 or less than –0.50). The SMD distributions reveal a clear pattern of grade inflation, with most schools experiencing a positive increase in grades relative to the 2017–2018 school year. We can see that many schools have small to negligible grade inflation both prior to and after the onset of the COVID-19 pandemic. That said, a meaningful portion of schools show a moderate or large grade inflation SMD, which suggests that for some schools, grade increases were substantial. These larger increases are especially pronounced in

the post-COVID year examined. Compared to the pre-pandemic cohort, the post-COVID distribution skews more heavily toward larger positive grade inflation.

Table 4. Pre- and Post-Pandemic (2017–2018 vs. 2020–2021) Numbers (and Percentages) of Schools by Grade Inflation Standardized Mean Difference

Grade change	Standardized mean difference (SMD)	Pre-COVID	Post-COVID onset
		<i>N</i> (%)	<i>N</i> (%)
Large deflation	≤ -0.50	32 (0%)	34 (0%)
Moderate deflation	-0.50 to -0.20	361 (4%)	206 (2%)
Small deflation	-0.20 to -0.10	737 (9%)	278 (3%)
Negligible change	-0.10 to 0.10	4,373 (52%)	1,831 (22%)
Small inflation	0.10 to 0.20	1,713 (20%)	1,719 (21%)
Moderate inflation	0.20 to 0.50	1,096 (13%)	3,421 (41%)
Large inflation	> 0.50	65 (1%)	888 (11%)

Figure 2 illustrates the distribution of grade inflation for the pre- and post-COVID cohorts. Both average grade inflation and the number of schools experiencing higher levels of grade inflation rose in 2020–2021 relative to 2018–2019.

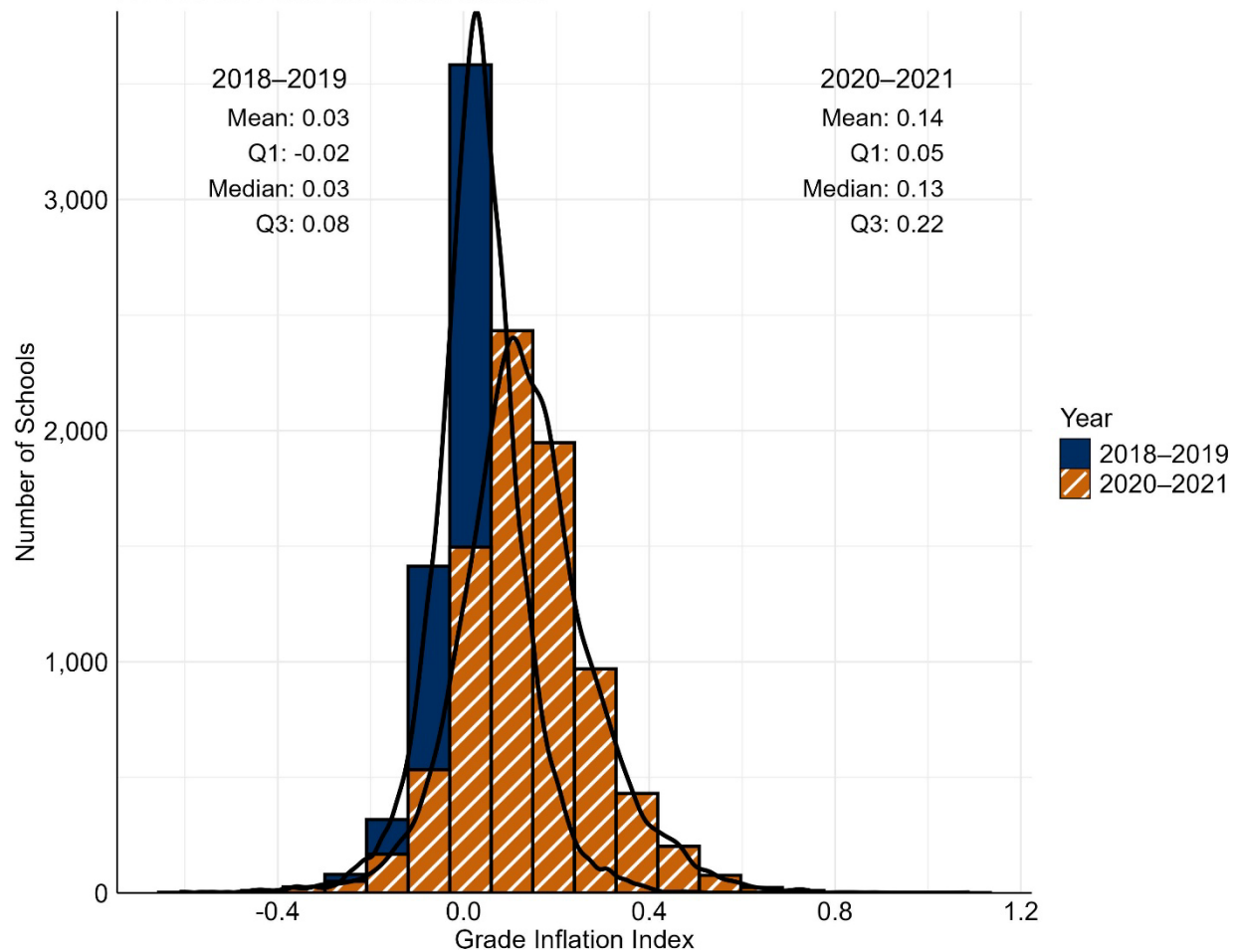
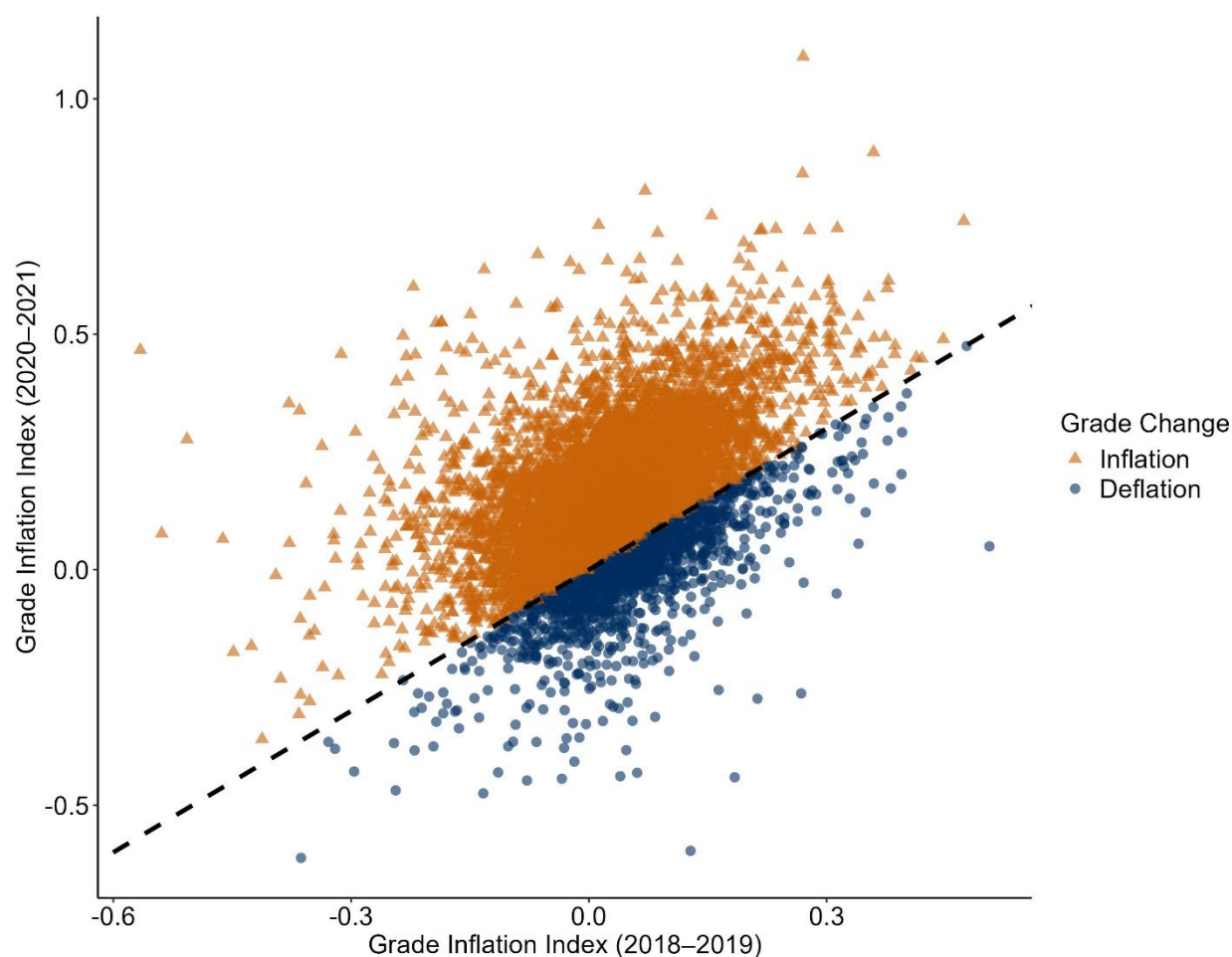
Figure 2. Distribution of Grade Inflation Index (Pre- vs. Post-Pandemic Onset)

Figure 3 shows the school grade inflation index for 2018–2019 and 2020–2021. Each point on the scatterplot represents the grade inflation index for a school in 2018 plotted against its 2020–2021 value. The dashed line represents no change. Points above the line indicate grade inflation increases relative to 2018–2019. In general, grade inflation was higher in 2020–2021 after the onset of the pandemic.

Figure 3. Scatterplot Comparison of Grade Inflation (2020–2021 vs. 2018–2019)

Did the Learning Modality Shifts Associated with the COVID-19 Pandemic Cause an Increase in the Magnitude of Grade Inflation Among ACT-Tested Students?

Table 5 shows the DiD estimates (interaction with post-COVID) for each instructional learning modality relative to schools that stayed in person throughout the 2020–2021 school year. The results showed that schools in one of three learning-mode change categories had statistically significantly higher grade inflation indices than schools that didn't change from in-person learning. These categories include hybrid ($p = 0.002$), virtual-in person ($p < 0.001$), and virtual-in person-hybrid ($p = 0.002$).

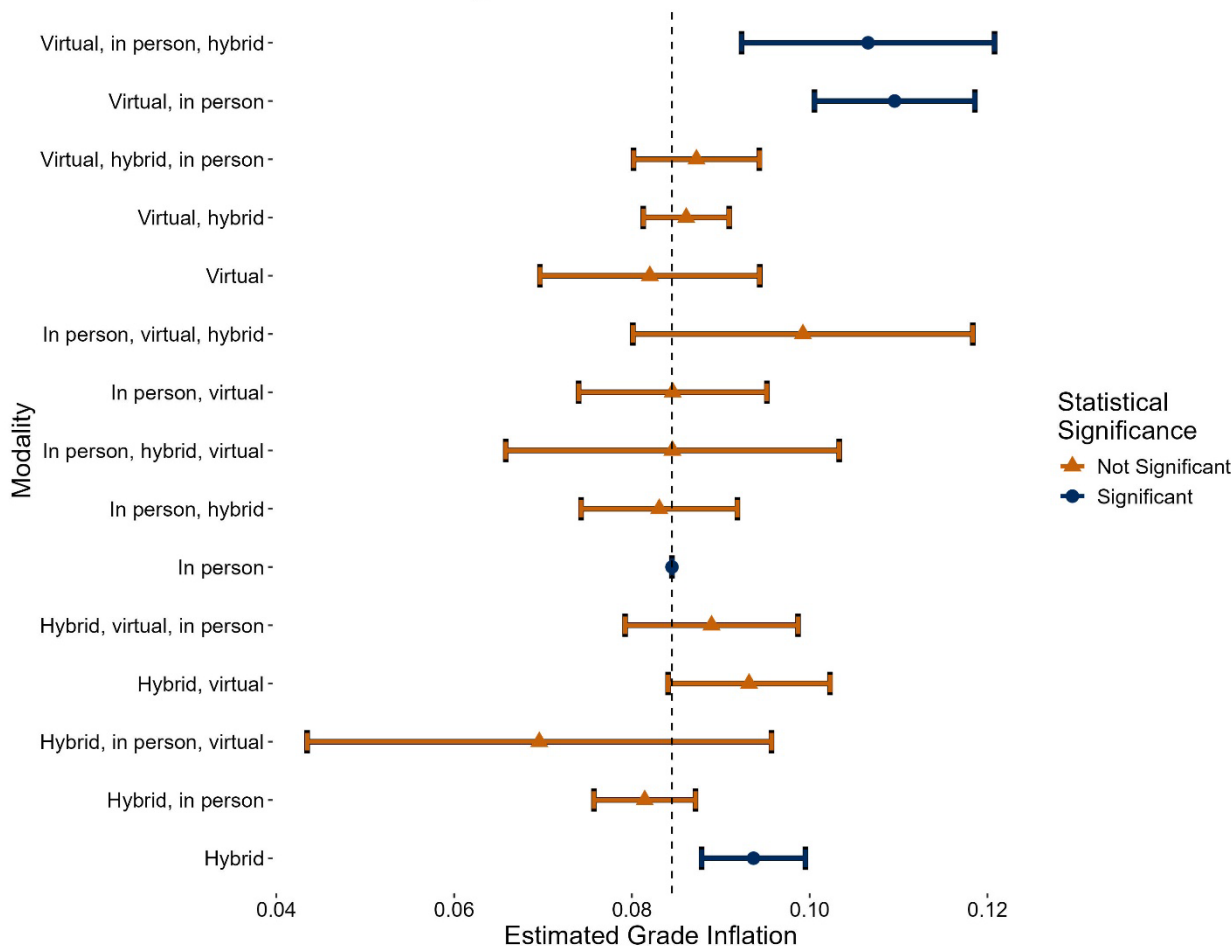
Table 5. DiD Analysis

Categories	β estimates	Standard error	95% CI	p
Hybrid	0.02	0.006	0.007–0.030	0.002
Hybrid, in person	–0.01	0.006	–0.018–0.005	0.293
Hybrid, in person, virtual	–0.03	0.027	–0.082–0.022	0.263
Hybrid, virtual	0.02	0.009	–0.001–0.036	0.062
Hybrid, virtual, in person	0.01	0.010	–0.010–0.028	0.369
In person, hybrid	–0.00	0.009	–0.021–0.015	0.749
In person, hybrid, virtual	0.00	0.019	–0.037–0.038	0.996
In person, virtual	0.00	0.011	–0.021–0.021	0.987
In person, virtual, hybrid	0.03	0.020	–0.009–0.068	0.131
Virtual	–0.00	0.013	–0.030–0.020	0.693
Virtual, hybrid	0.00	0.005	–0.006–0.013	0.515
Virtual, hybrid, in person	0.01	0.007	–0.009–0.020	0.388
Virtual, in person	0.05	0.009	0.032–0.068	<0.001
Virtual, in person, hybrid	0.04	0.015	0.015–0.073	0.002

Note. Values are rounded to 2 decimal places. Observations = 13,198. R^2 / R^2 adjusted = 0.763 / 0.525.

Figure 4 shows the estimated grade inflation associated with each modality pattern examined. For each pattern, the mean and 95% confidence interval are shown. The figure shows that schools that transitioned from the virtual to the in-person modality experienced the largest amount of grade inflation, followed by schools that went from virtual to in person to hybrid. Schools that went hybrid during the pandemic recorded the third largest significant effect. These three modalities were the only modalities that showed significantly increased grade inflation compared to schools that stayed in person during the pandemic.

Figure 4. Estimated Grade Inflation for Each Modality



Note. The vertical dotted line indicates the average grade inflation associated with continuous in-person learning.

Discussion

This study helps document changes in English 11 grade inflation among ACT-tested students during the first year of the COVID-19 pandemic. On average, grade inflation increased from about 0.03 grade points pre-pandemic to 0.14 grade points during the 2020–2021 academic year. Practically speaking, this means grades rose significantly during the 2020–2021 school year without commensurate gains in academic achievement. This study found that 52% of schools exhibited moderate to large levels of grade inflation as measured by an English 11 standardized mean grade point difference of 0.2 or greater. These trends confirm that the 2020–2021 academic year indeed corresponded with greater grade inflation in high schools, which bolsters the concern raised in previous research about changes in validity of grades over time.

In the present study, our primary area of interest was the role of instructional modality during the COVID-19 pandemic. The difference-in-difference analysis found that the mode of instruction during the 2020–2021 school year did have a measurable but relatively modest impact on grade inflation. In fact, three learning modalities showed statistically significantly greater grade inflation when compared to schools that remained in person throughout the 2020–2021 school year. Most notably, schools that began the 2020–2021 school year virtually and then shifted back to in-person learning had the highest rate of grade inflation (~0.11 grade points on average vs. ~0.08 in schools that stayed in person). Schools that transitioned from virtual to in person and then to hybrid, as well as those that were hybrid only, also had significantly higher grade inflation than schools that remained in person throughout the pandemic.

That said, however, all learning modalities were associated with some degree of grade inflation during the 2020–2021 pandemic year, even for schools that remained in person (Figure 4). On average, the increase in grades from before the pandemic to the 2020–2021 academic year was about 0.11 grade points (see Figure 1), which corresponds to roughly a tenth of a letter grade on a traditional 4.0 scale. The three learning modalities that were statistically significant had increases of only a few hundredths of a point beyond that baseline. Standardized mean difference for the average grade inflation was small in magnitude.

While these findings suggest that instructional modality was indeed associated with grade inflation, it does not appear to have been a dominant driver of that inflation. Based on the present analysis, we cannot isolate the impact of modality from other factors such as grading policy changes, disruptions to instruction, student stress, or other barriers that affected grades at this time. A larger takeaway is that grade inflation was widespread during this period and not limited to any one instructional model. If anything, the results suggest that an overall increase in grades during the 2020–2021 academic year has implications for how grades, in this case English 11 grades, should be interpreted.

This study suggests that students who took English 11 during the 2020–2021 academic year should be aware that their grades may reflect more than just content mastery. While grades were higher, they may not fully represent learning gains. Students who experienced this disruption in learning modality may benefit from seeking additional academic support such as

tutoring or enrichment opportunities to be sure that they are prepared for post-secondary coursework.

As mentioned, the data suggest that grade inflation occurred across all instructional modalities. This suggests that there may be a broader need for consistency or transparency in grading practices. When teachers must use hybrid or virtual settings, they should consider developing grading rubrics that are adaptable across modalities. Documenting grading decisions during emergency transitions such as the COVID-19 pandemic can also help future analysis and policy development.

Even though most students from the 2020–2021 cohort have graduated from undergraduate studies, their high school records continue to influence decisions in 2026, particularly for transfer admissions and graduate programs. The findings of this study show that English 11 grades from the pandemic rose while ACT scores remained flat or declined, which suggests that grades may not fully represent academic readiness. As pandemic-era transcripts remain in circulation and in use, admissions officers should interpret them with caution and rely on multiple measures to ensure fair and accurate evaluations.

Limitations

A few limitations to this study should be acknowledged. First and foremost, these data represent only ACT-tested students in participating schools; while the data do represent a large-scale, multistate sample of students, they may not capture all U.S. high school students, including those who did not take the ACT or who attended schools that could not be matched to the COVID-19 School Data Hub. Second, we rely on measures of self-reported English 11 grades rather than official transcript grades. While previous research supports the accuracy of self-reported grades, it is possible that some measurement error or missing data may influence the results. Third, in this study we focus on a single pandemic-impacted year, 2020–2021, compared to pre-pandemic baselines. We do not examine whether grade inflation persisted or changed in subsequent years, which potentially limits insights into long-term trends beyond the immediate pandemic impact. Also, due to a lack of available data, it was not possible for us to account for school-level characteristics or other local factors that may have confounded the results regarding grade inflation. The differences we observe between learning modalities may reflect not only the instructional format itself but also unmeasured differences in school contexts such as grading cultures, resource levels, or other local pandemic conditions. It is possible that some of the observed inflation is attributable to these other contextual differences rather than learning modality alone. Fourth, we examined the transitions in learning modality during the 2020–2021 school year, but we did not factor in the length of time the school stayed in that learning modality or the transitions that may have occurred during the spring of 2020. It is possible that the length of time spent in a given learning modality or unmeasured learning modalities during the initial months of the pandemic also impacted outcomes.

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Technical Appendix

Grade Inflation Model

The definition of grade inflation used in this study—that is, an increase in grades without a corresponding rise in student achievement or content mastery—is well supported by existing research. Prior research, such as that of Bejar & Blew (1981), ACT (2015), and Ziomek & Svec (1995), has consistently shown that high school GPAs have risen over time, while standardized test scores have remained stagnant or declined. This disconnect between grades and external benchmarks is widely recognized as the definition of grade inflation. By using ACT scores as a reference point, the current study builds upon the principles of those definitions to isolate inflationary trends in English 11 grades.

Additionally, the approach used in this study expands on prior definitions of grade inflation by incorporating longitudinal data and school-level variation, which aligns with the three grade inflation detection strategies outlined by Finefter-Rosenbluh and Levinson (2015). Those three methods include observing an upward shift in the distribution of grades, a grade compression analysis, and cross-school comparisons. The grade inflation index in this study operationalizes these ideas using a hierarchical linear model (HLM) that controls for student achievement, tracks cohort trends, and adjusts for grade reporting rates over time. Specifically, including the percentage of students missing English 11 grades helps to serve as a statistical control to account for potential bias introduced by the changes in reporting of those grades across cohorts. This adjustment helps ensure that the observed changes in grade inflation more accurately reflect shifts in grading practices and are not an artifact of missing data. We do not assume a causal relationship between missingness and grades; controlling for this variable, however, allows us to isolate grade inflation effects from fluctuations in grade reporting.

To estimate school-level grade inflation in English 11 grades, we first used an HLM that predicts student-level English 11 grades using both individual and school-level predictors. The outcome variable of interest is that the self-reported English 11 grade for student i in school j is denoted as $Eng11_{ij}$. The model used is:

$$\begin{aligned} Eng11_{ij} = & \beta_0 + \beta_1 ACTCz_{ij} + \beta_2 \overline{ACTC}_j + \beta_3 Cohort\ Year_{ij} \\ & + \beta_4 Change\ in\ English\ 11\ Grade\ Missingness_j \\ & + \beta_5 (Cohort\ Year_{ij} \times Change\ in\ English\ 11\ Grade\ Missingness_j) + u_{0j} \\ & + u_{1j} Cohort\ Year_{ij} + \varepsilon_{ij} \end{aligned}$$

Where:

- $ACTCz_{ij}$ is the standardized ACT Composite score for student i in school j (mean = 0, SD = 1),
- $\overline{ACTC}_j$ is the school's average standardized ACT Composite score in 2017–2018,
- $Cohort\ Year_{ij}$ is the year the student took English 11,

- *Change in English 11 Grade Missingness_j* is the change in the percentage of students missing English 11 grades at school *j*, calculated as the difference in missingness between 2017–2018 and each subsequent year,
- u_{0j} is the school-level random intercept,
- u_{1j} is the school-level random slope for cohort year, and
- ε_{ij} is the student-level residual error.

In this model, students are nested within schools, and the model allows for variation in grading trends across schools over time. Including the percentage of missingness in English 11 grades and its interaction with cohort year serves as a statistical control to reduce the bias from differential reporting of English 11 grades across years. This is included to ensure that the observed grades accurately reflect changes in grading practices rather than shifts in reporting patterns.

The average school grade inflation index is derived from the English 11 model. It represents the adjustment in English 11 grades across cohorts at the school level while controlling for student achievement and data completeness. It is calculated by adding the school fixed effect, i.e., the mean change in grades, and the school random effect, i.e., the individual school change from the fixed effect mean.

This grade inflation index quantifies the extent to which English 11 grades have increased or decreased over time after adjusting for academic achievement and reporting completeness. This index is then used as a dependent variable in the subsequent difference-in-difference model that evaluates the impact of instructional modality on grade inflation.

Table A1 provides demographic data for the sample of students used in the grade inflation analysis during the years of 2017–2018, 2018–2019, and 2020–2021. Included are student and school counts; distributions by race/ethnicity, gender, and family income; and academic performance indicators such as HSGPA, English 11 grades, and ACT Composite scores. Notably, there is a gradual decline in the number of tested students, an increase in missing income percentages and grades over time, and an upward trend in grades despite decreases in ACT Composite scores.

Table A1. Grade Inflation Sample Demographics

Characteristic		2017–2018	2018–2019	2020–2021
N	Students	1,484,827	1,407,256	1,141,526
	Schools	8,377	8,377	8,377
Race/Ethnicity N (%)	African American	193,268 (13.0)	178,825 (12.7)	139,498 (12.2)
	American Indian/Alaskan Native	10,178 (0.7)	10,321 (0.7)	7,910 (0.7)
	Asian	65,679 (4.4)	62,029 (4.4)	47,895 (4.2)
	Hispanic	208,206 (14.0)	205,369 (14.6)	158,932 (13.9)
	Native Hawaiian/Pacific Islander	4,419 (0.3)	3,900 (0.3)	3,129 (0.3)
	Prefer not to respond/missing	136,320 (9.2)	135,666 (9.6)	121,939 (10.7)
	Two or more races	66,993 (4.5)	64,311 (4.6)	51,690 (4.5)
	White	799,764 (53.9)	746,835 (53.1)	610,533 (53.5)
Gender N (%)	Another gender	0 (0.0)	0 (0.0)	2,342 (0.2)
	Female	751,043 (50.6)	715,799 (50.9)	555,587 (48.7)
	Male	706,713 (47.6)	666,666 (47.4)	520,905 (45.6)
	Missing	27,071 (1.8)	24,791 (1.8)	54,816 (4.8)
	Prefer not to respond	0 (0.0)	0 (0.0)	7,876 (0.7)
Family N (%)	< \$36K	183,786 (12.4)	160,401 (11.4)	86,788 (7.6)
	\$36K–\$60K	210,442 (14.2)	187,524 (13.3)	113,420 (9.9)
	\$60K–\$100K	263,846 (17.8)	228,003 (16.2)	116,425 (10.2)
	> \$100K	282,603 (19.0)	265,751 (18.9)	202,270 (17.7)
	Missing	544,150 (36.6)	565,577 (40.2)	622,623 (54.5)
Academic metrics	HSGPA (mean (SD))	3.28 (0.63)	3.31 (0.63)	3.41 (0.59)
	English 11 grades (mean (SD))	3.31 (0.83)	3.34 (0.83)	3.45 (0.77)
	Missing English 11 grades (%)	37.6	39.0	51.7
	ACT Composite (mean (SD))	20.82 (5.85)	20.68 (5.93)	20.29 (6.03)

In Table A2, we can see that the estimated effect for the 2018–2019 cohort year was 0.03, indicating that, on average across schools, students' English 11 grades were 0.03 grade points higher in 2018–2019 compared to 2017–2018 after accounting for individual ACT Composite scores and school-level average ACT scores. Additionally, as the percentage of students missing English 11 grades increased by 1 percentage point, the grade inflation index increased by 0.03 grade points.

Table A2. Hierarchical Linear Model Results for Grade Inflation from 2017–2018 to 2018–2019

Predictors	Estimates	CI	p
(Intercept)	3.31	3.31–3.32	<0.001
ACTCz	0.36	0.36–0.37	<0.001
ACTC School AVG (2017–2018)	–0.02	–0.03––0.02	<0.001
Cohort Year [2018–2019]	0.03	0.03–0.04	<0.001
Change in Missing ENGLISH 11 %	–0.02	–0.02––0.01	<0.001
Cohort Year [2018–2019] * Change in Missing ENGLISH 11 %	0.03	0.02–0.03	<0.001

Note. $\sigma^2 = 0.49$. $T_{00} \text{ HS_CODE} = 0.05$. $T_{11} \text{ HS_CODE.cohort_year20182019} = 0.02$. $\rho_{01} \text{ HS_CODE} = -0.28$. ICC = 0.09. $N_{\text{HS_CODE}} = 11,695$. Observations = 2,100,430. Marginal R^2 / Conditional $R^2 = 0.182$ / 0.258.

In Table A3, we can see that the estimated effect for the 2020–2021 cohort year was 0.14, indicating that on average across schools, students' English 11 grades were 0.14 grade points higher in 2020–2021 than in 2017–2018 after accounting for individual ACT Composite scores and school-level average ACT scores. Additionally, as the percentage of students missing English 11 grades increased by 1 percentage point, grade inflation increased by 0.04 grade points.

Table A3. Hierarchical Linear Model Results for Grade inflation from 2017–2018 to 2020–2021

Predictors	Estimates	CI	p
(Intercept)	3.28	3.27–3.28	<0.001
ACTCz	0.36	0.36–0.37	<0.001
ACTC School AVG (2017–2018)	–0.04	–0.04––0.04	<0.001
Cohort Year [2020–2021]	0.14	0.13–0.14	<0.001
Change in Missing ENGLISH 11 %	–0.03	–0.03––0.02	<0.001
Cohort Year [2020–2021] * Change in Missing ENGLISH 11 %	0.04	0.04–0.05	<0.001

Note. $\sigma^2 = 0.49$. $T_{00} \text{ HS_CODE} = 0.05$. $T_{11} \text{ HS_CODE.cohort_yearh20202021} = 0.03$. $\rho_{01} \text{ HS_CODE} = -0.52$. ICC = 0.09. $N_{\text{HS_CODE}} = 8,511$. Observations = 1,485,196. Marginal R^2 / Conditional $R^2 = 0.186$ / 0.258.



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